



## **JOINT PRESS RELEASE – embargoed until 17 Jan 2011**

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### **New NUS spin-off company to develop novel electrocardiogram to target the US\$ 8 billion global patient monitoring market**

*17 Jan 2011, Singapore* – A new spin-off company from the National University of Singapore (NUS) is set to enter the global cardiac healthcare market. Called Clearbridge VitalSigns, this medical device start-up company will develop and commercialise an NUS invention, which is a novel, ultra-low powered electrocardiogram (ECG) chip.

The research behind the ECG chip was conducted at the Department of Electrical and Computer Engineering of NUS, and funded by the Agency for Science, Technology and Research (A\*STAR) through the Thematic Strategic Research Programme (TSRP). Exploit Technologies Pte Ltd (Exploit Technologies), the marketing and commercialisation arm of A\*STAR, worked closely with the NUS research team and the NUS Industry Liaison Office to recommend the appropriate intellectual property (IP) protection strategy for the breakthrough technology and subsequently, licensed the IP to Clearbridge VitalSigns.

This ECG chip is essentially an innovative, low-powered, fully-integrated, 7-day continuous, ECG recording device. Current cardiac ECG recording devices tend to have short operating lives, and often have difficulty in capturing the sporadic abnormal heart episodes. In addition, the current cardiac monitoring devices are often cumbersome and bulky, which greatly affects patient comfort and mobility.

In contrast, the ECG chip can be developed into an extremely thin, self-adhesive “Digital ECG Plaster” that is adhered to a patient’s chest. This device’s primary use is to monitor patients with heart problems or who have undergone heart surgery. It can also be used by professional athletes who undergo strenuous physical training.

“Currently, ECG devices on the market are expensive, bulky and have numerous connecting wires. We aim to revolutionise the ECG market, by developing our Digital ECG Plaster into a highly-sensitive and accurate, fully-integrated, medical grade ECG waveform recorder. This will allow patients to enjoy a greater level of mobility, higher quality of care and reduced healthcare costs,” said Mr Johnson Chen, Co-Founder of Clearbridge VitalSigns and Managing Partner of Clearbridge Accelerator.

Unique features of Clearbridge VitalSigns’ Digital ECG Plaster include:

- ECG-on-chip: This patent-pending design fully integrates the collation, processing, and storage of vital sign signals into a single state-of-the-art integrated circuit (IC) chip. The Digital ECG Plaster monitors not just the heart rate but the full heart cycle waveform, which is vastly superior in providing doctors with an understanding of patients’ heart condition.
- Ultra-low power consumption: This chip has been optimised to consume up to 20 times less power than current ECG monitoring devices on the market. This means it can last longer and therefore has the potential to record meaningful cardiac events over lengthy periods.
- Ultra-thin and lightweight: When the user wears the self-adhesive Digital ECG Plaster, it conforms to the body readily and can be inconspicuously worn under daily clothing, while not hindering regular movements. This allows the Digital ECG Plaster to continuously monitor patients while they carry out normal activities. The plaster is designed to be water-resistant, and can even be worn while showering.
- Multi-channel recording: Various models can be potentially developed, allowing for multiple ECG channel data recording, offering superior diagnostic and detailed information to clinicians.

“In Singapore, cardiovascular disease accounted for over 32% of deaths in 2008. This prevalence is only set to increase due to current lifestyles. When this Digital ECG Plaster is fully-developed, it could play a significant role in combating heart disease to benefit both patients and cardiologists,” said Professor Chuen Neng Lee, Chief, Department of Cardiac, Thoracic & Vascular Surgery at National University Health System (NUHS).

Clearbridge VitalSigns plans to develop various models of the Digital ECG Plaster, including a professional model for hospitals, a personal model for the silver community or athletes and a body vest model for longer term monitoring. The NUS lab prototype has already been successfully tested on multiple subjects and Clearbridge VitalSigns will carry out further product development to translate

it into an intermediate product. Moving forward, Clearbridge VitalSigns hopes to partner with public hospitals and performance sports organisations.

