

# **SENSITIVE VIRUS DETECTION IN HUMAN AND NON-HUMAN SAMPLES FOR CLINICAL DIAGNOSTIC AND PUBLIC HEALTH SURVEILLANCE IN THAILAND**

Theeraphap Chareonviriyaphap<sup>1</sup>, Gregor Dubois<sup>2</sup>, Walairut Tuntaprasart<sup>3</sup>, Ilias Stefan<sup>4</sup>,  
Francisco Veas<sup>2</sup> and Sylvie Manguin<sup>2</sup>

<sup>1</sup> *Department of Entomology, Kasetsart University, Bangkok, Thailand*

<sup>2</sup> *IRD, University Montpellier 1, Montpellier, France*

<sup>3</sup> *Faculty of Public Health, Mahidol University, Bangkok, Thailand*

<sup>4</sup> *Apo-H Technologies, Montpellier, France*

**BACKGROUND:** Regular outbreaks of Dengue, Japanese Encephalitis, Hepatitis C (HCV) viruses, and occasionally Chikungunya virus, have pointed out the dramatic need to improve the surveillance of viruses, including vector-borne ones, in Thailand and other regions of the world.

**OBJECTIVES:** A highly efficient and cheap technology must be developed for sensitive virus detection.

**METHOD:** We will present a unique, reliable and easy to use technology based upon the capacity of Apolipoprotein H (ApoH), a human plasma protein, to bind non-self particles. Apo-H technologies concentrate pathogens and clean up inhibitors from detection methods, including PCR-based ones. Therefore, this new technology allows an ultra-sensitive detection of pathogens of different origins.

**RESULTS:** The Apo-H technologies used on different human samples revealed infections that were classified as occult (HCV, Dengue) or detected higher viral loads than those perceived by the gold standard methods. In samples from environmental or animal origins (e.g. mosquitoes), our technology was able to increase the sensitivity as well as detect the presence of pathogens undetected by current standard PCR methods. Its unique capacity to concentrate any kind of pathogens allows the detection of multiple and simultaneous pathogens.

**CONCLUSIONS:** This technology will help public health managers for an accurate assessment of a determined clinical situation, for a follow-up evaluation of an anti-infectious treatment, as well as for pathogen surveillance. Early detection of virus is important for alerting public health programs to take prevention measures in order to avoid any outbreak.

**KEYWORDS:** dengue virus, Apolipoprotein H, human plasma protein