



Singapore
Immunology Network



ETPL



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A*STAR and Veredus Laboratories Create Market's First Lab-on-Chip for the Detection of Multiple Tropical Infectious Diseases

Singapore, April 25, 2013 – The Agency for Science, Technology and Research (A*STAR) and Veredus Laboratories, a leading supplier of innovative molecular diagnostic tools, announced the launch of VereTrop™, the first biochip in the molecular diagnostics market that can identify 13 different major tropical diseases from a single blood sample.

With its high level of automation, this lab-on-chip diagnostic kit is poised to transform the quality and efficiency of testing tropical infectious diseases, including dengue fever, malaria, chikungunya, and hand, foot and mouth disease, in the field.

The lead virologist in this project, Associate Professor Lisa F.P. Ng from A*STAR's Singapore Immunology Network (SIgN) said, "Tropical diseases often reflect common symptoms like fever, and may not be accurately diagnosed early by doctors. This portable test kit is a rapid and reliable method to accurately test for multiple pathogenic targets from just one blood sample in a matter of hours."

Together with Prof Laurent Renia, an expert in Malaria Immunobiology at SIgN, the team from SIgN has successfully validated the kit on patient samples in the external fields of Northern Thailand, at the Thai-Myanmar border.

Professor François H Nosten, the clinical collaborator at the Oxford Clinical Unit in Mae Sot and Director of the Shoklo Malaria Research Unit said, "This technology opens new possibilities for the accurate and rapid diagnostic of important infectious diseases that remain the main causes of illness in the tropics. Its versatility and ease of use will change the approach to diagnostics at the periphery of health care system."

Developed with infectious disease expertise from A*STAR's SIngapore Genome Nucleus, this biochip, which operates on STMicroelectronics' Lab-on-Chip platform, was initiated between ETPL, the technology transfer arm of A*STAR, and Veredus in 2009¹. Prior to this, Veredus had licensed diagnostic technology from A*STAR in the areas of influenza and malaria².

"Veredus and A*STAR have worked on several collaborative projects dating back to 2004," said Dr. Rosemary Tan, CEO of Veredus Laboratories, a Singapore-based, majority owned subsidiary of STMicroelectronics. "This latest project on VereTrop Lab-on-Chip has combined the strengths and expertise of A*STAR, Veredus, and STMicroelectronics to create a powerful multiplexed molecular product that can rapidly detect and differentiate symptomatically similar tropical infectious diseases and enable timely proper treatment."

"After this journey of more than three years, we are glad that such a compelling technologically-advanced product with global healthcare benefits is ready to be launched to the market. Veredus is a good example of how local companies can work with A*STAR for a consistent stream of technology to develop products that can enhance their offerings and level them up to be competitive and relevant globally," said Philip Lim, Chief Executive Officer of ETPL.

Enclosed:

Annex A - List of tropical diseases that can be detected by VereTrop™

For media queries, please contact:

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

Dr. Sarah Chang

Tel: (65) 6826 6442

Email: chang_kai_chen@a-star.edu.sg

ETPL (A*STAR's Technology Transfer arm)

Ms. Amanda Lee

DID: (65) 6478 8443

Email: amanda_lee@etpl.sg

¹ ETPL funded the project from the onset - designing the sequence probes, developing and validating the chip, up to acquiring samples for clinical validation.

² <http://www.a-star.edu.sg/Media/News/PressReleases/tabid/828/articleType/ArticleView/articleId/91/Default.aspx>

Veredus Laboratories

Mr. Boey Taik Boon
Corporate External Communications
STMicroelectronics Asia-Pacific
Tel: +65 6427 7765
Email: taik-boon.boey@st.com

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 20 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 about A*STAR, please visit www.a-star.edu.sg

About ETPL

ETPL is the technology transfer arm of the Agency for Science, Technology and Research (A*STAR), Singapore's lead agency for fostering world-class scientific research and talent. A*STAR oversees 14 biomedical sciences, physical sciences and engineering research institutes, and six consortia and centres. As a one-stop resource, ETPL supports A*STAR in transforming the economy through driving innovation and commercializing its research outcomes.

