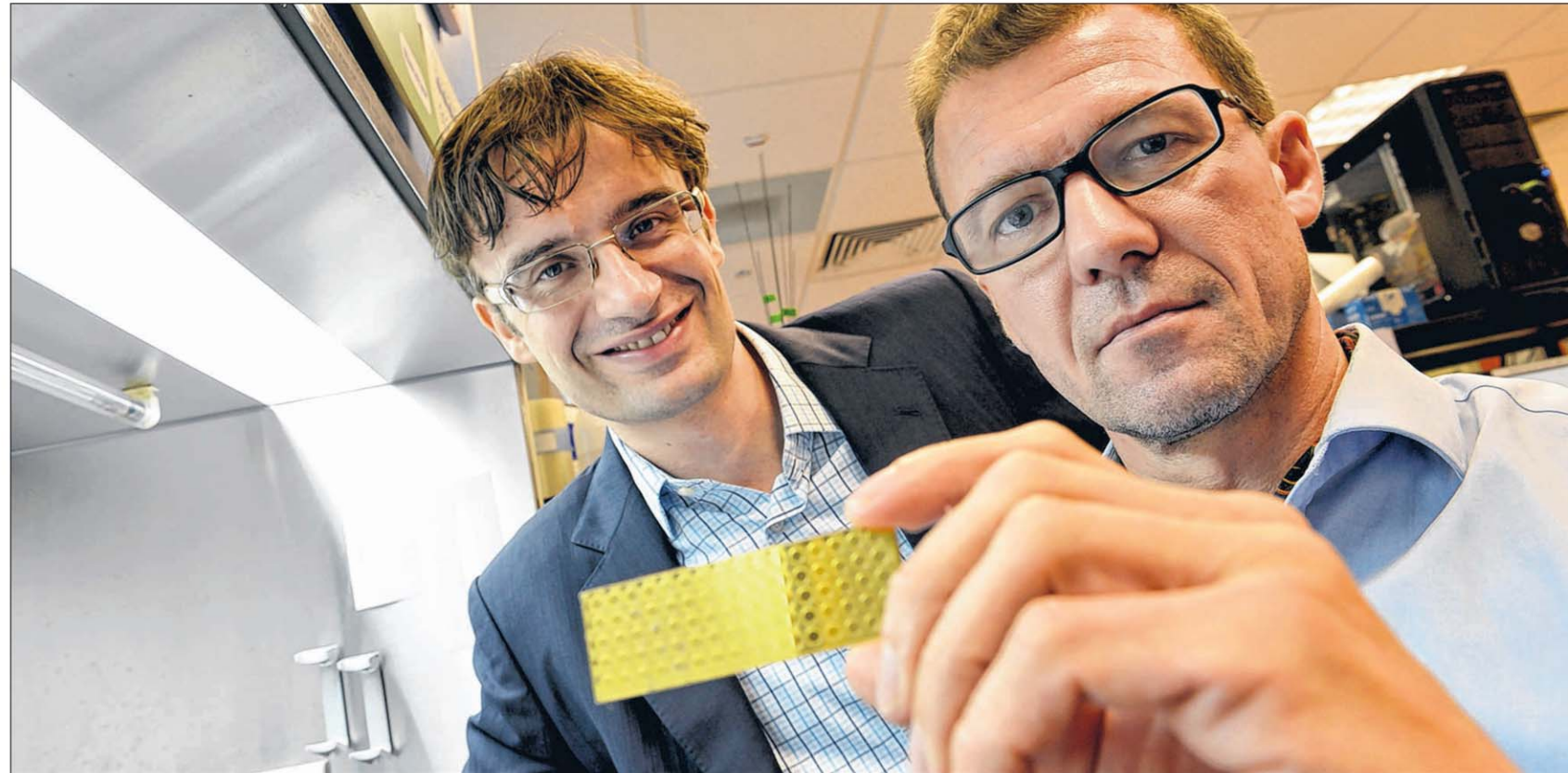


Some 5,000 new tech start-ups are registered in Singapore annually, many of which are developing cutting-edge innovations to improve the

lives of people around the world. In the last of a three-part series, two of these companies, Ayoxxa and YFind, are featured.



