Agency for Science, Technology and Research
SINGAPORE

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PUB
Water for All: Conserve, Value, Enjoy

JOINT MEDIA RELEASE

SINGAPORE CONFERS PRESTIGIOUS HONORARY CITIZEN AWARD ON PROFESSOR SIR GEORGE RADDA AND DR JOAN B. ROSE

Singapore—Singapore will be honouring Professor Sir George Radda, Chairman of A*STAR's Biomedical Research Council (BMRC), and Dr Joan B. Rose, Chairperson of PUB's External Audit Panel, with the 2015 Honorary Citizen Award for their valuable contributions to the country.

The award is the highest form of recognition bestowed by the Singapore Government for outstanding contributions by individuals to the country's growth and development. It is conferred to those who have made a significant impact in the areas of business, science and technology, information communications, education, health, arts and culture, sports, tourism, community services or security. (Please refer to **Annex A** for more information on the Honorary Citizen Award.)

About Professor Sir George Radda

Professor Sir George Radda has been a key contributor to the advancement of the biomedical sciences in Singapore. He charted the development of Singapore's bioimaging R&D capabilities through initiatives such as the establishment of the Singapore Bioimaging Consortium (SBIC), which he led as Chairman from 2005 to 2010, and the Clinical Imaging Research Centre (CIRC), one of the few research centres in the world dedicated to clinical imaging. His world-class expertise in bioimaging has added weight to Singapore's credibility in this field, and with his guidance, Singapore's imaging expertise and capabilities were harnessed into a focused national platform supporting and elevating Singapore's clinical R&D potential.

Professor Radda has also played a pivotal role in steering the direction of Singapore's biomedical sciences R&D, and has helped transform Singapore into an acclaimed biomedical research hub. His extensive domain knowledge and rich interdisciplinary R&D experience have fostered a collaborative and

multidisciplinary research culture in Singapore, and facilitated partnerships with numerous renowned international research institutions, universities and industry players. Through his visionary leadership, Professor Radda has enabled Singapore to achieve excellence in the biomedical sciences sector.

On being named Honorary Citizen, Professor Sir George Radda said, “I am deeply grateful and honoured to receive this highly prestigious national award. The biomedical sector in Singapore has matured significantly over the last decade as a result of the country’s commitment to R&D. I am pleased to have played a part in shaping Singapore’s biomedical research landscape and I thank the Singapore Government for giving me the opportunity to contribute.”

About Dr Joan Bray Rose

Dr Joan Rose has contributed significantly to the development of NEWater as one of Singapore’s Four National Taps and Singapore’s efforts in ensuring water sustainability over the past 17 years. She was appointed as an independent expert in the NEWater Expert Study Panel in 1998 to assess the quality of NEWater. As a member of the NEWater Expert Study Panel, Dr Rose studied and reviewed data from the NEWater study before the panel endorsed that NEWater was consistently of a safe and high quality, well within the international drinking water requirements, and a safe and sustainable source of water for Singapore.

Dr Rose went on to chair PUB’s External Audit Panel from its inception in 2003 till today. The panel comprises local and international independent experts, and conducts an independent audit and review of the sampling and analysis of water quality covering PUB’s entire water supply system from source to tap, including NEWater, desalinated water, tap water and reservoir water. This is an important part of PUB’s commitment in ensuring that water supplied by PUB is safe for drinking and for use by the industries. In addition, Professor Rose actively engages local undergraduates and researchers, providing guidance and education in our local universities through visiting professorship programmes.

Dr Joan Rose said, “I am honoured and delighted to receive this prominent national award. As a microbiologist, I believe that the provision of safe drinking water is the basic building block of a healthy and successful society, and I have been very impressed with how Singapore has evolved from a small island struggling with water challenges into a model for sustainable water management through relentless pursuit of R&D. I feel extremely fortunate to have played a part in helping Singapore shape the way the world understands water.”

This is the tenth year the Honorary Citizen Award is being conferred. President Tony Yam Keng Yam will present the award to Professor Sir George Radda and Dr Joan Rose at a ceremony to be held at the Istana on 21 October 2015. The fact sheet on the Honorary Citizen Award and biographies of the recipients are attached in Annex A and B respectively.

