OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Omics Studies

September 4-6, 2013 Holiday Inn, Orlando-FL, USA

Cytokine proteome paves the way to redox signaling in tumor microenvironment

Dunyaporn Trachootham
Thammasat University, Thailand

Abstract

Tumor microenvironment plays a major role in cancer development. Understanding how the stroma affects epithelial transformation will provide a basis for new preventive strategies. The signaling cascades in cancer cells themselves are very complex; thus, interactive signals between cancer and stromal cells are definitely even more complicated. It should involve not just a single gene but rather systemic changes. After completing our recent research study, I could not appreciate more for the power of "omic" approach to uncover the key signals. First, we discovered that p53-deficient fibroblasts could transform non-tumorigenic to invasive cancerous oral epithelium. Then, we were looking for the key interactive signals between the fibroblasts and transforming epithelial cells. At that time, we really had no clues since P53 is robust and multifunctional. Utilizing cytokine proteome array, three cytokines were found highly up-regulated in p53-deficient but not in p53-intact fibroblasts. Interestingly, those cytokines share a common feature, i.e. their transcriptions are redox-sensitive. This finding prompted us to study further the redox alteration in the cells. Finally, it led us to newly discover intrinsic oxidative stress in stroma as a key systemic change that induced epithelial transformation. Furthermore, we found that modulation of the redox signaling in microenvironment may serve as a novel approach to prevent epithelial transformation and suppress cancer invasion. Without the cytokine proteomic approach, we certainly could not make this discovery. For future perspective, I am certain that "redox proteomics" would be crucial in the study of cancer cell signaling.

Biography

Dunyaporn Trachootham was granted DDS from Mahidol University, Thailand and PhD (Biomedical Sciences) from UT Health Science Center at Houston. In 2009, he finished postdoctoral fellowship at MD Anderson Cancer Center, Houston with multiple awards e.g. UT Presidents' research scholar and Best Dissertation award from National Research Council of Thailand. He contributed in 10 publications, 1 book chapter and 2 patents. His research interest is cancer pathogenesis; R&D of food and drug for cancer patients. Currently, I am an instructor at Thammasat University and a project manager of Dental Innovation Foundation under Royal Patronage of His Majesty the King of Thailand.