

# GESINAS - ImmunoTools *special* Award 2015



**Nattika Nantachit**, PhD-student

Supervisor: Prof. Dr. Sukathida Ubol

Department of Microbiology, Faculty of Science,  
Mahidol University, Bangkok 10400, Thailand

## **Host-arboviruses interaction**

I am a Ph.D. student in the Department of Microbiology, Faculty of Science, Mahidol University. My laboratory is currently occupied by 7 graduate students, both Ph.D. and M.Sc. level. Therefore, I am writing to you on behalf of all 7 students.

Our research focus on two kinds of virus, dengue virus (DENV) and chikungunya virus (CHIKV). DENV is the most important mosquito-transmitted virus in the world which can be evidenced that an estimated of 390 million dengue infections occur worldwide with 250,000 to 500,000 hospitalization annually. There are 4 serotypes of DENV (DENV-1 to -4). All serotypes cause asymptomatic infection up to life-threatening disease, dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS). The pathophysiology of severe form of dengue is partially known with most evidences support the role of pre-existing anti-DENV responses as a key player on disease severity. Currently, no vaccine or effective anti-DENV drugs are available. Therefore, the main objectives of our research on dengue are to develop effective dengue vaccine and to answer how does pre-existing anti-DENV antibody contribute to disease severity. To fulfill these goals, several types of immune cells which serve as target of DENV have been used in our experimentations including primary human dendritic cells, monocytes, and macrophages. Responses of these cells upon treatment with vaccine candidates are investigated. To investigate the role of pre-existing antibody, the responses of these cells on infection *via* Fc Receptor, virus-enhancing antibody complexes, have been monitored.

Chikungunya virus research: The recent epidemic of CHIKV started in 2004 in Kenya. Since then, CHIKV has spread throughout Asia. In 2013, the epidemic of CHIKV is reported in the Americas and Europe. In October 2014, CHIKV remains in Caribbean and the US continents. Epidemics of CHIKV cause huge damage in

economy. Infection by CHIKV induces fever with rash and arthralgia/arthritis. Thus interaction between CHIKV and cells of the synovium is of interesting. Our laboratory recently published that mediators secreted from CHIKV-infected synoviocyte fibroblast cultures can drive primary human monocytes/macrophages into osteoclast. This aggressive osteoclasts are one player for arthralgia/arthritis. Therefore, we continue our study on pathophysiology of arthralgia/arthritis induced by CHIKV.

The **ImmunoTools** reagents will be useful for both DENV and CHIKV researches in our laboratory. Antibodies specific to surface markers will help to evaluate cell purity, cell differentiation, and potential of cell function while ELISA kits can be used to confirm cell activities and responses.

Contribution to Thai society is another task for the Graduate students in this department. We have set up a program called “Summer Camp” for undergraduate students. In this program, 20-30 students in Science from all over Thailand will be selected and enrolled into this 3 weeks research training course. Our laboratory has served as a mentor for this program for 5 years in the roll and will continue for next year and so on. Thus, **ImmunoTools** reagents will be used in this training program meaning that **ImmunoTools** reagents are not only help to fulfill our researches but also support Science education in Thailand.

## **GESINAS ImmunoTools AWARD for Nattika Nantachit includes 50 reagents**

**FITC** - conjugated anti-human CD3, CD4, CD8, CD16, CD19, CD80, CD86, CD95, HLA-ABC, HLA-DR, Control-IgG1, Control-IgG2a, Annexin V,

**PE** - conjugated anti-human CD11c, CD19, CD20, CD40, CD80,

**PerCP** - conjugated anti-human CD3, CD14,

**APC** - conjugated anti-human, CD3, CD4, CD8, CD11c, CD15, CD16, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V,

Multicolour combinations anti-human:

CD3 **FITC** / CD4 **PE** / CD19 **APC**

human ELISA-set for 96 wells, (each 3 reagents), human IFN-gamma, human IL-4, human IL-6, human IL-8, human TNF-a,

recombinant human cytokines: rh GM-CSF, rh IL-4, rh M-CSF, rh RANKL

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