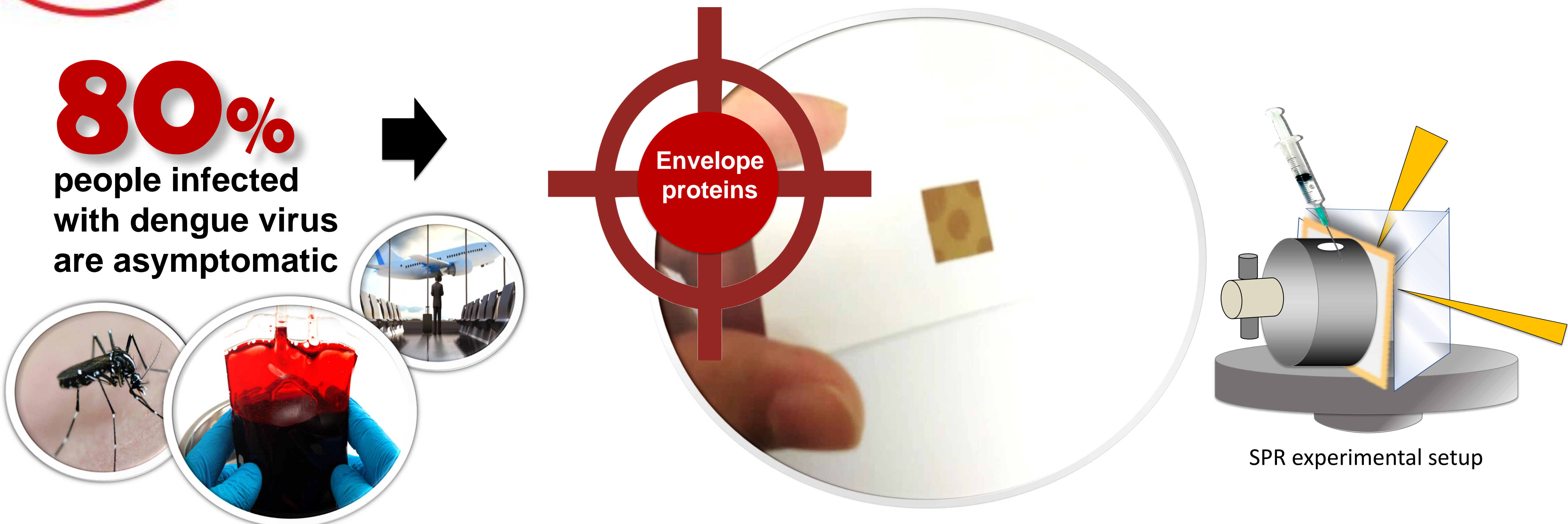




# RGO-PAMAM based SPR Sensor for Rapid Dengue Virus Detection

PATENT NO. PI 2019005737



## BRIEF TECHNOLOGY

This technology comprises the integrated novel RGO-PAMAM thin film with surface plasmon resonance (SPR) sensor for detection of dengue virus envelope proteins (DENV E-proteins).

## PROBLEM STATEMENT & CURRENT ISSUES

- Dengue virus (DENV) is an infectious tropical disease that continuously affecting human survival. The effects of the virus to human body can be experienced by two categories of dengue carriers:

	Symptomatic	Asymptomatic
Diseases	Fever, body rashes, muscle and joint pain	No noticeable
Detection kits	Rapid NS1	-

- The available techniques/kits, such as Rapid NS1 kits, ELISA, PCR, etc. are generally developed for symptomatic dengue carrier. Moreover, they have one/several disadvantages.

	Rapid NS1	ELISA	rt-PCR	SD Bioline Dengue Duo	CareStart™ Dengue Combo
Cost/Result analysis	Around RM100/strip	RM20k-30k	RM30/test	RM150/pack	-
LOD	0.1 nM	0.02 nM	-	-	-
Time	30 mins	1 h	1h	15-20 mins	15-20 mins
Target	NS1	NS1	IgM, IgG	NS1+ IgM/IgG	NS1+ IgM/IgG
Drawback	Lower sensitivity for 2 <sup>nd</sup> infections	Required skilled operator	Higher expertise and experimentation are required	-	-

## INVENTIVENESS & NOVELTY

- 1<sup>st</sup> study on detection of E-proteins using SPR sensor
- Offer lower detectable concentration of DENV E-proteins in comparison with the established method while retained the high sensitivity and high selectivity analysis.

## USEFULNESS & APPLICATION

RGO-PAMAM based SPR sensor emerges as an alternative technology for diagnosing asymptomatic dengue carriers compared to the current kits, which are solely used for symptomatic dengue carriers.

## IMPACT OF THE PRODUCT

- Detect DENV E-proteins at lowest concentration (0.08 pM)
- Fast time detection (8 minutes)
- Highly sensitivity and selectivity analysis
- Do not require skilled operator

## MARKET POTENTIAL

**RGO-PAMAM sensor chip**

**E-proteins point of care**

- High potential to be commercialized as E-proteins point-of-care diagnostic for asymptomatic dengue carrier.
- Can be used as a screening test at blood donation centre.

TRL : 4 – Lab validation



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