

# A hub for cancer research and treatment

By **INTEGRATING CANCER RESEARCH, TREATMENT, PREVENTION, AND EDUCATION**, a specialized hospital in Tianjin is fulfilling its commitment to provide patients with the best care and medicine.

**The incidence of breast cancer** is rising rapidly in Asia. In China, it is becoming the most common cancer among women, increasing at a rate much higher than the global average. Recognizing the importance of prevention and early detection, Tianjin Medical University Cancer Institute & Hospital (TMUCIH), along with China Anti-Cancer Association, compiled the country's first population-based guideline for breast cancer screening, one of its many leading cancer research efforts.

With a history that started with London Christian Church Hospital, established in Tianjin in 1861, TMUCIH boasts China's first dedicated oncology department, set up in 1952 by Xianzhai Jin, China's pioneering oncological surgeon. It is now one of the largest comprehensive cancer prevention and treatment research centres in China. It was designated as a National Clinical Research Centre for Cancer in 2013. Its oncology programme was selected as the National First-Class Academic Development Program by the Ministry of Education in 2017. Specializing in the diagnosis and treatment of a variety of diseases, TMUCIH's greatest

strengths lie in cancers (in particular of the breast, lung, gastrointestinal tract, and the thyroids) and radiation oncology.

## Breaking new ground for tumour studies

Housing a Ministry of Education Key Laboratory of Breast Cancer Prevention and Treatment, the only state-level key laboratory in the field, TMUCIH integrates its cross-disciplinary research resources to provide novel approaches for preventing and fighting breast cancer. It is committed to developing a model based on the disease onset characteristics of the Chinese population. Drawing on statistical differences from European and American counterparts, its screening guideline specifically targets Chinese women, with detailed recommendations for age, modalities, and screening intervals. It enables effective identification of high-risk populations, contributing to a disease prevention and control model for China. The laboratory also specializes in the mechanisms of breast cancer initiation and development. Its cell biology and molecular biology studies have led to precision medicine strategies



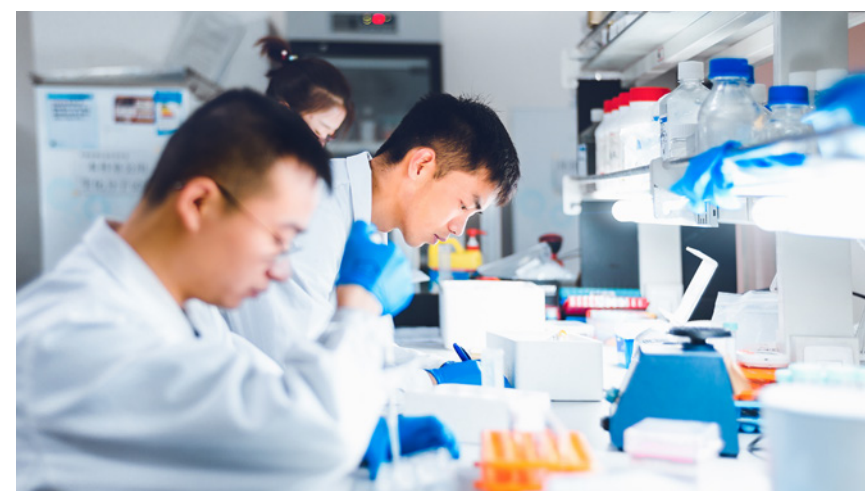
Life-saving tumour surgeries are performed by dedicated surgeons at TMUCIH.

against the disease.

Multi-omics studies are conducted on gastrointestinal cancers to reveal genetic characteristics of tumour genesis, metastasis and heterogeneity. Key insights are generated for molecular typing, prognosis prediction and treatment strategy design. TMUCIH researchers have also explored regulatory mechanisms of the tumour microenvironment, in particular, the roles of hypoxia, immunity and, angiogenesis, the formation of new blood vessels, in the progress of pancreatic, gastric and intestinal tumours. Their research sheds light on developing new therapies for these cancers.

Taking advantage of the latest technologies, including artificial intelligence, the TMUCIH team is exploring new tools for cancer diagnosis and treatment. For example, early diagnosis for thyroid cancer can be challenging, as the disease is typically asymptomatic in its early stage. Using deep learning algorithms, TMUCIH researchers have enhanced analysis of ultrasound and other imaging results of thyroid tumours, enabling a new model for intelligent diagnosis. Advances in techniques such as liquid biopsy are also harnessed to develop new diagnosis methods.

As one of the first in China to establish an immunotherapy



centre, TMUCIH also spearheads translational studies on immune checkpoint inhibitors, cell therapies, and tumour vaccines. Combined with multi-centre clinical research, these help improve cancer prevention and treatment.

## Ramping up efforts for clinical success

Research discoveries at TMUCIH are facilitated by its advanced platforms. It has built a bio-sample bank in accordance with international standards, collecting more than 59,000 tissue samples and 100,000-plus blood samples, representing more than 20 common tumour malignancies.

A specialized information management system allows matching of sample data with clinical information. The sample bank has supported hundreds of research projects.

TMUCIH has also established China's first precision medicine big data centre for cancer. Effective and standardized collection, storage, and analysis of clinical and biological data allow for development of precision medicine strategies. Its various cross-disciplinary research facilities also include good clinical practice (GCP), high-throughput sequencing, and model animal platforms.

Within a few years, a research centre for translational medicine and personalized

cancer treatment will be completed, with lab space for around 100 principal investigators. TMUCIH looks to enhance its research team with its updated research facilities and comprehensive global talent attraction and incubation programmes.

With an emphasis on international exchange, TMUCIH has established close collaborative links with medical research institutions in more than 30 countries and regions. A leading force in China's anti-cancer efforts, it is a member of WHO's International Association of Cancer Registries (IACR), and of the Union for International Cancer Control (UICC), coordinating UICC's

## TMUCIH IN NUMBERS

- 3,071 employees, with 788 physicians/surgeons and 191 researchers
- 46 clinical departments, six research departments, 17 PI teams, and five core facilities
- Four national key clinical specialties, in thoracic surgery, nursing, oncology, and pathology
- More than 2,000 hospital beds
- 1.25 million outpatients, and 37,053 surgeries in 2019
- Publishes two core journals: *Chinese Journal of Clinical Oncology and Cancer Biology & Medicine*



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