Ayoxxa chief executive Andreas Schmidt (left) and co-founder Dieter Trau with a protein chip. The chip identifies and quantifies proteins, including markers for cancer, allergies and cardiovascular or infectious diseases. The product is now in its pre-sale prototype stage and the researchers are refining it to understand what users such as research firms and universities want. ST PHOTO: DESMOND FOO

# Protein chip to detect diseases faster

Ayoxxa's technology will also help scientists learn more about infections

By AMANDA TAN

A HOME-GROWN start-up is in the process of commercialising a technology that can help detect and identify diseases faster.

Ayoxxa's technology, called the Ayoxxa protein chip I, consists of an 8cm-by-2cm silicon plate, or biochip, with 48 separate wells which can each hold a drop of blood or other bodily fluids.

Each well contains thousands of micro beads that can identify components of the substance.

The chip is then placed under a fluorescent microscope with a digital camera, which snaps shots of it.

The pictures are then uploaded to the Ayoxxa Web server, which is like an online sharing gallery.

It is then possible to electronically analyse the contents and generate data of the different molecules and proteins present in the samples.

"This product can currently be used to detect and identify a large number of different proteins from a very small sample... allowing researchers to find out more about the make-up of diseases and infections," said Dr Dieter Trau, the technology's inventor and a co-founder of Ayoxxa.

In future, the chip will also be able to be used to obtain a detailed diagnosis of illnesses in a shorter time. "This could allow us to detect and measure hundreds of diseases in the minutest droplet of blood accurately and rapidly," said Dr Trau, who is also an assist-

ant professor at the National University of Singapore's (NUS) departments of bioengineering and chemical and biomolecular engineering.

The protein chip identifies and quantifies proteins, including markers for cancer, allergies and cardiovascular or infectious diseases. It can also be mass-produced cheaply.

Dr Trau, 47, said that such a comprehensive tool to identify proteins is not yet available.

Seeing the need for a more comprehensive technology in 2006, he embarked on the project together with two others, including Assistant Professor Liu Wen-Tso, who has since left NUS.

In 2009, with a view to commercialising the product, they roped in Dr Andreas Schmidt, 34, who has expertise in immunology. He is now Ayoxxa's chief executive. Both Dr Trau and Dr Schmidt are from Germany.

“

## COMPREHENSIVE TOOL

This could allow us to detect and measure hundreds of diseases in the minutest droplet of blood accurately and rapidly.

– Dr Dieter Trau, the technology's inventor, on the chip being able to be used in future to obtain a detailed diagnosis of illnesses in a shorter time

”

The start-up was incorporated in 2010, and last year received \$500,000 in funding from Spring Singapore's Technology Enterprise Commercialisation Scheme, which supports the commercialisation of ideas undertaken by tech start-ups.

Through NUS, Dr Trau received other grants as well.

Ayoxxa is exclusively licensing the intellectual property from the school. The firm also has a presence in Germany.

"The market in Singapore is too small, and we have international partners. As a biotech company, you need to look internationally," Dr Schmidt said.

Such links can also tap the

strengths of experts in both countries.

The team has won several competitions, including first prize in a global life sciences competition in Austria called Best of Biotech.

The product is now in its pre-sale prototype stage and the researchers are refining it to understand what users – such as research firms and universities, for a start – want.

They are also partnering laboratories to test the system.

But getting to this stage was not always easy for the team, which has been dealing with a product that encompasses micro-fabrication, nanotechnology, biochemical engineering and information technology, among other things.

"It was a huge challenge to find the right manpower... We need an interdisciplinary team and everyone to speak the same 'language'," Dr Schmidt said.

✉ [tamanda@sph.com.sg](mailto:tamanda@sph.com.sg)