Enclosed:
Annex A – Fact Sheet on the Honorary Citizen Award
Annex B – Biographies of Professor Sir George Radda and Dr Joan B. Rose

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About the Agency for Science, Technology and Research (A*STAR)
The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector agency that fosters world-class scientific research and talent to drive economic growth and transform Singapore into a vibrant knowledge-based and innovation driven economy.

In line with its mission-oriented mandate, A*STAR spearheads research and development in fields that are essential to growing Singapore's manufacturing sector and catalysing new growth industries. A*STAR supports these economic clusters by providing intellectual, human and industrial capital to its partners in industry.

A*STAR oversees 18 biomedical sciences and physical sciences and engineering research entities, located in Biopolis and Fusionopolis, as well as their vicinity. These two R&D hubs house a bustling and diverse community of local and international research scientists and engineers from A*STAR's research entities as well as a growing number of corporate laboratories.

For more information on A*STAR, please visit www.a-star.edu.sg.

About PUB

PUB is a statutory board under the Ministry of the Environment and Water Resources. It is the water agency that manages Singapore's water supply, water catchment and used water in an integrated way.

About PUB's tagline: Water for All: Conserve, Value, Enjoy

PUB has ensured a diversified and sustainable supply of water for Singapore with the Four National Taps (local catchment water, imported water, NEWater, desalinated water).

To provide water for all, PUB calls on all to play our part to conserve water, keep our water catchments and waterways clean and build a relationship with water so we can enjoy our water resources. If we all play our part, we can have enough water for all our needs – for industry, for living, for life.

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Annex A

FACT SHEET ON THE HONORARY CITIZEN AWARD

About the Honorary Citizen Award

- The title of Honorary Citizen is a national award conferred by the Singapore Government since 2003 to recognise and acknowledge the contributions of foreigners who have rendered extensive and valuable services to Singapore and its people, or who have made a significant impact in the areas of business, science and technology, information communications, education, health, arts and culture, sports, tourism and community services or security.

- The Honorary Citizen Award is the highest form of national recognition for a non-Singaporean and ranks ahead of existing awards – the Public Service Star (Distinguished Friends of Singapore) Award and the Public Service Medal (Friends of Singapore) Award.

- The title of Honorary Citizen is conferred for life.

Past Honorary Citizen Award Recipients

2003	**Dr. Sydney Brenner** (UK) Scientific Advisor to Ministers / Senior Fellow, A*STAR **Dr Pasquale Pistorio** (Italy) President & Chief Executive, STMicroelectronics
2004	**Sir Richard Brook Sykes** (UK) Chairman, GlaxoSmith Kline PLC (2000-2002) **Mr. Lodewijk Christiaan Van Wachem** (Netherlands) Chairman of the Supervisory Board of the Royal Dutch Petroleum Company (Shell) (1992-2002)
2005	**Dr Tsutomu Kanai** (Japan) Chairman of the Board & Director of Hitachi Ltd **Professor Robert A Brown** (US)

	Provost, Massachusetts Institute of Technology (MIT) (1998-2005)
2007	**Mr Lee R. Raymond** (US) Chairman and CEO, ExxonMobil (1999-2006) **Dr Heinrich von Peirer** (German) Chairman, Supervisory Board of Siemens AG
2008	**Mr Ratan Tata** (India) Chairman, Tata Group **Tan Sri Frank Tsao Wen-King** (Malaysia) Senior Chairman, IMC Group Chairman, Suntec City Development
2010	**Mr Jeroen van der Veer** (Netherlands) Chief Executive, Royal Dutch Shell (2004-2009) Vice-Chairman, Supervisory Board of ING
2011	**Professor Edward Holmes** (US) Deputy Chairman, Translational and Clinical Science Group, Biomedical Research Council, A*STAR Executive Chairman of the National Medical Research Council, MOH
2012	**Lord Ronald Oxburgh** (UK) Co-chairman of A*STAR Science & Technology Advisory Committee (2011) Deputy Chairman, Board of the A*STAR Science and Engineering Research Council (SERC)
2014	**Mr Hiromasa Yonekura** (Japan) Chairman, Sumitomo Chemical Member, International Advisory Council, A*Star (2007-2011)

