KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

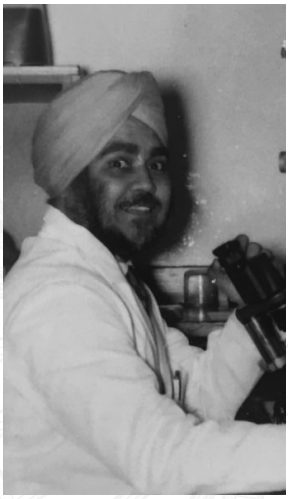
AKADEMI SAINS MALAYSIA

DR RANJEET BHAGWAN SINGH MEMORIAL LECTURE & THE ANNOUNCEMENT OF 2023 DR RANJEET BHAGWAN SINGH RESEARCH GRANT RECIPIENT

15 AUGUST 2023 (TUESDAY)
10.00 am – 1.00 pm
@HIVE 5 AUDITORIUM,
TAMAN TEKNOLOGI MRANTI

Programme

10:00AM	**Registration and Arrival of Guests**
10:30AM	Introduction Speech by **Professor Sheila Nathan FASc** Chairperson of ASM's Dr Ranjeet Bhagwan Singh Medical Research Trust Fund Committee
10:35AM	**2023 Dr Ranjeet Bhagwan Singh Memorial Lecture** *"Promise (and Overpromise) of Precision Public Health"* **by Professor Teo Yik Ying** Dean, Saw Swee Hock School of Public Health National University of Singapore (NUS)
11:30AM	**Negaraku and Doa Recitation**
11:35AM	Speech by **Dr Tripat Narayanan** Family Representative of Dr Ranjeet Bhagwan Singh
11:40AM	Speech by **YM Academician Datuk Dr Tengku Mohd Azzman Shariffadeen FASc** President, Academy of Sciences Malaysia and the Science, Technology, and Innovation Advisor to the Prime Minister and the Nation
11:50AM	Speech by **YB Tuan Chang Lih Kang** Minister of Science, Technology and Innovation (MOSTI)
12:00PM	**Presentation by the 2023 Dr Ranjeet Bhagwan Singh Research Grant Recipient**
12:50PM	**Award Ceremony of 2023 Dr Ranjeet Bhagwan Singh Research Grant Recipient**
1:00PM	**Networking Session and Lunch**



Biography of **Dr Ranjeet Bhagwan Singh**

Dr Ranjeet Bhagwan Singh was born in Telok Anson, Perak on 1 May 1920. He had his early education at the Government English School in Batu Gajah, Perak where he took his senior Cambridge exam and obtained Grade 1 in 1937.

He attained his MBBS from the Medical College, Lahore, Pakistan from 1942 - 1947 and the Medical College of Amritsar, India from 1947 - 1948. He also obtained a postgraduate Diploma in Tropical Medicine in Calcutta, India with a study award from the Government of Malaysia and earned his PhD in bacteriology at the University of Edinburgh, Scotland from 1962 - 1964. All of his graduate and postgraduate studies were accomplished by scholarships and awards – earning him five WHO Fellowships.

He began his professional career in Malaysia as a Bacteriologist Medical Officer at the Institute for Medical Research (IMR), Kuala Lumpur from 1951 - 1958. He then became a Senior Bacteriologist and Head of the Department of Bacteriology as Consultant Bacteriologist there. In February 1971, he was appointed as Deputy Director of IMR, after which he was made Director in November of the same year. He was also a consultant holding several concurrent appointments as the examiner.

On 1 May 1975, he retired as the 18th Director of the Institute of Medical Research (IMR). As a consultant, he participated in several expert working groups consisting of WHO, SEAMEO, and SIRIM in the field of research management, tropical diseases and biological products. He was one of the main post-independence designers and builders of the new IMR, KL and developer of the National Health Laboratory Services Malaysia. He established the Division of Bacteriology as the WHO Reference Centre on Salmonellosis.

