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MEDIA RELEASE

EXPECTANT MOMS, BABIES SUBJECTS OF NEW STUDY TO FIND WAYS TO PREVENT OBESITY AND DIABETES

Official launch of Growing Up in Singapore Towards healthy Outcomes (GUSTO) Study

A major, long-term study of pregnant mothers and their fetuses as well as infant children in Singapore aimed at finding ways of preventing the onset of diseases in later years has kicked off.

Backed by mounting evidence that the environment in which a baby is conceived, born and grows up determines the child's growth and development, a research team from the KK Women's and Children's Hospital (KKH), the National University Hospital (NUH) and the Singapore Institute for Clinical Sciences (SICS) under the Agency for Science, Technology and Research (A*STAR) intend to see just how profoundly environmental factors cause the development of diseases like obesity and diabetes.

This seminal effort is led by lead investigator, Associate Professor Chong Yap Seng of the National University Health System (NUHS). He is working with a team of Singaporean and international researchers and is recruiting a total of 1,200 expectant mothers for the study, which will track children from the time they are fetuses to 3 years of age initially, and then as they grow up to become adults subsequently, if further funding is secured.

Termed the Growing Up in Singapore Towards healthy Outcomes (GUSTO) study, this research effort is the centrepiece of the "Developmental Origins: Singapore" (DevOS) programme that was awarded the S\$25m Translational and Clinical Research Flagship Programme Grant by the National Research Foundation in September 2008.

Explaining the reason for the study, Associate Professor Chong, from the Department of Obstetrics and Gynaecology, NUS Yong Loo Lin School of Medicine and a Senior Consultant with the Department of Obstetrics and Gynaecology, NUH, said attempts at modifying lifestyles to prevent or reduce diabetes, obesity, and cardiovascular disease have had a limited impact thus far. "Present strategies for the management of obesity and diabetes are focused on the prevention of secondary complications rather than primary disease. While there is little doubt about the benefits of exercise and healthy diets in improving overall health, it is evident that additional approaches must be explored to improve the long term effectiveness of interventions."

Environmental factors at conception, birth contribute to development of metabolic diseases

Hence, the importance of a major initiative to study how fetuses respond to their environment during development.

Added Professor Sir Peter Gluckman, Executive Board Member, DevOS and Programme Director of SICS' Growth, Development and Metabolism Programme, "There is increasing evidence that a baby's environment from conception to birth determines its childhood development and lifelong health and that factors in early development are major causes of metabolic diseases such as Obesity and Type 2 Diabetes Mellitus." Professor Gluckman has a strong interest in how nutrition in the womb affects a baby's health for the rest of its life, and how this phenomenon evolved. He advises the World Health Organisation, United States Agency for International Development and the World Bank on public health measures to improve the outcomes of pregnancy.

Knowledge gained from the study will be of immense importance to Singapore, said Associate Professor Kenneth Kwek, Co-Principal Investigator, GUSTO, DevOS. "With the participation of Singaporean mothers-to-be recruited from the maternity units of the KKH and NUH, the research team hopes to discover effective prevention and early intervention strategies, which may be in the form of simple lifestyles, nutritional intervention or preventive drugs to reduce the burden of metabolic diseases." Associate Professor Kwek is also Chairman, Medical Board and Head, Department of Maternal Fetal Medicine, KKH.

"As the GUSTO birth cohort is the first life course longitudinal follow-up study of babies from early pregnancy to childhood in Singapore, the study will provide valuable information on early fetal influences, genetic, and childhood environmental predictors of development and childhood health," added Associate Professor Saw Seang Mei, Co-Principal Investigator, GUSTO, DevOS. "Important findings from our study will guide national public policy and improve the health of the population." Associate Professor Saw is also Vice-Dean (Research, Pre-Clinical), NUHS Research Office and Associate Professor, Department of Epidemiology and Public Health, NUS Yong Loo Lin School of Medicine.

Exploring the Asian phenotype

And with the increased prevalence of obesity and diabetes in Singapore, there is a need to study the "Asian Phenotype" as much information about these diseases originates from studies conducted in the west. Research, however, indicates that Asians seem more prone to metabolic diseases at lower Body Mass Index. Also, different ethnic groups seem to be at different risk levels, Associate Professor Chong said.

“The development of this research is timely as these diseases are rapidly increasing in prevalence throughout the world, especially in Asia. While much research in this area has been conducted in Caucasian populations, data has suggested that aspects of the diagnosis, prevention and treatment of metabolic diseases could differ between Asians and Caucasians, and also differ between the various Asian ethnic groups. There is an urgent need to try and identify biomarkers, such as epigenetic changes, that indicate increased risk for metabolic diseases and use these to tailor interventions for individuals at risk.” added Associate Professor Chong.

The prevalence rate of Type 2 Diabetes Mellitus in Singapore is one of the highest in the world and has increased dramatically over the past three decades, from 1.9% of adults in 1975 to 8.2% in 2004. The prevalence of obesity is also rising in Singapore and increased from 5.1% of adults in 1992 to 6.9% in 2004 with almost double the prevalence of school children at over 12%.

