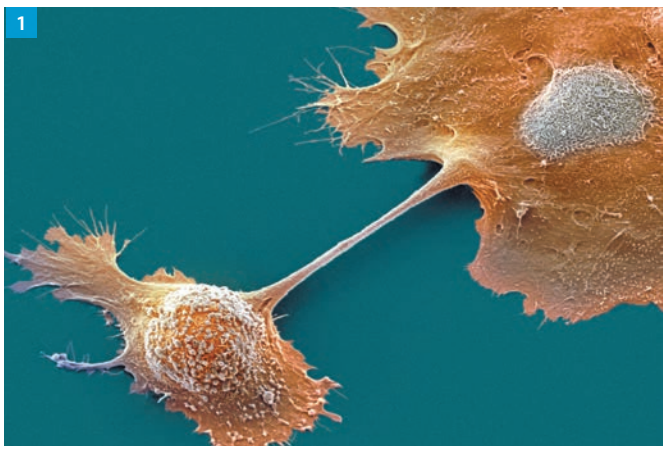
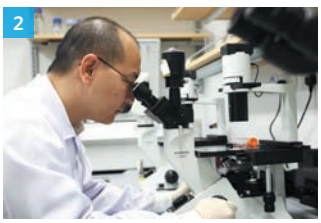
TUMOUR PROFILING OFFERS NEW CLINICAL TRIAL OPTIONS

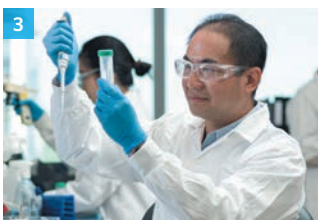
Singapore has become a centre for cancer clinical trials thanks to A PIONEERING GENETIC MUTATION IDENTIFICATION PROGRAMME that matches late-stage cancer patients to therapeutic studies.

Patients in Singapore with advanced-stage cancers resistant to standard treatments are being offered genomic profiling of their tumour tissues to check for 'actionable' mutations.

Patients who have run out of standard treatments can then be matched with early-phase clinical trials of new cancer drugs or alternative therapies targeting these genomic aberrations, explains oncologist, David Tan, from the National University Cancer Institute, Singapore (NCIS), one of two public, specialty cancer centres in the country.







Science Photo Library - STEVE GSCHMEISSNER/Brand X Pictures/Getty

▲ **1. Pancreatic cancer cells are one of the most lethal malignancies in humans. Deciphering the molecular aberrations in these cells may lead to better therapeutic strategies in patients.**

2. Chng Wee Joo is director of the National University Cancer Institute, Singapore (NCIS).

3. David Tan is a medical oncologist working on molecular profiling for precision oncology at NCIS.

ASIAN CLINICAL TRIALS

The process is managed by NCIS's integrated molecular analysis of cancer (IMAC) programme, one of the first initiatives of its kind in Asia.

Launched in 2014, IMAC uses blood or tumour tissue samples and next-generation sequencing to check for mutations that could be targeted for treatment.

A 2018 study by Tan and his colleagues detailed IMAC profiling of 396 patients with a diverse array of advanced cancers, ranging from breast to colorectal cancer. It showed that 82% had at least one mutation in 50 cancer-linked genes.

The team is also using these cohorts to bring more early-phase clinical trials to Singapore, says Tan. "Because we've demonstrated our capacity to identify patients with specific mutations, including rare genetic variants that could be new treatment targets, we're able to collaborate with industry partners to bring new trials into the city," he explains.

Singapore contains large groups of people whose heritage is Malay, Indian or Chinese, adds Tan. Studies on these groups could therefore improve the diversity of genomic data on tumours and treatment responses. It could lead to individually tailored treatment plans for treating cancer across a number of countries in Asia, he says.

This 'precision oncology' has been hampered in Asia by the fact that most studies, particularly on rare diseases, have been done on populations of people of European descent. However, the incidence of cancer-linked mutations varies between groups of people from different parts of the world.

PRACTICAL AND PRECISE

Insights into rare diseases are just as valuable as insights into common cancers according to Tan. Precision oncology is based on a simple premise, he says: that no two cancer patients are exactly alike.

"On a molecular level, every cancer is a rare disease, driven by a multiplicity of mutated genes and molecular pathway aberrations that can vary widely from one patient to another — even if they have the same type of cancer," explains Tan. "Our hypothesis is that tailoring treatment to each individual patient's unique molecular profile is more likely to be effective than a one-size-fits-all approach."

Recently, NCIS teamed up with government and private organizations to form the Singapore Translational Cancer Consortium (STCC). Its mission is to establish a national precision oncology infrastructure, expand access to molecular profiling, and help clinicians identify the best available treatment options, including clinical trials, for cancer patients, says Chng Wee Joo, NCIS's director and STCC's executive director.

Chng says that the new STCC partnership and genetic insights from the IMAC programme aim to help the team "improve the survival and quality of life of cancer patients across Asia using a data-driven, patient-centric model of care". ■

REFERENCE

1. Heong, V. *et al. Intern. J. of Can.* (2018)

National University Cancer Institute Singapore

www.ncis.com.sg