

# NUS to help launch tech-based start-ups

It'll spend \$25m over five years; work will involve latest tech like machine learning

Jolene Ang

Last Tuesday, the National University of Singapore (NUS) announced its plans to seed, incubate and launch up to 250 tech-based start-ups.

This will be done through the NUS Graduate Research Innovation Programme (Grip). Graduate students, post-doctoral fellows and research staff will establish and run the start-ups.

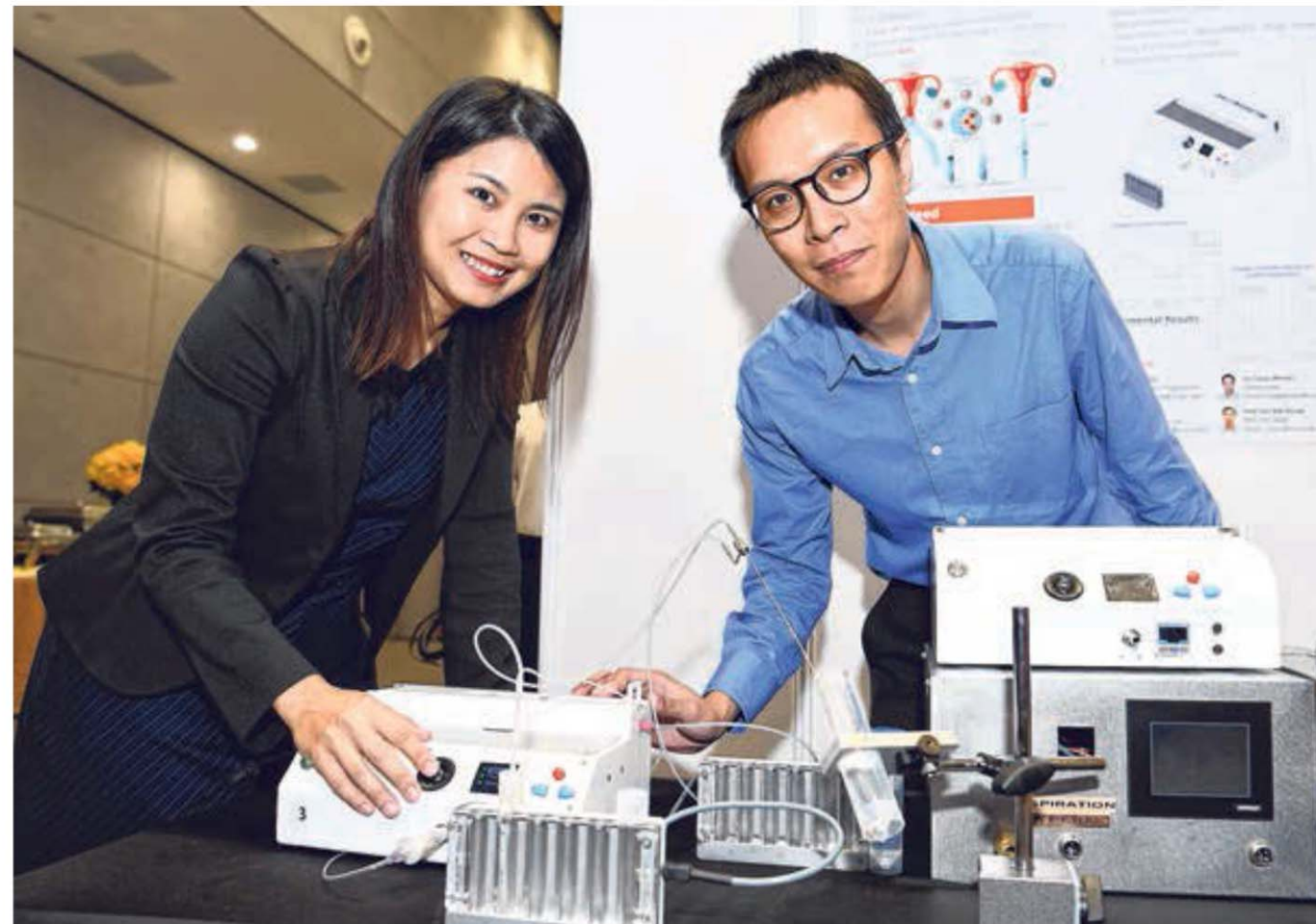
NUS will spend \$25 million over five years in the process and the start-ups' work will involve the latest technologies, such as artificial intelligence and machine learning.

## TEMPERATURE CONTROL IN IN-VITRO FERTILISATION (IVF)

One start-up project is a unit created by doctoral student Ng Cailin and research fellow Liang Wenyu that can potentially boost IVF success rates.

In-vitro fertilisation is an option for couples who cannot conceive naturally. The technique involves fertilising the egg externally through a series of treatments once it has been extracted from the mother's womb. Generally, the pregnancy success rate from IVF is about 40 per cent, and for live births about 30 per cent.

The unit developed by Ms Ng and Dr Liang allows precise temperature control during the egg extraction procedure that could boost the success rate of fertilisation. Studies have shown that



keeping the eggs in a temperature range of 36.4 deg C to 36.9 deg C during retrieval improves the IVF outcome.

Said Ms Ng: "Some couples have to go through several cycles of egg extractions to get a baby. Each (cycle) is emotionally stressful and traumatic for the woman, as she has to go through injections to stimulate hormones to produce as many eggs as she can to be extracted."

## USING BREATH ANALYSIS TO DIAGNOSE DISEASES

Imagine being able to test for lung cancer just from your breath. A de-

vice created by Dr Jia Zhunan, a recent graduate of the NUS Graduate School for Integrative Sciences and Engineering, can do just that.

Patients breathe into the instrument through a disposable mouthpiece, and the analysis can be done within a matter of seconds.

Dr Jia, who is now a research assistant in the NUS Nanoscience and Nanotechnology Institute, said that in theory, the device should be able to diagnose all types of diseases but it has been tested so far on patients with lung cancer and acute myocardial infarctions (heart attack), with an accuracy rate comparable

to conventional methods.

She is also working towards identifying the stage of cancer.

Explaining how the device works, she said: "Metabolic reactions take place all the time in everyone's bodies. The products from these reactions – some volatile – circulate in your blood.

"When they reach your lungs, they are exhaled. When a person develops a disease, some metabolic pathways are changed and these changes can be detected from their breath."

While human effort is needed for the analysis now, Dr Jia is working



Above: Dr Jia Zhunan demonstrating the device that is able to test for lung cancer just from a person's breath. The analysis can be done within seconds.

Left: Doctoral student Ng Cailin and research fellow Liang Wenyu have created a unit that can potentially boost IVF success rates. ST PHOTOS: KHALID BABA

to develop software that analyses data for diagnosis and outputs results autonomously.

## A GEL THAT BOOSTS PLANT GROWTH WITH LESS WATERING

Every day, tonnes of waste are produced in tofu factories. The tofu dregs, called okara, are high in moisture content – making them highly perishable. They have to be disposed of promptly to prevent badsmells.

Research fellows Tan Wee Kee and Zhu Jingling turned the foul-smelling waste into an eco-friendly gel material that stimulates plant

growth in water-limited conditions such as times of drought. Dr Tan said Nutrigel can hold water to be released to the plant over longer periods of time. The team has filed for a patent for Nutrigel.

They have also come up with NUSoil (pronounced new soil), by adding the gel to commercially available soil. Less watering is needed for plants that grow in this soil. They are in the midst of upscaling production now, and possibly commercialising both the gel and soil.

jolenezl@sph.com.sg