



## National Center for Liver Cancer

# A centre for liver cancer research in Shanghai

**The National Center for Liver Cancer set to open in 2015 will foster research and innovation for the early diagnosis, treatment and prevention of liver cancer**

Liver cancer ranks as the second leading cause of cancer-related mortality in developing countries and the sixth in developed countries. An estimated 782,500 new cases of liver cancer and 745,500 deaths occurred worldwide in 2012, of which China alone accounted for about 50 per cent. An extraordinarily heterogeneous disease, liver cancer has become a serious social and medical issue, especially in China.

To address this enormous challenge, China's National Development and Reform Commission established the National Center for Liver Cancer, which is set to open in Shanghai at the end of 2015. The centre aims to strengthen China's capacity in frontier research and clinical treatment of liver cancer and enhance the competitiveness of China's medical industry for treating liver cancer. It will focus on research into biomedicine and translational medicine, as well as fostering

self-innovation in its pursuit of the study of hepatobiliary diseases, especially liver cancer. It is the second national centre in the field of biotechnology established by the commission.

Initial plans for the centre came out of a proposal to promote the scientific study of liver cancer submitted by Mengchao Wu and Hongyang Wang, academicians of the Chinese Academy of Sciences and Chinese Academy of Engineering, respectively, along with five other renowned scientists. The Eastern Hepatobiliary Surgery Hospital — an affiliated teaching hospital of the Second Military Medical University — Shanghai Jiao Tong University and Fudan University jointly produced a feasibility report for the National Center for Liver Cancer and the report was formally approved by the National Development and Reform Commission in 2010.

Construction of the National Center for Liver Cancer then commenced, backed by an investment of 400 million RMB. The centre covers an area of 30,450 square metres and includes a scientific research building, an academic exchange centre, experimental animal facilities and an administration



building. The infrastructure will be completed at the end of 2015. Wang will be the founding director of the centre, which is currently affiliated with and managed by the Eastern Hepatobiliary Surgery Hospital.

### Detection and prevention

The National Center for Liver Cancer will focus on seven key aspects of research: early detection and prevention of the transition from hepatitis to cirrhosis to liver cancer; screening of liver cancer biomarkers and related applications in early diagnosis, molecular typing and personalized treatment; study of the molecular mechanism of the development and progression of liver cancer, drug target identification and targeted treatment; research of the molecular mechanisms associated with recurrence and metastasis and of intervention methods for liver cancer; systematic regulation of the relationship between the host and microenvironment; exploration of new approaches for biotherapy of liver cancer; and novel comprehensive approaches for treating liver cancer.

To achieve its ambitious research goals, the centre will establish six core platforms and three large-scale shared facilities. The six core platforms will mainly consist of laboratories for diagnostic biomarker screening and molecular typing, pathogen-host interaction analysis, disease molecular network modulation, discovery and development of drug targets, biological therapy and evidence-based medicine. The large-scale shared facilities will include a biobank and a big-data information centre, a model animal centre and a polymerase-chain-reaction-certified experimental platform.

Wang and her group will focus on linking basic research findings with clinical investigations, with the aim of improving outcomes for hepatocellular carcinoma patients. The group has already made significant contributions to the understanding of molecular mechanisms of tumorigenesis, signalling network regulation and characterization of novel liver cancer biomarkers, which are directly related to the development of new therapies for patients. The group found that the protein Glypican-3 can be used as a



biomarker for diagnosing hepatocellular carcinoma, especially for alpha fetoprotein (AFP)-negative patients. This discovery will significantly improve the early detection of hepatocellular carcinoma.

The researchers have also established a tissue bank of liver cancer, which has more than 10,000 samples, and a systematic information system. They have published more than 160 papers in top journals in this field, including *Cancer Cell*, *Nature Cell Biology*, *Nature Communications*, *The Journal of Experimental Medicine*, *Gastroenterology*, and *Hepatology*. They have also received international and regional recognition, including the National Awards for Science and Technology Progress (Innovation Team Award), the National Natural Science Award (Grade II) and the Shanghai Natural Science Award (First Prize).

The centre also plans to take its research in other directions. These include studying the mechanism and prevention of malignant transition from inflammation to tumour and the facilitation of early diagnosis and intervention of this transition; regulation of the tumour microenvironment; metabolic regulation and malignant tumours; multicentre verification and clinical application of screening biomarkers; validation of drug targets based on research and development; identification and function research of cancer stem cells; as well as basic research, translational medicine and precision medicine based on targeting tumour heterogeneity.

### Invitation to talented researchers

Led by Wang, the National Center for Liver Cancer will build its strength in clinical research by taking advantage of clinical facilities in Shanghai, especially those at the Eastern Hepatobiliary Surgery Hospital, and by working closely with the basic liver cancer research teams at Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences. The centre principally will strive to solve bottleneck issues in the prevention, diagnosis and treatment of cancers, especially liver diseases in China.

To achieve these long-term goals, the centre intends to recruit talented researchers from around the globe, including independent principal investigators and other scientific and technological personnel. It is eager to receive applications from talented researchers within China and overseas who are working in the field of liver cancer and oncology research. The National Center for Liver Cancer welcomes scientists at different levels, ranging from leading established scientists in the field to talented young researchers.

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