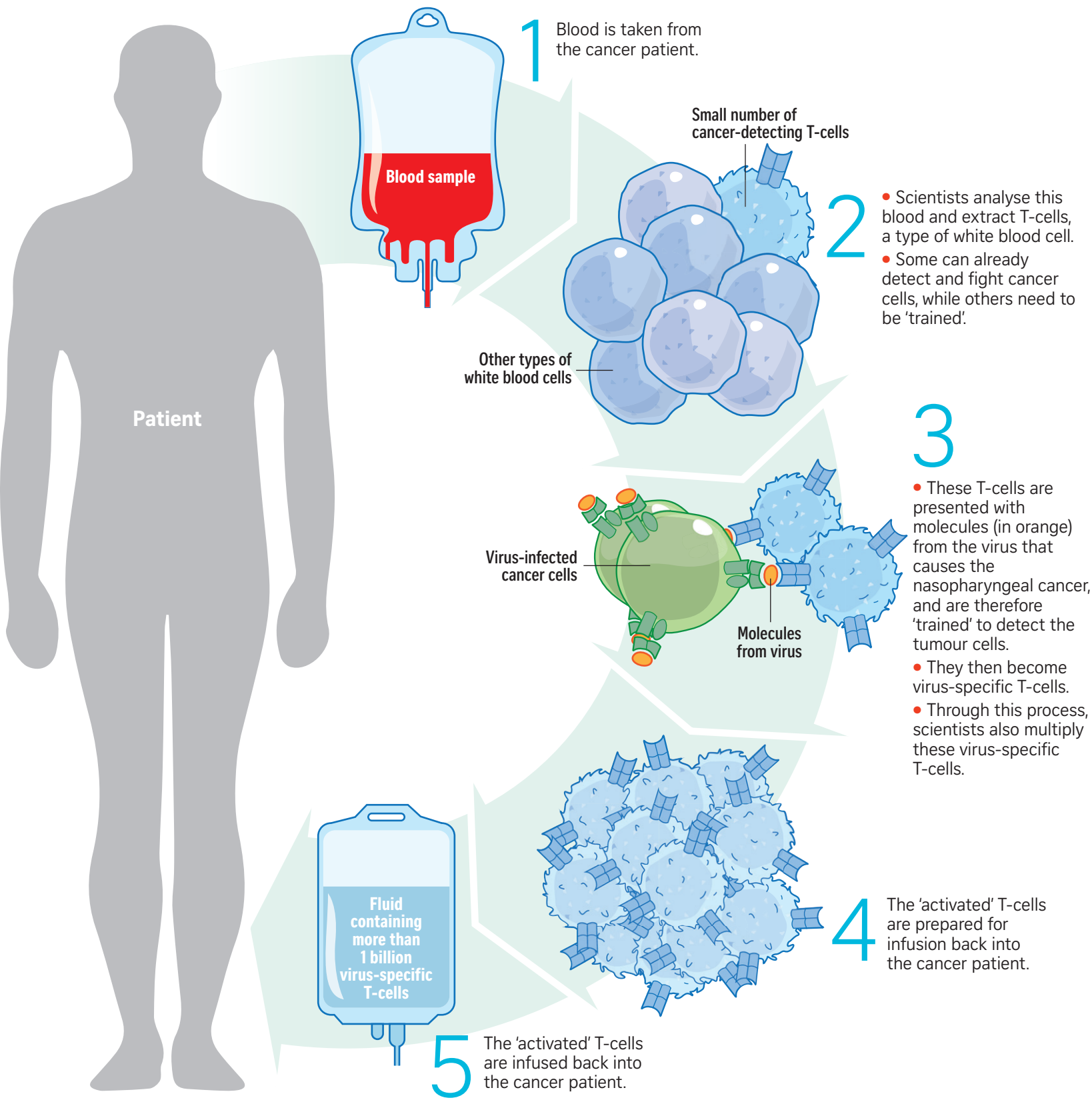
Pioneering a cure for cancer

A cure for nasopharyngeal cancer is getting closer to reality. Home-grown firm Tessa Therapeutics is conducting what it says is the world's largest trial of its kind to treat patients through a specialised form of immunotherapy: virus-specific T-cell therapy. Jose Hong explains the science behind it.



ABOUT THE TRIAL

• Home-grown biotechnology company Tessa Therapeutics has developed revolutionary anti-cancer therapies that rely on turbo-charging the body's cancer-killing immune system.

• Its clinical trial on nasopharyngeal cancer started in 2014. It plans to recruit 330 patients from all over the world, including Singapore. More than half this number have signed up.

• With this form of treatment, patients are tested nine times through the course of their treatment, with Tessa's researchers monitoring their virus-specific T-cells (the body's immune cells which have been "trained" to kill cancer cells) and their general health, so that they can ensure the treatment is working, and create better treatments.

• No significant toxic effects have been noticed.

• Patients from previous trials (as far back as 2001) who were treated with virus-specific T-cells were still found to have them 10 years later, fuelling hopes that they would continue producing such cells in the future to help keep cancer at bay.

• The current trial on patients should be completed by the end of next year. If successful, treatments could be commercially available by 2020.

TYPES OF IMMUNOTHERAPY TREATMENT

• Cancer cells evade the body's defence system by cloaking themselves in molecules that deactivate immune cells.

• Immunotherapy, a relatively new treatment, helps the body's own immune system to outwit and outmanoeuvre cancer and attack it.

• Tessa Therapeutics uses adoptive cell transfer – where white blood cells from patients are 'trained' (see diagram) and multiplied to recognise and attack cancer cells, similar to how police officers might train their dogs to recognise certain scents. Other forms of immunotherapy treatments include:

Non-specific immune stimulation
The body's general immune system is put on high alert by being stimulated by things like specially injected molecules or bacteria, which makes it more likely to attack cancer cells than it normally would be.

Immune-checkpoint blockade strategy
Cancer normally hides from white blood cells by taking advantage of the latter's 'brakes' that prevent them from damaging healthy cells. This strategy removes the brakes, allowing white blood cells to attack the cancer, though they could also then attack healthy cells.

Vaccinations
Virus cells, weakened forms of the patient's own tumour cells, or even the patient's own immune cells are vaccinated to direct white blood cells towards cancer tissue and attack it.

THE STATE OF PERSONALISED CANCER TREATMENTS

• Personalised cancer treatments are gaining ground, with the recognition that every individual requires specific treatments for his specific cancer.

• This is done either by studying the genetic make-up of each patient or the tumours within him, to see which treatments he would best respond to.

Source: TESSA THERAPEUTICS STRAITS TIMES GRAPHICS