

**Embargoed until 10.30am on Friday, 29 January 2016, Singapore Time**

## **PRESS RELEASE**

### **NCCS AND INVITROCUE PTE LTD TO DEVELOP QUANTITATIVE CANCER IMAGING AND RADIOMICS APPLICATIONS FOR TREATMENT OF LIVER CANCER PATIENTS**

- Developing radiomics applications can help doctors select precise targeted treatments for liver cancer patients and improve treatment outcomes

**Singapore, 29 January 2016** – National Cancer Centre Singapore (NCCS) has signed a Memorandum of Understanding (MOU) with InvitroCue Pte Ltd (IVQ) to collaborate on research in the development of applications that will improve treatment outcomes in primary liver cancer or Hepatocellular Carcinoma (HCC).

This translational and clinical research in Radiomics is an initiative that will move precision medicine<sup>1</sup> into clinical practice.

NCCS and IVQ, a Singapore-based provider of biomedical quantitative image analytic products and services, will develop the applications for liver related disease by extracting data from patient's MRI or CT scans for non-invasive quantitative image analysis of HCC. The data will be correlated with cancer genomic profile<sup>2</sup> and be validated for prognostics and treatment planning. It is hoped that clinicians can eventually use non-invasive imaging to select the most appropriate therapy for an individual patient and improve patient outcomes.

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<sup>1</sup> Precision Medicine is an emerging approach for disease prevention and treatment that takes into account people's individual variations in genes, environment, and lifestyle. Source: <http://syndication.nih.gov/multimedia/pmi/infographics/pmi-infographic.pdf>

<sup>2</sup> Genomic profiling may be used to find out why some people get certain diseases while others do not, or why people react in different ways to the same drug. It may also be used to help develop new ways to diagnose, treat, and prevent diseases, such as cancer. Source: <http://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=561401>

The collaboration brings together NCCS' clinical and translational research expertise in HCC developed over the years and IVQ's patented and know-how in biomedical quantitative image analysis.

Prof Soo Khee Chee, Director of NCCS said, "This collaboration combines advances in image analysis with genomics and clinical expertise in Liver Cancer to realise the potential of Precision Medicine for patients. This aligns with the mission of NCCS and we look forward to better treatment outcomes in Liver Cancer patients. I am pleased that we are able to partner our own Singapore team to embark on this journey together. "

Dr Steven Fang, InvitroCue Executive Director, said, "IVQ is delighted and honoured to have this partnership with NCCS, especially given the unmet clinical need in this space.

"We are very excited to bring innovative quantitative imaging technology in the field of radiomics research to help doctors stratify individual patient risk profiles and select the most appropriate therapy for optimal clinical outcomes. This MOU allows IVQ to equip NCCS with the latest non-invasive, quantitative imaging technology to yield novel radiomics-directed treatment approaches."

NCCS Senior Consultant Surgeon who is the lead clinical investigator in the collaboration, Prof Pierce Chow said, "The research we have planned converges with our ongoing research on the genomics and immunology of HCC and is highly synergistic.

"It also leverages on the Asia-Pacific Hepatocellular Carcinoma Trials Group that we have built over the last two decades and will benefit from the strengths of all parties involved."

Prof Chow, who is also the co-director (Surgical Oncology) of the Comprehensive Liver Cancer Clinic at NCCS, has other ongoing scientific collaborations with A\*STAR research institutes and the National University Hospital.

This latest MOU is signed at the AHCC Trials Group Meeting and Scientific Forum held at NCCS on 29th January 2016. The collaboration will last for a year to establish the first proof-of-concept study data. The radiomics strategy has the potential to be adapted to other cancer types and can provide a new opportunity to improve cancer treatment.

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## **About National Cancer Centre Singapore**

National Cancer Centre Singapore (NCCS) provides a holistic and multi-disciplinary approach to cancer treatment and patient care. We treat almost 70 per cent of the public sector oncology cases, and they are benefiting from the sub-specialisation of our clinical oncologists. NCCS is also accredited by the US-based Joint Commission International for its quality patient care and safety.

To deliver among the best in cancer treatment and care, our clinicians work closely with our scientists who conduct robust cutting-edge clinical and translational research programmes which are internationally recognised. NCCS strives to be a global leading cancer centre, and shares its expertise and knowledge by offering training to local and overseas medical professionals. [www.nccs.com.sg](http://www.nccs.com.sg)

## **About InvitroCue Pte Ltd**

InvitroCue (IVQ) provides innovative products and services in the fields of in-vitro DMPK, in-vitro toxicology and digital pathology utilizing cell-based models and image analytics. InvitroCue's technologies have been developed and validated together with leading pharmaceutical companies and scientific collaborators. The company uses *in vitro* technologies and assays to support better decision-making in preclinical drug studies and preclinical research. Headquartered in Singapore and was spun out of Singapore, Agency for Science, Technology and Research (A\*STAR), InvitroCue currently operates in Singapore and China. [www.invitrocue.com](http://www.invitrocue.com)

InvitroCue is listed on Australian Stock Exchange under ASX code "IVQ".

## **About Asia-Pacific Hepatocellular Carcinoma Trials Group**

The Asia-Pacific Hepatocellular Carcinoma Trials Group is a collaborative research group formed in 1997 by clinicians treating HCC in major medical centers in the Asia-Pacific region. These clinicians recognise the urgency and necessity for collaboration if efficacious therapies are to be developed for the large number of patients with HCC. The aims of the trials group are to conduct preventive and therapeutic trials in HCC, carry out basic and translational research in this field and develop training and educational programs pertaining to HCC. The secretariat of the trials group is at National Cancer Center Singapore and the clinical trials databases are at the Singapore Clinical Research Institute. Since its inception, the trials group has launched six multi-center GCP clinical trials. Additional trials are in the pipeline and the group is in discussions with biotech and pharmaceutical groups with a view towards future collaborations. <http://www.scri.edu.sg/scri/index.php/ahcc-introduction>

## **About Radiomics**

The science of Radiomics leverages on the growing availability of imaging data and integrates them with genomic data, individual patient data records and digital histopathology data, to achieve improved clinical decision support and precise targeted treatment.

Using quantitative imaging technology, predictive analytics and machine learning and advanced features, data extracted from MRI and CT images can be further analysed and integrated. The integral-combined datasets can become a key part of population cancer management strategies and support the creation individualized radiomics therapy.

### **About Hepatocellular Cacinoma**

Liver cancer is the second most common cause of death from cancer worldwide, estimated to be responsible for nearly 746,000 deaths in 2012 (9.1% of the total). In general, the highest incidence and mortality rates among both sexes are in Eastern and Southeastern Asia and parts of Africa. In Singapore, liver cancer is the fourth most frequent cancer in males; and is the third and fourth highest mortality rates in males and females respectively. About 70% to 90% of liver cancers globally are hepatocellular carcinoma (HCC), which is most often caused by chronic infection

with hepatitis B virus (HBV) or hepatitis C virus (HCV) and increasingly, nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH).

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