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Singapore opens research centre for circulating tumour cell

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Singapore: National Cancer Centre Singapore (NCCS) and Clearbridge BioMedics, in partnership with the Pathology Department at Singapore General Hospital (SGH) have together established Circulating Tumour Cell Centre of Research Excellence (CTC CoRE).

This new Centre facilitates the use of circulating tumour cells (CTCs) in clinical diagnostics, in order for new technologies to be applied by healthcare institutions.

The CTC CoRE is a key enabler in Singapore's efforts to advance the development of personalised medicine, which is the customised healthcare of an individual patient. The research being undertaken at the CTC CoRE aims to understand the genetic make-up of a patient's cancer cells, which can evolve over time.

To determine the effectiveness of treatment, blood samples will be drawn from the patient pre- and post-treatment. The blood samples are sent to the Cytology Lab at SGH and put through the ClearCell FX system to separate the cancer cells from other blood components. Using a cytogenetic test, the number of cancer cells are counted and documented. If there is no significant reduction in the number of cancer cells, the oncologist may decide to modify the treatment regime to best combat the cancer. Not only does this result in a dramatic effectiveness in cancer therapy management, it also leads to reduced side effects and significant cost savings.

The CTC CoRE is located at the newly-opened Academia, within SGH's 12,000 sqm Pathology Department. This allows researchers at the CTC CoRE to have access to the cytology, immunohistochemistry, cytogenetics and molecular capabilities at the Department.

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CTCs are cells that have detached from a primary tumour and are circulating in the blood stream. They are rare, with only a few CTCs mixed with billions of blood cells per millitre of blood.

The CTC CoRE will focus on a number of research programmes and clinical trials at NCCS and SGH, with support from Clearbridge BioMedics. These include the pilot use of the ClearCell FX system, which is Clearbridge BioMedics' novel label-free
enrichment system for CTCs, first invented at the National University of Singapore.

The CTC CoRE will also be developing novel CTC diagnostic assays for personalised medicine that will enable clinicians to tailor therapies to individual patients' unique genetic make-up. It is envisioned that these diagnostic assays will
eventually be adopted as part of routine clinical service, enabling clinicians to obtain real-time feedback on therapeutic effectiveness, in order to improve cancer management and patient outcomes.

"With the establishment of this CTC CoRE, Clearbridge BioMedics is now entering the clinical diagnostics field. We are delighted to work with the leading cancer centre in Singapore, to validate the clinical utility of our ClearCell FX system, which we target to be in the clinic by 2015. The ultimate aim is for the CTC CoRE to allow cancer clinicians to access technologies that reliably process and analyse patients' blood, for actionable clinical results," said Mr. Johnson Chen, Director, Clearbridge BioMedics.

"Circulating tumour cells have the potential to become a powerful tool in how oncologists diagnose, treat and manage cancers. Setting up this CTC CoRE facility will allow our researchers to characterise these cells real-time, even as a patient's tumour evolves due to treatment and time. This will boost NCCS's position as a centre for cancer management, as well as enhance Singapore's reputation as an oncology thought leader in Asia," said Professor Soo Khee Chee, Director, National Cancer Centre Singapore.

"Pathology represents the final bridge between basic science and clinical medicine. The Pathology Department at SGH is able to serve as an incubator for biomedical care, research and innovation. By understanding the genetic make-up of a patient's cancer cells, personalising cancer treatment can be achieved. This collaboration will enable us to leverage on each other's expertise and explore new technologies to improve patient care and outcomes," said Associate Professor Tan Puay Hoon, Head, Department of Pathology, Singapore General Hospital.