Annex B

BIOGRAPHY OF PROFESSOR SIR GEORGE RADDA

Professor Sir George Radda
Chairman of Biomedical Research Council (BMRC), Agency for Science, Technology and Research (A*STAR)
Emeritus Professor of Molecular Cardiology, University of Oxford

Professor Sir George Radda has been a key driver in spearheading Singapore's bioimaging capabilities for basic, translational and clinical R&D. He is the founder of A*STAR's Singapore Bioimaging Consortium (SBIC) and held Chairmanship of the Consortium from its establishment in 2005 up till 2010. Professor Radda continues to play an advisory role in shaping the research agenda for the Consortium. Through his contributions, SBIC has continued to successfully attract collaborations with various major companies in the industry. He has developed significant tie-ups with industry players such as Bayer and Schering Plough, and with GE Healthcare to develop a new biomedical technology to further advance the field of biomedical sciences (BMS).

Professor Radda has also been pivotal in building Singapore's bioimaging capabilities for clinical R&D through the establishment of the Clinical Imaging Research Centre (CIRC) in 2007. He played an important role in key hires into both SBIC and CIRC, including world-renowned experts such as Professor David Townsend, the inventor of the PET/ICT scanner. Today, the centre is one of the few facilities in the world dedicated to clinical R&D.

Professor Radda has been involved with Singapore's BMS Initiative since 2003 and in the last six years, played a more direct role in charting and guiding the BMS

R&D strategies and scientific direction for A*STAR and Singapore. Helming several key leadership appointments, Professor Radda has contributed extensively in terms of scientific administration and R&D management. He has been appointed Chairman of A*STAR's Biomedical Research Council (BMRC), Chairman of the BMRC Board, as well as Member of the A*STAR Executive Committee since April 2009. Under his leadership, BMRC has overseen the establishment of various research consortia in key BMS fields such as bioimaging, stem cells and immunology.

A strong advocate for fostering scientific exchange and collaborations, Professor Radda was instrumental in initiating scientific interactions and collaborations between Singapore and the United Kingdom, New Zealand and Hungary. He facilitated the master collaboration agreement between A*STAR and Hungary's National Office for Research and Technology in 2007 for the promotion of scientific R&D and human capital development. Professor Radda is also strongly supportive of manpower training and exchange initiatives, having actively promoted the Singapore International Graduate Awards (SINGA) to students from various European countries and being involved in the negotiation with the University of Oxford to offer a joint PhD programme under the A*STAR Graduate Scholarship.

Beyond A*STAR, Professor Radda is also actively involved in Singapore's broader BMS landscape. He holds membership in the Ministry of Education's Academic Research Council (ARC) and the Research Centre of Excellence for Mechanobiology Governing Board under the National Research Foundation (NRF).

Other appointments which Professor Radda held during his distinguished career include being the Chief Executive of the United Kingdom's Medical Research Council (MRC) from 1996-2003. During his term as Chief Executive of the MRC, he oversaw the inter-council working group on behalf of Research Councils UK to develop a combined strategy and vision for the 7 research councils in the UK. The result was the publication of two documents namely, "Strategies for Synthesis" and "A Vision for Research" on cross council research efforts. Professor Radda was also the British Heart Foundation Professor of Molecular Cardiology (1984-2003) and most recently, Professor and Head of the Department of Physiology, Anatomy and Genetics at Oxford University.

Professor Radda's obtained his MA in Chemistry and D.Phil. in Physical Organic Chemistry at Merton College Oxford. He is well known for developing Nuclear Magnetic Resonance (NMR) methods to study the human body; he published the first use of phosphorus NMR to study tissue metabolites in 1974. For his pioneering

efforts in establishing clinical NMR, Professor Radda has received numerous honours such as being elected as a member of the Royal Society in 1980, made a Commander of the British Empire in 1993 and knighted in 2000. He has also won many awards for his work in the area of cardiology such as the British Heart Foundation Gold Medal in 1982, the Buchanan Medal of the Royal Society in 1987 and most recently, the Medal of Merit from the International Academy of Cardiovascular Sciences in 2006. Professor Radda was also awarded the Singapore Public Service Medal in 2008 as a recognition of his commendable service to Singapore.

