

New Generation of Biosensor

M'sian made aptamer-based biosensor makes its mark

BY SHAMIRA SHAMSUDDIN

KUALA LUMPUR: A locally developed aptamer-based biosensor is set to change the way we monitor human body, pathogens, food and environmental contaminants.

The innovation also has the potential to be developed into portable diagnostic kits that is robust and convenient for field use.

The technology was recently introduced by Biogenes Technology Sdn Bhd (Biogenes) in a seminar themed "Aptamer + Biosensor".

"Aptamer, a synthetic alternative to antibodies can act as molecular probes to detect and measure desired target molecules in a sample," said Tang Kok Moon, Biogenes Chief Operating Officer.

He said aptamer is highly flexible and can be moulded into use within a range of conditions determined by end users," added Tang.

According to him, while antibodies are harvested from animals and is very expensive to produce, aptamers on the other hand are simply synthesised in a laboratory, where no animals are used or harmed in the process.

Using the new method - in silico computational approach - aptamers can be synthesised in a virtual environment that is more accurate, faster and cheaper, said Dr Samson Soon, Director of Research Management Centre in Infrastructure University Kuala Lumpur (IUUKL).

He said the conventional way to derive aptamers is via the use of



Biogenes lead researcher Mohd Rawa showing off Aptasensor chips.

Systematic Evolution of Ligands by Exponential Enrichment (SELEX) which involves complex multiple rounds of selection which are extremely laborious, costly, and time consuming.

In 2017, Biogenes and IUUKL signed a collaborative MoU on the development of aptamer applications in biosensors for molecular diagnostics.

With in silico computational method, comes the incorporation of aptamers onto printed biosensors, which is then used to detect the presence and measure the concentration of targeted molecules.



Close up view of Aptasensor chip and biosensor reader.

"These biosensors are electrochemical based, and work in the same principle as diabetes monitoring gluco-meters," said Mohd Rawa, Biogenes lead biosensor researcher.

Mohd Rawa said his work has shown good correlation between the electrical signal output from the biosensors and the concentration of target molecules in the samples.

Mohd Rawa and team are currently working to incorporate more aptamers onto biosensor platforms for many important target molecules for applications in diagnostics.

According to Tang, Biogenes will further refine and integrate their methods into a computational software that allows users to design aptamers for their desired target molecules cheaply and rapidly.

"Biogenes' vision is to bring to both local and global market an array of aptamer-based biosensor diagnostic kits in healthcare, agriculture, aquaculture, animal breeding, and environmental monitoring.

"It is of prior importance to build an eco-system with biosensor researchers from local universities and research institutions to co-develop specific biosensors to targeted molecules in different sectors.

"It is through building linkages and networks with foreign universities and international bodies, that we are able to elevate our homegrown technology to the global level," added Tang. 

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Repurposing NDV vaccine for cancer treatment



Ong (left) with Khatijah and Looi at the conference.

For Khatijah, this award plays a fundamental role, as it would encourage collaboration between reputable researchers and helps women scientists gain visibility.

At the conference Khatijah presented her keynote address on her research — "Repurposing NDV vaccine for cancer treatment".

Khatijah said NDV has the potential to be a cancer vaccine due to the absence of anti-NDV antibodies in human.

"Knowledge on the molecular biology of NDV has allowed us to develop various biologics in the prevention and treatment of disease. Whilst NDV attack chicken, it replicates poorly in human cells, causing mild respiratory conditions and conjunctivitis.

"Several clinical trials using NDV as a therapeutic agent for cancer treatment have shown positive outcomes" she added.

The conference, organised in conjunction with International Women's Day by the Malaysian Invention and Design Society (MINDS) recognises the achievements by Malaysian women in the fields of Biology, Chemistry, Physics, Engineering, Mathematics, and Medicine.

The conference featured seven

other inspiring women who have made significant achievements in their field. Among them are Prof Datuk Dr Looi Lai Meng, histopathologist from University of Malaya Medical Centre; Prof Dr Goh Lai Yoong, president of Hong Kong University Alumni Association Malaysia; Prof Dr Wan Haliza Abd Majid, Professor of physics, University of Malaya and Dr Ravigadevi Sambanthamurthi, Malaysian Palm Oil Board research consultant.

Speaking to The Petri Dish, MINDS president Tan Sri Emeritus Prof Datuk Dr Augustine Ong said: "The roles played by women scientists have been significant in the scientific community and to the nation.

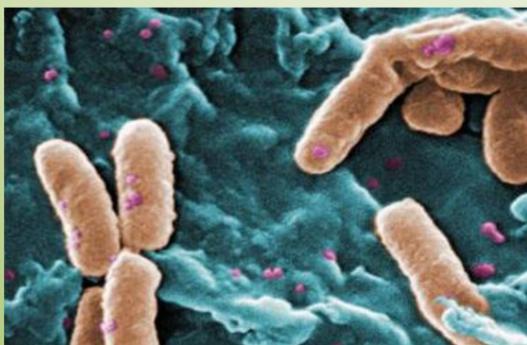
"We need to showcase and share the stories of a diverse array of women scientists and, importantly, celebrate their achievements.

"It is crucial that the youngsters have role models in science to look up to."

Ong also added MINDS plans to make this conference an annual affair. He said women will continue to make contribution to the field of science and this conference serves as a platform for women scientists to bask in their 'stardust moment'. 



INTERNATIONAL BIENNIAL CONFERENCE
Pseudomonas 2019
JULY 22-26, 2019 • MALAYSIA



Venue: Pullman Kuala Lumpur Bangsar Hotel

The scientific sessions include Signalling; Resistance and Novel Antibacterials; Host-pathogen Interaction; Metabolism and Physiology; Gene Regulation and Genomics; Harnessing the Potential of *Pseudomonas* species; Evolution and Coevolution; and Multi-species Interaction. The sessions also include a panel discussion with past *Pseudomonas* chairs – many of whom are *Pseudomonas* stalwarts. The participants hail from more than 30 countries.

Plenary Speaker



Shahriar Mobashery
University of Notre Dame
Opening Night, July 22, 2018

Keynote Speakers



Iain Lamont
University of Otago, New Zealand



Joanna Goldberg
Emory University, USA



Mark Wilcox
University of New South Wales, Australia



Dawn Arnold
University of the West England Bristol, UK

Program

Date	Time	Location	Program
July 22, Monday	12:00-5:00pm	Ballroom	Registration
	5:00-6:30pm		
July 23, Tuesday	7:00pm-9:00pm	Village	Welcome Reception
	9:00am-6:00pm	Ballroom	Keynote 1 & 2 Lectures 2-min Student Poster Presentations Poster Session – I
	6:30pm-8:00pm		Networking & Poster Viewing
July 24, Wednesday	9:00am-6:00pm	Ballroom	Keynote 3 Lectures / Forums Student Oral Presentations Poster Session – II
	6:30pm-8:00pm		Networking & Poster Viewing
July 25, Thursday	9:00am-9:00pm	Ballroom	Tour Malaysia include Lunch & Dinner
	9:00am-6:00pm		Keynote 4 Lectures
July 26, Friday	7:30pm-10:00pm	Ballroom	Closing Reception and Award Ceremony

Exhibition Space
Pseudomonas International Biennial Conference 2019 is a great opportunity to get your brand in front of the best and brightest in the life sciences industry. The details as follow. For more information about exhibition, please contact:

Shamira Shamsuddin shamira@bic.org.my	Farah Nadzri farah@bic.org.my
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Exhibition booth Size	Shell Scheme Booth 3m x 3m x 2.5m H
Rental fee per day	RM 2000

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