Besides his invaluable contribution to the field of medical and scientific research as well as laboratories in Malaysia, Dr Ranjeet Bhagwan Singh was well known for his many philanthropic activities and contributions to mankind. He has donated magnanimously to the universities in Malaysia, namely Universiti Kebangsaan Malaysia, where he started the Dr Ranjeet Bhagwan Singh Goodwill Loan Fund in 1969 with 6 to 8 study loans and a Gold Medal for Medicine; the University of Malaya, where the Dr Ranjeet Bhagwan Singh Endowment Fund was formed in 1965 with 6 to 8 study loans and a Gold Medal for Master of Pathology; and also to Universiti Sains Malaysia where he formed the Dr Ranjeet Bhagwan Singh Endowment Fund in 1970 with 6 to 8 study loan awards and 3 meritorious Gold Medal Awards. The late Dr Ranjeet Bhagwan Singh bequeathed his entire estate to the Dr Ranjeet Bhagwan Singh Medical Research Endowment Fund.

He died on 13th June 1987.

Speaker of the 2023 Dr Ranjeet Bhagwan Singh **Memorial Lecture**

Professor
Teo Yik Ying
Dean of Saw Swee Hock School of Public Health, National University of Singapore (NUS)

Promise (and Overpromise) of Precision Public Health.

Professor Teo Yik Ying is the Dean of the Saw Swee Hock School of Public Health at the National University of Singapore (NUS). Prior to his Deanship, he was the Founding Director of NUS' Centre for Health Services and Policy Research (CHSPR) and Director of the Centre for Infectious Disease Epidemiology and Research (CIDER).

A mathematician by training, Professor Teo Yik Ying holds an MSc in Applied Statistics and a DPhil in Statistical Genetics from the University of Oxford, United Kingdom. He returned to Singapore from the UK in 2010 after working for four years concurrently as a Lecturer at Oxford and a researcher at the Wellcome Trust Centre for Human Genetics. He is presently a member of the Council of Scientists for the International Human Frontier Science Program as well as a governing board member of the Regional Centre for Tropical Medicine and Public Health Network for Southeast Asia.

2023 Dr Ranjeet Bhagwan Singh **Grant Recipient**

Dr Fazren Azmi
Senior Lecturer
Universiti Kebangsaan Malaysia (UKM)

Bioengineered-microalgae Oil Droplets as Production Platform of Advanced Immunogenic Protein Particles for Intranasal COVID-19 Nanovaccine Formulation.

Grant Amount: RM 50,000.00

Dr Fazren Azmi completed his PhD in Pharmaceutical Nanotechnology at the University of Queensland, Australia in 2016 and joined the Faculty of Pharmacy at Universiti Kebangsaan Malaysia shortly thereafter as a Senior Lecturer. He has a long-standing interest in vaccine development, with his current research focusing on the use of nanotechnology as a vaccine delivery platform.

He has attracted significant research funding from various funding agencies/institutions with a total of over RM 2 million in funding. Since the COVID-19 pandemic, his research team has been actively involved in the development of nanovaccine formulation for intranasal administration. His research has collectively attracted over 600 citations from publications featured in high-impact journals such as Carbohydrate Polymers, AJPS, and Nanomedicine.

Research Abstract:

The continued emergence of new SARS-CoV-2 variants is detrimental to global health and prolongs the COVID-19 pandemic. Intranasal vaccine administration can elicit sterilising immunity at the predominant sites of infection, which potentially help to prevent viral transmission across human.

In this research, we aim to explore the utilisation of bioengineered-microalgae oil droplets as a novel production platform for a multi-epitope receptor-binding domain (RBD)-based protein immunogen. Microalgae's remarkable capacity to produce significant quantities of oil per unit area, coupled with their high biomass productivity, renders this approach highly effective for scalable biomanufacturing processes. The assembly of the RBD-based immunogen in the oil droplets of microalgae will be presented in repetitive copies of subunit antigens, which mimics the multivalent surface presentation of a pathogen for enhanced immunogenicity. The immunogenic oil droplets will be further stabilised with ACNs, our established in-house mucosal adjuvant to produce the final nanovaccine formulations. The nanovaccines will be administered intranasally, exploiting the mucosal immune system's ability to provide a first line of defense against respiratory pathogens in animal model. We will assess both systemic and mucosal immune responses, including antigen-specific antibody titers, T-cell responses, and cytokine profiles.

This proposed research work will provide the proof-of-concept on the feasibility of using bioengineered-microalgae oil droplets as a production platform for advanced immunogenic protein particles to develop an intranasal COVID-19 nanovaccine. If successful, this approach could revolutionise vaccine development and delivery, offering an innovative solution to address the challenges posed by the COVID-19 pandemic and potentially other respiratory infections in the future.