Also known as Exploit Technologies Pte Ltd, ETPL enhances the research output of A*STAR scientists by translating their inventions into marketable products or processes. Through shaping and facilitating licensing deals and spin-offs, ETPL actively engages industry leaders and players to commercialise A*STAR's technologies and apply them to building ecosystems that benefit business, industry and economy. For more information, please visit <http://etpl.sg>

About Veredus Laboratories Pte Ltd

Veredus Laboratories Pte Ltd was founded in 2003 and launched its first products in 2005. Veredus is a Singapore-based majority-owned subsidiary of STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications.

Veredus specializes in the development, manufacture, and marketing of innovative multiplexed molecular solutions in the clinical, specialty, and custom testing markets based on STMicroelectronics' proprietary Lab-on-Chip platform. The Lab-on-Chip platform, marketed as the VerePLEXTM Biosystem, combines Micro-Electro-Mechanical-Systems (MEMS) with micro-fluidics to integrate multiplexed DNA amplification with microarray detection for rapid, cost-effective, and accurate analysis of biological materials.

Further information on Veredus can be found at www.vereduslabs.com.

About STMicroelectronics

ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2012, the Company's net revenues were \$8.49 billion. Further information on ST can be found at www.st.com.

ANNEX A

List of 13 Tropical Diseases and corresponding sub-species detected by VereTrop™

To detect	Disease	To discriminate	Subspecies
1	African trypanosomiasis (Sleeping Sickness)	1	<i>Trypanosoma.brucei rhodensiense (T.Br)/ Trypanosoma.brucei gambiense (T.Bg)</i>
	Human American trypanosomiasis (Chagas disease)	2	<i>Trypanosoma.cruzi cruzi (T.Cc)</i>
2	Malaria	3	<i>Plasmodium falciparum (P.fal)</i>
		4	<i>Plasmodium vivax (P.viv)</i>
		5	<i>Plasmodium ovale (P.O)</i>
		6	<i>Plasmodium malariae (P.m)</i>
		7	<i>Plasmodium knowlesi (P.kn)</i>
3	Typhoid Fever	8	<i>Salmonella typhi (ST)</i>
4	Leptospirosis (Weil's syndrome)	9	<i>Leptospira.interrogans</i>
			<i>Leptospira.borgpetersenii</i>
			<i>Leptospira.weilii</i>
			<i>Leptospira.santorosai</i>
			<i>Leptospira.alexanderi</i>
			<i>Leptospira.noguchii</i>
5	Melioidosis	10	<i>Burkholderia pseudomallei (BP)</i>
6	Chikungunya Fever	11	<i>Chikungunya virus (CHIKV)</i>
7	Dengue Fever	12	<i>Dengue serotype 1 virus (DENV 1)</i>
		13	<i>Dengue serotype 2 virus (DENV 2)</i>
		14	<i>Dengue serotype 3 virus (DENV 3)</i>
		15	<i>Dengue serotype 4 virus (DENV 4)</i>
8	West Nile	16	<i>West Nile Virus (WNV)</i>
9	Yellow Fever	17	<i>Yellow Fever Virus (YFV)</i>
10	Japanese Encephalitis	18	<i>Japanese Encephalitis Virus (JEV)</i>
11	Rift Valley Fever	19	<i>Rift Valley Virus (RVV)</i>
12	Hand, foot and mouth disease (HFMD)	20	<i>Human enterovirus A EV-71 (EV71)</i>
13	Hemorrhagic fever with renal syndrome (HFRS)	21	<i>Puumala virus (PUUV)</i>
		22	<i>Tula virus (TULV)</i>
		23	<i>Dobrava-Belgrade virus (DOBV)</i>
		24	<i>Seoul virus (SEOV)</i>
		25	<i>Hantaan virus (HTNV)</i>
	Hantavirus Cardiopulmonary Syndrome (HCPS or HPS)	26	<i>Andes virus (ANDV)</i>