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About the Singapore Institute for Clinical Sciences (SICS)

Established in 2007, the Singapore Institute for Clinical Sciences (SICS) is an institute within the Agency for Science, Technology and Research (A*STAR), and its mission is to develop disease-oriented clinical and translational research programmes in focused disease areas. SICS is distinguished by its focus on clinical sciences and the use of innovative approaches and technologies that enable the efficient and effective study of human health and diseases. The clinical scientists in SICS conduct the full spectrum of “bench to bedside” research activities in genetic medicine, infectious diseases and metabolic diseases (including diabetes/ obesity/ insulin resistance). SICS aims to attract, train and nurture clinician-scientists and serves as a critical bridge linking basic research undertaken by A*STAR Research Institutes and clinical research programmes in Singapore's public hospitals, disease centres and universities.

For more information about SICS, please visit: www.sics.a-star.edu.sg.

About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is the lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based and innovation-driven Singapore. A*STAR oversees 14 biomedical sciences, and physical sciences and engineering research institutes, and seven consortia & centre, which are located in Biopolis and Fusionopolis, as well as their immediate vicinity.

A*STAR supports Singapore's key economic clusters by providing intellectual, human and industrial capital to its partners in industry. It also supports extramural research in the universities, hospitals, research centres, and with other local and international partners.

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

About the KK Women's and Children's Hospital (KKH)

KK Women's and Children's Hospital (KKH) specialises in care for women, babies and children. Since its inception in 1924, the hospital has grown from a 30-bed maternity hospital into an 830-bed hospital. The hospital offers a full range of tertiary services for women in Obstetrics & Gynaecology, Paediatrics and Neonatology, through its 300 medical specialists combined with some of the most advanced medical technology and innovative equipment. KKH is committed to providing quality care, equipped with advanced diagnostic and treatment technology for the benefit of its patients.

For more information about KKH, please visit <http://www.kkh.com.sg/>

About the National University Health System (NUHS)

Established in January 2008 and jointly owned by the Ministry of Health Holdings and National University of Singapore (NUS), the National University Health System groups the National University Hospital (NUH), NUS Yong Loo Lin School of Medicine and NUS Faculty of Dentistry under a common governance structure to create synergies to advance health by integrating excellent clinical care, research and education.

The enhanced capabilities and capacity will enable the NUHS to deliver better patient care, train future generations of doctors more effectively and bring innovative treatments to patients through groundbreaking research.

For more information about NUHS, please visit www.nuhs.edu.sg

About the National University Hospital (NUH)

The National University Hospital (NUH), a member of the National University Health System (NUHS), is a tertiary specialist hospital that provides advanced, leading-edge medical care and services. Equipped with state-of-the-art facilities as well as dedicated and well-trained staff, the NUH is a major referral centre that delivers tertiary care for a wide range of medical and dental specialties including Cardiology, Gastroenterology and Hepatology, Obstetrics and Gynaecology, Oncology, Ophthalmology, Paediatrics and Orthopaedic Surgery. It is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine. The Department of Obstetrics and Gynaecology in NUH is the host department for the Metabolic Disease Translational and Clinical Research Flagship Programme, DevOS.

With combined resources from the teaching hospital and NUS Yong Loo Lin School of Medicine and Faculty of Dentistry, the NUH will be able to meet the healthcare needs of patients, train future generations of doctors more effectively, and help develop solutions to our healthcare problems through research.

Backed by substantive expertise and experience, the NUH was chosen by the Ministry of Health to develop two new national specialist centres, the National University Heart Centre, Singapore and National University Cancer Institute, Singapore to meet the growing need for cardiac and cancer treatments.

In 2004, the NUH became the first Singapore hospital to receive Joint Commission International (JCI) Accreditation, an international stamp for excellent clinical practices in patient care and safety. It was also the first hospital in Singapore to receive a triple ISO certification concurrently for Quality, Environmental, and Occupational Health & Safety Management Systems in 2002.

For more information about NUH, please visit www.nuh.com.sg

About the NUS Yong Loo Lin School of Medicine

Established in 1905, the NUS Yong Loo Lin School of Medicine (YLLSoM) was the first institution of higher learning in Singapore and the genesis of what would become the National University of Singapore. The School offers one of the finest undergraduate medical programs in the Asia Pacific region and commands international recognition and respect. From Academic Year 2009–2010, the NUS Yong Loo Lin School of Medicine has an intake of 260 new students for the July admission. The School strives to fulfil its tripartite mission of providing excellent clinical care, training the next generation of healthcare professionals, and fostering research that will transform the practice of medicine. It plays a pivotal role in producing future leaders in healthcare delivery, discovery, and public service as well as in Singapore's Biomedical Sciences Initiative and Singapore Medicine, a medical tourism initiative. The School's 17 departments in the basic sciences and clinical specialties work closely with the Alice Lee Centre for Nursing Studies, the Centre for Biomedical Ethics, and the Centre of Excellence for Health Services Research to ensure that teaching and research are aligned and relevant to Singapore's healthcare needs.

For more information about YLLSoM, please visit <http://medicine.nus.edu.sg/corporate/>