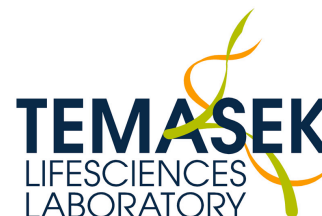


PRESS RELEASE

Singapore, 20 June 2003



Joint Media Release from The Environmental Health Institute, Genome Institute Of Singapore, Singhealth Group, National Healthcare Group, The Novartis Institute for Tropical Diseases and Temasek Life Sciences Laboratory

SIX COMPANIES FORM THE SINGAPORE DENGUE CONSORTIUM

Six healthcare and research companies have joined forces to form the Singapore Dengue Consortium to study the mosquito-borne disease. The six organizations – the Environmental Health Institute (a division of the National Environment Agency), the Genome Institute of Singapore, SingHealth Group, National Healthcare Group, the Novartis Institute for Tropical Diseases and Temasek Life Sciences Laboratory – inked a Memorandum of Understanding (MOU) this afternoon.

2 The intention of the consortium is to explore ways to better understand and manage dengue infection and ultimately minimize the incidence of dengue in Singapore. Consortium members will be able to leverage on each other's strengths and capabilities both in terms of clinical management, laboratory diagnosis and viral research in order to

- Accelerate the diagnosis of dengue
- Determine the serotype of dengue as well as its full genome sequence
- Understand what role the genes of dengue virus play in causing the different types of dengue diseases with different severity.

3 The Dengue Consortium will also provide a platform for the parties who welcome other parties to participate, share current work on dengue and brainstorm ideas for projects that may be of mutual interest. The diverse expertise of the parties ranging from basic research to surveillance and patient management would allow projects that would not be possible without the joint efforts of the parties. Separate agreements between the relevant parties will be drawn up to implement these projects.

4 Since 2002, many parts of the world are reporting increased dengue incidence. There was also a major worldwide outbreak of dengue in 1997/8. The exact reason for such an upsurge is not known although, it is possible that the warm temperatures could have affected the Aedes mosquito's life cycle and sped up virus maturation in the mosquitoes.

5 "This may not be the sole explanation," said Dr Ooi Eng Eong, Head of the NEA's Environmental Health Institute. "A few recent studies suggest that the genetic makeup of the virus could also determine the extent of manifestation of the disease. So, depending on the virus in circulation, we could see in some years more cases and in some years, fewer cases. However, this observation will need further evaluation."

6 This is where the Singapore Dengue Consortium will play a part. It is hoped Singapore will achieve even better control of dengue by focusing its limited resources on those areas with a more virulent dengue virus as well as to advance the care and treatment of dengue patients through research. In addition, the efforts of the consortium could also be instrumental in speeding up the discovery of an anti-viral drug effective against the dengue virus.

7 "SingHealth is pleased to be part of this initiative to proactively address dengue infection," said SingHealth's Group Chief Executive Officer, Prof Tan Ser Kiat. "As a group of institutions managing more than 60 per cent of public healthcare patient load in Singapore, we look forward to sharing knowledge, expertise and pertinent data, and participating in leading-edge research towards reducing the dengue infection rates in Singapore. We hope this collaboration will serve as a model in dealing with other infectious diseases."

8 "NITD will contribute its state-of-the-art in drug discovery know-how to find new therapies for dengue haemorrhagic fever and shock and will be fully complementary to the other members of the consortium," added Paul Herrling, Chairman of the Board of Novartis Institute for Tropical Diseases. "NITD welcomes the opportunity to collaborate with other consortium members to alleviate the suffering caused by this disease".

9 The first project on the drawing board is the dengue virus-sequencing project, which will provide information on the entire virus genome together with annotation of clinical data and patient history. This information will be valuable for surveillance as well as understanding the genetic variations of different serotypes. One long-term outcome may be to find genetic markers that predict the clinical severity of the disease.

10 Assoc Prof Mohan Balasubramanian, Acting Director at Temasek Life Sciences Laboratory, said: "TLL is building up its reputation in the fields of cell and development biology and bio-informatics and we are particularly pleased to be part of the Singapore Dengue Consortium, which allows us to carry out science that is fundamental and relevant to Singapore."

11 "The task is a challenging one, but the National Healthcare Group is confident that with the active participation and cooperation of the members of this Consortium, there will be some breakthrough discoveries," said Dr Lim Suet Wun, Deputy CEO, National Healthcare Group.