BIOGRAPHY OF DR JOAN BRAY ROSE

Dr Joan Bray Rose
Chairperson, PUB External Audit Panel
Homer Nowlin Chair in Water Research and Co-Director, Center for Water Sciences and Center for Advancing Microbial Risk Assessment, Department of Fisheries and Wildlife at Michigan State University, USA

Every drop of water matters to Joan B. Rose and her research team of water detectives. Rose is an international authority on water microbiology, water quality, and public health safety. Her work addresses the use of new molecular tools for surveying and mapping water pollution for recreational and drinking water, irrigation water, coastal and ballast waters; assessment of innovative water treatment technology for the developed and developing world; and use of quantitative microbial risk assessment.

Rose holds the Homer Nowlin Endowed Chair in Water Research at Michigan State University in the Departments of Fisheries & Wildlife and Plant, Soil and Microbiological Science. She co-directs both MSU's Center for Advancing Microbial Risk Assessment (CAMRA) and its Center for Water Sciences (CWS), in addition to leading the Global Water Pathogens Project in partnership with UNESCO.

She is a member of the National Academy of Engineering and a Fellow of the American Academy of Microbiology, and currently serves on the Environmental Protection Agency Science Advisory Board for the Great Lakes and the National Academy's Board on Environmental Studies and Toxicology.

Joan is a pioneer in the emerging science of viral metagenomics – sequencing virus DNA in water sources, discharges and shipping ballast using next-generation high-throughput technology. Such technology promises to significantly improve

methods protect water and food supplies, and Rose now is applying it to assess the safety of irrigation waters and fresh produce.

Her global activity includes investigation of waterborne disease outbreaks and the study of water supplies, treatment, and reclamation. Her applied research interests include study of microbial pathogens in recreational waters and climatic factors impacting water quality. Rose has published more than 300 manuscripts.

She is the 2001 recipient of the Clarke Water Prize and was presented with the Singapore Public Service Medal from the Ministry of Environment and Water Resources, in August, 2009 for her contributions to water quality and Singapore's water security.

Rose earned her B.Sc. and Ph.D. in microbiology from the University of Arizona, Tucson.

Contributions to Singapore

Rose's contribution to Singapore started in late 1998 with her appointment as an independent expert in the NEWater Expert Study Panel. The then-Ministry of the Environment and PUB, Singapore's national water agency, jointly set up a NEWater study team to address technical and water quality issues in purifying treated used water to drinking water using the latest proven membrane technologies. The NEWater Expert Study Panel was an important part of the overall strategy to ensure that the NEWater Study was conducted to the highest international standards. Comprising both local and international experts, the Panel provided advice and conducted independent review and evaluation of the results and findings of the NEWater Study. After more than two years of study, the Panel concluded and endorsed NEWater as a safe alternative to augment our local water resources in 2002. Rose, as a key member of the Panel, contributed significantly to the evaluation process and later on, in the national campaign to educate the public on NEWater and to achieve high public acceptance of NEWater as a water resource. This led to the successful launch of NEWater as the third National Tap in Feb 2003.

Rose's involvement with Singapore continued with her appointment as the Chair of the External Audit Panel in 2003 till today. The External Audit Panel comprises local and international independent experts, and is an important part of PUB's commitment in ensuring that the water supplied by PUB is safe for drinking and for use by the industries. Started initially to audit on NEWater quality and operation,

Rose's effective leadership in the External Audit Panel enabled PUB to expand the scope to audit both drinking water and desalinated water. The panel also advises PUB on emerging issues and suggests long term water quality management approaches and strategies. Singapore's water supply system continues to be robust and water supplied is safe for drinking and for use by the industries.

Rose's expertise and contributions have ensured that Singapore has a sustainable water supply through NEWater and desalinated water. In addition, Rose actively engages local undergraduates and researchers, providing guidance and education in local universities through visiting professorship programmes.