The technology for the Digital Plaster was developed by a team led by Prof Lian Yong, from the the Department of Electrical and Computer Engineering of NUS. Prof Lian is a co-founder of Clearbridge VitalSigns. He will retain his position at NUS, while also acting as an advisor to the company. “Our goal is to develop a range of extremely low-powered wireless biomedical chips that can monitor a wide array of human vital signs and which are also comfortable to wear, robust and sensitive,” said Prof Lian.

Clearbridge VitalSigns is incubated by Clearbridge Accelerator, one of the high-technology incubators backed by the National Research Foundation’s Technology Incubation Scheme.

“We have previously worked with the Clearbridge Accelerator to complete spinning off two other NUS technologies into start-up companies – Clearbridge BioMedics and Clearbridge NanoMedics. When we saw the potential of Prof Lian Yong’s ECG chip, we knew that Clearbridge Accelerator would be an ideal partner, and we are very pleased that this has now become our third spin-off company with the group. I look forward to seeing Clearbridge VitalSigns translate NUS research into a novel medical device that can lead to better outcomes for patients,” said Dr Lily Chan, CEO NUS Enterprise.

Mr Philip Lim, CEO, Exploit Technologies Pte Ltd said, “At Exploit Technologies, we work with NUS to bring Singapore technologies closer to the market. We are pleased to have Clearbridge VitalSigns join the ranks of our large pool of innovative licensees. We wish Clearbridge VitalSigns every success and we are confident that it would create substantial impact in the regional and international cardiac healthcare market.”

For more information, visit [www.clearbridgevitalsigns.com](http://www.clearbridgevitalsigns.com)

**Media enquiries should be directed to:**

Chan Yiu Lin (Ms)

**NUS Enterprise**

PR Consultant

Mobile: (65) 9765-5897

Email: [yiulin@greenergrass.com.sg](mailto:yiulin@greenergrass.com.sg)

Sabariah Aris (Ms)

**Exploit Technologies Pte Ltd (A member of A\*STAR)**

Corporate Marketing and Communications  
DID: (65) 6478 8443  
Mobile: (65) 8299 4400  
Email: [sabariah@exploit-tech.com](mailto:sabariah@exploit-tech.com)

#### **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 & centres, which are located in Biopolis and Fusionopolis, as well as their immediate vicinity.

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#### **About Exploit Technologies Pte Ltd**

Exploit Technologies is the strategic marketing and commercialisation arm of the Agency for Science, Technology and Research (A\*STAR). Its mission is to support A\*STAR in transforming the economy through commercialising R&D. Exploit Technologies enhances the research output of A\*STAR scientists by translating their inventions into marketable products or processes. Through licensing deals and spinoffs with industry partners, Exploit Technologies is a key driver of technology transfer in Singapore. It actively engages industry leaders and players to commercialise A\*STAR's technologies and capabilities, bridging the gap from Mind to Market. Exploit Technologies' charter is to identify, protect and exploit promising intellectual property (IP) created by A\*STAR's research institutes. [www.exploit-tech.com](http://www.exploit-tech.com).

#### **About Clearbridge Accelerator (CBA)**

Clearbridge Accelerator is the Singapore incubation arm of Clearbridge Partners, an Asian-based venture capital firm. The company aims to translate core technologies from the laboratory into commercial products that will result in sustainable and lasting enterprises. CBA focuses on key emerging and disruptive technologies that will make a dramatic impact in tomorrow's world. Supported by the National Research Foundation's Technology Incubation Scheme, CBA provides the necessary funding, mentorship, operational and execution discipline to deliver determined and accelerated results. CBA's initiatives and investment focus areas are in biomedical devices, nanotechnology, advanced material sciences/ceramics and computational algorithms. [www.clearbridgeaccelerator.com](http://www.clearbridgeaccelerator.com)

#### **About NUS Enterprise**

NUS Enterprise was established as a University-level cluster to provide an enterprise dimension to NUS teaching and research involving the University's students, staff and alumni. The functions of the Enterprise Cluster complement the academic cluster of the University to nurture talents with an entrepreneurial and global mindset. NUS Enterprise promotes the spirit of innovation and enterprise through Experiential Education, Industry Engagement & Partnerships and Entrepreneurship Support. The NUS Industry Liaison Office is a division under NUS Enterprise. [www.nus.edu.sg/enterprise](http://www.nus.edu.sg/enterprise)