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Research Introduction:

Bacterial pathogenesis & Host responses

My long term research goal is to study the host defending system, particularly focused on the innate immune system, in human inflammatory disease with an emphasis on solving the pathogenesis using mouse genetics as a tool. In the past few years, I have applied varies gene deficient animals, including Toll-like receptor (TLR)-, iNOS-, and cystatin C-deficient mice, to study how host deficient in certain defending system responds to the bacterial infection.

In addition, I also devoted to the development of functionalized nanoparticles for probing pathogenic bacteria in collaboration with Dr. Yu-Chie Chen in the past years. We already obtained promising results and earned valuable experiences in constructing the functionalized nanoparticles for targeting and killing pathogenic bacteria.

Molecular imaging is a rapidly emerging field, providing noninvasive visual quantitative representations of fundamental biological processes in intact living subjects. In 2007, I moved to National Laboratory Animal Center and developed an *in vivo* light reporting system, NF-κB-RE-luciferase transgenic mice that express luciferase under the control of NF-κB, to monitor the inflammatory responses *in vivo*. After creating several light reporting mouse models in NLAC, in 2009, I moved back to the academic environment, which I particularly enjoy working with, in NCKU. At the first year, I contribute my knowledge to establish an IVIS platform in NCKU, founded by NSC.

For the next stage of my career, I plan to initiate and continue my research work on dissecting the contribution of TLR-mediated innate inflammation to

1. **Diabetic nephropathy**
2. ***Clostridium difficile* induced colitis**
3. ***Streptococcus pyogenes* induced necrotizing fasciitis**

I believe a combined basic and applied approach, with the focus on the inflammatory responses in human disease, is worth of such an investment in time and effort to better understand the innate immune system in host defending mechanisms.

Education

Ph.D., National Cheng-Kung University

Research

Clinical microbiology, Infectious diseases, Animal disease models