12 Added the Executive Director of the Genome Institute of Singapore, Prof Edison Liu: "The Genome Institute of Singapore is delighted to participate and contribute to the Consortium. Our immediate focus is the full length sequencing of the multiple isolates of the dengue virus to determine its genetic diversity."

13 Dengue and dengue haemorrhagic fever are the most common mosquito-borne viral diseases in the world. The disease is common where the Aedes mosquitoes are prevalent, especially the Aedes aegypti. There is as yet no specific anti-viral drug to treat the disease nor is there a vaccine to prevent a person from being infected with the dengue virus. The only means right now is to control the Aedes mosquito population.

The National Environment Agency (NEA)

The National Environment Agency (NEA) was formed on 1 July 2002 as a statutory board of the Ministry of the Environment (ENV) to focus on the implementation of environmental services. Each of the NEA operational divisions – Environmental Protection, Public Health, and Meteorological Services – plays a vital role in ensuring a safe, clean and healthy environment for Singapore. More information about the NEA is available at <http://www.nea.gov.sg>.

Novartis

Novartis Institute for Tropical Diseases is an affiliate of Novartis AG (NYSE: NVS), a world leader in pharmaceuticals and consumer health. In 2002, the Group's businesses achieved sales of USD 20.9 billion and a net income of USD 4.7 billion. The Group invested approximately USD 2.8 billion in R&D. Headquartered in Basel, Switzerland, Novartis Group companies employ about 77 200 people and operate in over 140 countries around the world. For further information please consult <http://www.novartis.com> and www.nitd.novartis.com

Genome Institute of Singapore (GIS)

The GIS is a national flagship initiative with a global vision that seeks to use genomic sciences to improve public health and prosperity. As a center for genomic discovery, GIS pursues the integration of technology, genetics and biology towards the goal of individualized medicine. The scientific focus will be to investigate post-sequence genomics; to understand the genetic architecture of pan-Asian populations with emphasis on cancer biology, pharmacogenomics, stem cell biology and infectious diseases. The genomics infrastructure at GIS will be utilized to train new scientific talent, to function as a bridge for academic and industrial research and explore scientific questions of high impact.

Singapore Health Services (SingHealth)

SingHealth is the largest provider of acute healthcare in Singapore, made up of 3 Hospitals, four National Specialist Centres and a network of polyclinics. We are dedicated to providing quality healthcare that is affordable and accessible to its patients. At SingHealth, we are inspired by our shared values of Clinical Excellence, Commitment and Collaboration to provide Genuine Care to all our patients.

Members of the SingHealth Group include

Hospitals – Changi General Hospital, KK Women's and Children's Hospital and Singapore General Hospital

National Specialist Centres – National Cancer Centre, National Dental Centre, National Heart Centre and Singapore National Eye Centre

SingHealth Polyclinics – Bedok, Bukit Merah, Geylang, Marine Parade, Outram, Pasir Ris, Queenstown and Tampines

National Healthcare Group

The National Healthcare Group manages the following:

- Four hospitals – Alexandra Hospital, National University Hospital, Tan Tock Seng Hospital and the Institute of Mental Health/Woodbridge Hospital;
- Three specialist centers - John Hopkins-NUH International Medical Centre; National Neuroscience Institute and National Skin Centre;
- The NHGP chain of nine polyclinics - at Ang Mo Kio, Bukit Batok, Choa Chu Kang, Clementi, Hougang, Jurong, Toa Payoh, Woodlands, Yishun;
- Three specialty institutes – The Cancer Institute, The Eye Institute and The Heart Institute; and
- Four Business Divisions – NHG College, NHG Diagnostics, NHG Pharmacy and NetCare Internet Service.

Our vision is "Adding years of healthy life to the people of Singapore".

Temasek Life Sciences Laboratory

Temasek Life Sciences Laboratory was established in August 2002 to undertake cutting edge research in molecular biology and genetics in the broad fields of life sciences. TLL is affiliated to the National University of Singapore and Nanyang Technological University. Currently, there are 15 research groups working in the areas of cell biology, developmental biology, pathogenesis and bioinformatics. In addition, TLL has training programs for graduate students, postdoctoral fellows, as well as students from the universities and junior colleges.

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