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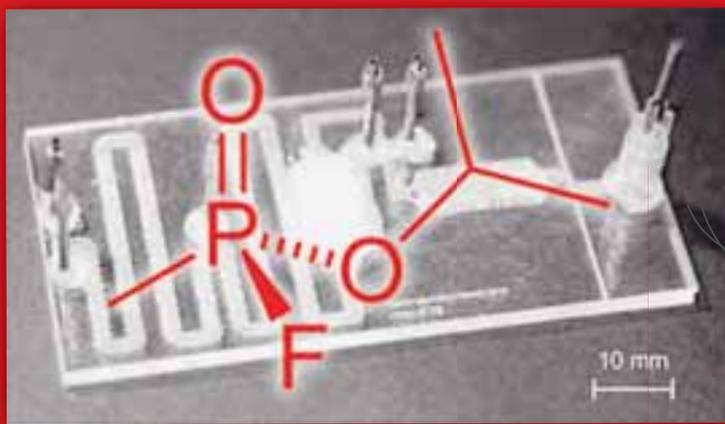
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SINGAPORE PRESS HOLDINGS

MADE IN S'PORE LAB-ON-A-CHIP DETECTS NERVE GAS



Device by NTU-DSO scientists identifies exposure to deadly sarin in terrorist attack

DESIGN: EDMUND GOH PHOTO: WWW.RSC.ORG

ANDREA SOH

SCIENTISTS in Singapore have produced a nerve agent detector that fits on to a chip the size of a credit card.

This device will allow anti-biochemical personnel responding to a terrorist chemical strike, such as the 1995 Tokyo subway sarin attack, to quickly identify those who are exposed to the deadly gas.

It can detect sarin or other related chemical warfare agents in a small drop of blood.

The home-grown lab-in-a-chip is the result of a two-year research collaboration between DSO National Laboratories and Nanyang Technological University (NTU).

The team recently published details of their trials in the April edition of the journal by the prestigious UK-based Royal Society of Chemistry.

The team comprises Dr Loke Weng Keong, 39, the DSO head

of medical counter-measure (chemical) lab, NTU Associate professor Nguyen Nam Trung, 38, and DSO defence research engineer Tan Hsih Yin, 25.

Commenting on the Singaporean achievement, Professor Jonas Berquist, who studies chip-based blood analysis at Uppsala University in Sweden, said he was impressed with the number of steps integrated into the device.

"It's a problem not many people have solved yet," he noted.

The device can screen 96 peo-

ple within half an hour and, being easily mass-produced, many more people can be checked at the same time.

This would shave off crucial minutes, which means the difference between life and death for people exposed to nerve agents.

Only a drop of blood is needed to be put in the chip, which can reveal results through an external detector.

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**Faye Wong itches for
comeback but hubby
prefers her to stay at
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OBAMA CLOSER TO BEING FIRST BLACK PRESIDENTIAL NOMINEE

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SINGAPORE

2 years of work for S'pore team to make lab-in-chip

ANDREA SOH

WHEN reading reports of the 1995 sarin gas attack in Japan, Dr Loke Weng Keong, the head of DSO's medical counter-measures (chemical) lab, was concerned that most of the 500 people who rushed to hospitals were actually not affected.

Ten years later, Dr Loke, 39, attended a seminar conducted by Nanyang Technological University (NTU) Associate Professor Nguyen Nam Trung, 38.

It was there that he realised that Dr Nguyen, the thermal and fluids researcher, had the expertise which could help identify people exposed to nerve agents in a terrorist attack.

Dr Loke approached Dr



TEAM-WORK: Dr Loke Weng Keong, Ms Tan Hsih Yin, and Associate Professor Nguyen Nam Trung. (PHOTO: NEO XIAOBIN)

Nguyen to work on finding a portable device that can detect sarin easily. DSO research engineer, Ms Tan Hsih Yin, 25 – then an undergraduate in NTU, also joined the team.

DSO is Singapore's primary defence research organisation.

Their two years of hard work has now paid off. The result is the power of a lab on the size of a chip. The tool about the size of a credit card enables mass screening to be done anywhere.

This ensures that the genuinely exposed can receive treat-

ment quickly, and also reassures the rest that they are not exposed.

At very low levels, symptoms of the sarin nerve agent – headache and nausea – is similar to those induced by fear, Dr Loke, said.

Hospital facilities in Japan were severely strained by the 500 people who rushed to hospitals for tests to see if they had been exposed to the gas in 1995, said Dr Loke.

"In the end, 99 per cent were actually not affected," he pointed out. The attack left 12 dead.

The chip is based on Scentmate – another nerve agent diagnostic kit developed by DSO.

Like Scentmate, it can screen 96 people within half an hour.

For Scentmate to work, it requires several equipment to run a five-step screening procedure.

For the new device, these equipment have been shrunk to the size of a credit card. This makes it easier for responders in bulky protective suits to use.

Before Scentmate and this new device was developed, it took 16 hours to screen as many samples in a laboratory said Dr Loke.

The new device works like this.

First, a drop of blood is collected and placed on the chip. It is then mixed with a chemical solution to extract the sarin agent. After that, the rest of the blood is removed.

The mixture containing the nerve agent is then passed through a biosensor in the chip.

Finally, the device is connected to an external detector, from which the results can be retrieved.

The team was given a \$50,000 grant from the Ministry of Defence for this research.

Their findings were published by UK-based Royal Society of Chemistry last month.

The chip can also be used for other applications, like detecting excessive levels of agricultural pesticides in farmers.

The chip may land up on supermarket shelves eventually if companies decide that there is a market for it, said Dr Loke.

If fear – the main weapon of terrorists – is reduced, the appeal of using chemical agents for terrorist attacks will be lowered, he said.

"Mass hysteria is contagious," he said.

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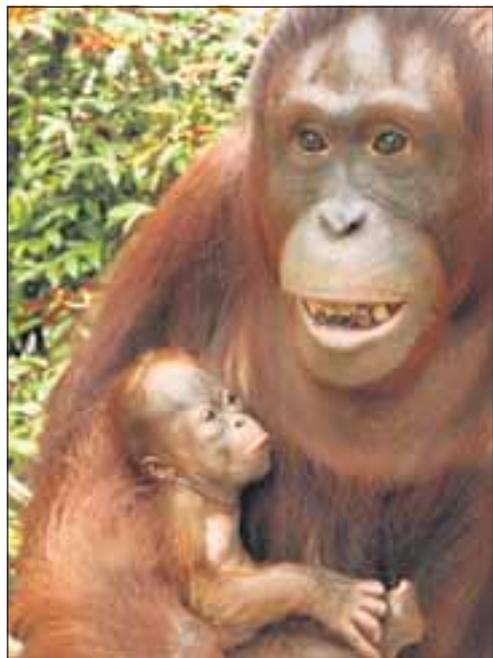


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Ria Grace was offered a full scholarship by NTU to study MBA in UK*





Meet Ah Tseng

MIRI, the Bornean orang utan, gave birth to a male orang utan on April 9. Ah Tseng is the 34th orang utan born at the zoo. Its name carries two meanings: A great ape in Mandarin and Mr Celebrity – a star. It was named in memory of Ah Meng, the popular orang utan who died in February.

(PHOTO: SINGAPORE ZOO)

*For Polytechnic Diploma / Advanced Diploma holders (in relevant disciplines)