

## 2012 SATU Joint Research Scheme

NCKU Project Host Center	Center of Infectious Diseases and Signaling Research
Project Title	Dissecting the Role of Viral Population Diversity in Pathogenesis of Enterovirus 71
NCKU PI / Co-PI	PI: Prof. Jen-Ren Wang, Medical Laboratory Science and Biotechnology, NCKU Co-PI: Pro. Ching-Chuan Liu, Pediatrics, NCKU Pro. Yee-Shin Lin, Microbiology and Immunology, NCKU
Foreign Co-PI	Yoke Fun Chan/ Department of Medical Microbiology, Faculty of Medicine, University Malaya Yong Poovorawan / Center of Excellence in Clinical Virology, Faculty of Medicine, Chulalongkorn University

### **Objectives**

This project is hosted by Center of Infectious Diseases and Signaling Research at National Cheng Kung University. The goals of the center are to make NCKU a worldwide landmark for dengue and enterovirus 71 researches, as well as to contribute to the development of its drugs and vaccines. Human enterovirus 71 (EV71) is a common causative agent of hand, foot and mouth disease (HFMD). In the recent years, EV71 has emerged as a more neurovirulent virus killing many young children in many parts of Asia especially Taiwan and Malaysia. Furthermore, previous studies had shown that different genotypes had caused large outbreaks in the Asia-Pacific region since 1997. Continuous surveillance of EV71 in different parts of Asia especially Taiwan, Malaysia and Thailand will enable a better control of future outbreaks. Therefore, in this study, our long-term goal is to initiate EV71 surveillance system in Taiwan, Malaysia and Thailand, and further to study the quasispecies characteristics of EV71 and seroepidemiology in three countries. The study will help us to understand how the viral populations can adapt and evolve in human, and has great implication in the design of vaccine and antiviral drug.

### **Collaborative Strategy**

The team consists of prominent research scientists from Taiwan, Malaysia and Thailand. They have been leading the research of enterovirus 71 in their own respective countries. We will initiate EV71 surveillance in Taiwan, Malaysia and Thailand. The surveillance data will be shared and the three countries will be alerted if there's any increase in EV71 cases. Different EV71 virus strains from Taiwan, Malaysia and Thailand will be analyzed to determine the quasispecies characteristics. In addition, we will collect sera from healthy adults and patients in three countries to test against the various subgenotypes of EV71 to investigate whether the genotypic shift might change the antigenicity in EV71. Furthermore, the antigenic variations among three countries will be further studied.

### **Future Perspectives**

For the center, we are not only aims to become the top infectious disease center in Asia but will also contribute to the biotechnology industry and translational medicine.

In the EV71 study group, the team consists of young and established researchers whom can exchange their expertise in the field of clinical and diagnostic virology, molecular biology and bioinformatics. We can share the surveillance data between three countries and get the knowledge on the role of viral quasispecies in EV71 pathogenesis. In addition, by using human sera to study the antigenicity of EV71 can provide the information to help development of EV71 vaccine. Furthermore, these findings can result in several publications in conference and international journals. This study will not only provide information to understand the cause of EV71 outbreaks, but also has implication in the vaccine and antiviral drugs design. The most importance is we can establish the good international collaboration and linkage between Taiwan, Malaysia and Thailand.