

NUS team develops new way to fight cancer

Its new chemotherapy treatment targets 'bad' cells, limits side effects

By **CAROLYN KHEW**

A STUDY led by the National University of Singapore (NUS) has found a way to use chemotherapy to shrink cancerous tumours while also minimising relapses and harmful side effects.

The team has managed to make a common chemotherapy drug, epirubicin, more effective in targeting cancer stem cells, which cause tumours to grow.

The drug is also smart enough to adhere only to cancerous cells and not other cells, such as white blood cells, needed for the body to function.

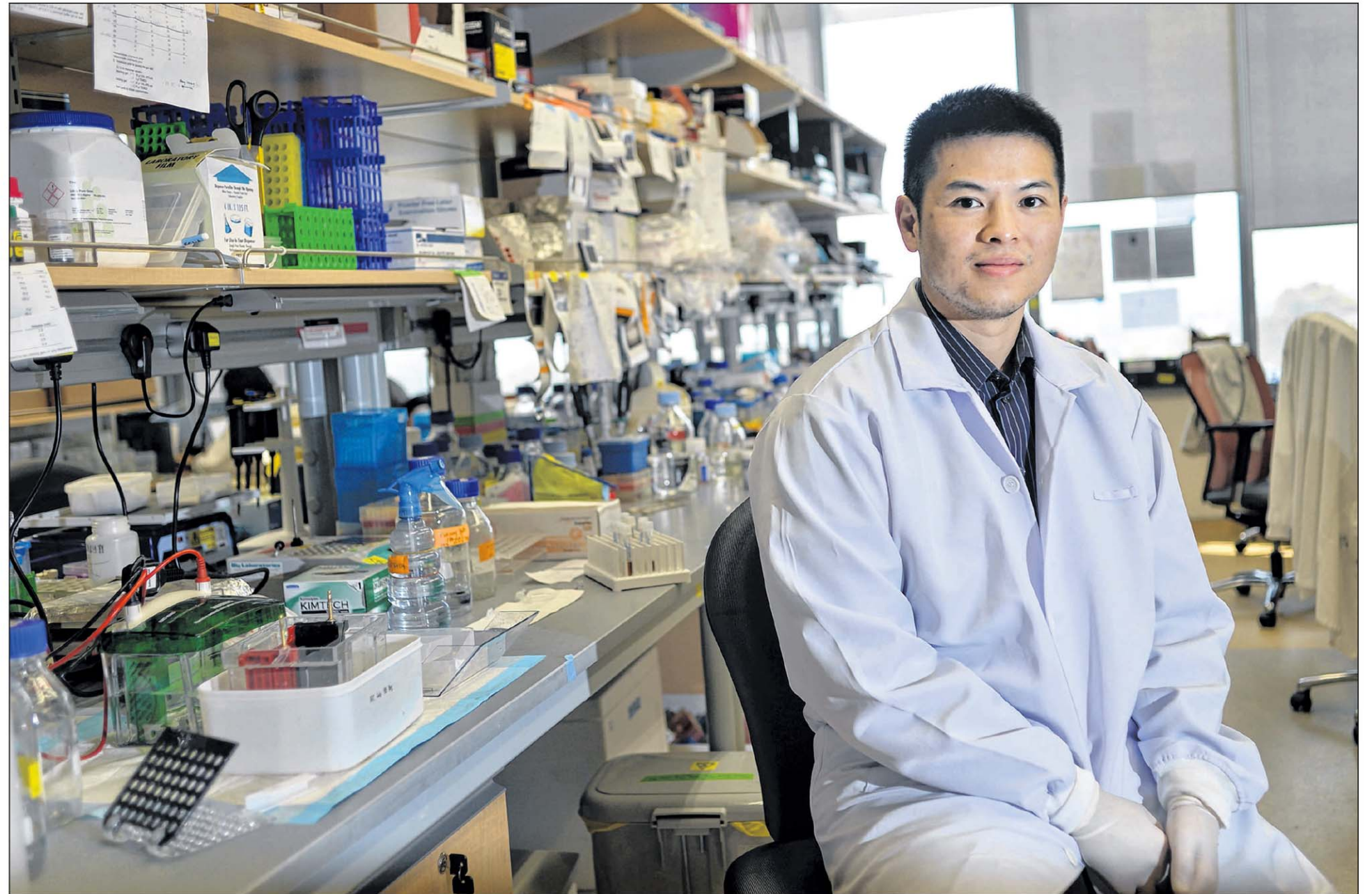
This point is significant as many patients die not from cancer itself but from the effects of chemotherapy, said Assistant Professor Edward Chow, who led the study.

In high doses, chemotherapy, a mainstream treatment for cancer, can cause side effects such as low immunity and weakening of the heart muscles, which can lead to congestive heart failure.

Experiments involving liver cancer in animals have proved successful, and the team hopes to start in-human clinical trials in about two years.

Through the study, started in 2012 and published last month, the team found that when epirubicin is mixed with powdered nanodiamonds, a by-product of soot, it zeroes in on cancer stem cells more effectively, said Dr Chow, a junior principal investigator with the Cancer Science Institute of Singapore at NUS.

Otherwise, the cells are usually more resistant to chemotherapy than the actual tumour, it has



A team led by Dr Edward Chow has found that when a common chemotherapy drug, epirubicin, is delivered using powdered nanodiamonds, it can zero in on tumour-initiating cancer stem cells more effectively. The method provides better treatment and minimises damage to other cells. ST PHOTO: CAROLINE CHIA

“ZEROING IN

Because it contains nanodiamonds, the drug homes in on the tumour instead of other cells that are responsible for biological functions.

— Assistant Professor Edward Chow

been found. Standard chemotherapy shrinks tumours, but tumour-initiating cancer stem cells can survive this treatment and form new tumours.

This explains why the cancer can come back in a few years even after the patient is found to be “cancer-free”, said Dr Chow.

By using nanodiamonds, the new treatment reduces harmful side effects as well.

“The drug doesn’t get released unless it actually enters the tumour,” said Dr Chow.

“And because it contains nanodiamonds, the drug homes in on the tumour instead of other cells that are responsible for biological functions.”

So far, the drug has been tested for use only in liver cancer, but Dr Chow does not rule out the possibility that it could eventually be

used to treat other cancers.

Liver cancer, which can result from alcoholism and high-fat diets, is the fourth most common cancer among men here, according to the Singapore Cancer Society.

It is also the second deadliest cancer globally, based on worldwide statistics provided by the Globocan database.

✉ kcarolyn@sph.com.sg