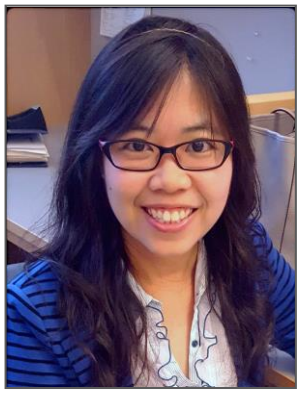
Skin Research Institute of Singapore (SRIS)

Agency for Science, Technology and Research SINGAPORE | NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE | NATIONAL SKIN CENTRE National Healthcare Group

Seminar Announcement

- All Are Welcome -



Speaker : **Dr Christine Wong**
Nanyang Assistant Professor
Principal Investigator, Metabolic Disorders
Lee Kong Chian School of Medicine, Nanyang Technological University

Title : ***"More than skin deep: neutrophil extracellular traps (NETs) as a "nuclear" weapon in inflammation"***

Date : 28 February 2019 (Thursday)
Time : 11:00am – 12:00pm
Venue : Exploration Theatrette, Matrix Level 4, Biopolis
Hosts : Prof Birgit Lane
(Chief Scientist, Skin Research Institute of Singapore)

Abstract:
Neutrophils can release their decondensed chromatin upon stimulation, forming neutrophil extracellular traps (NETs). Armed with histones and granular proteins such as myeloperoxidase and neutrophil elastase, these web-like DNA-based structures are cytotoxic, and were postulated as a form of host defense when first discovered in 2004. NETs ensnare and kill pathogens including fungi and bacteria, thereby limiting their spread. Mounting evidence, however, soon demonstrated that NETs are also produced in sterile inflammation, resulting in unfavorable collateral injuries. NETs promote coagulation and inflammation, fueling conditions such as thrombosis and cancer. In this seminar, I will discuss my findings on the impact of diabetes on NET formation, and the adverse effects of NETs on a diabetic complication: delayed wound repair. Diabetes primes neutrophils to generate NETs in both humans and mice, and the excessive NETs produced in wounds impair recovery. Preventing NET formation, or cleaving NETs using DNase 1, facilitates wound healing. I will also discuss my recent research advances on using anti-NET strategies to enhance skin allograft survival in mice, and the cellular/molecular basis of the NETosis process. Discovery of NETs, the miniature "nuclear" weapon within ourselves, refines our understanding of diseases and conditions in which inflammation and neutrophils are implicated. Anti-NET therapies could be a new and effective strategy to prevent or alleviate diabetic complications and many NET-mediated diseases.

About the Speaker:
Dr Christine Wong is an awardee of the 2018 Nanyang Assistant Professorship, and an Assistant Professor of Metabolic Disorders in Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore. Dr. Wong obtained her PhD (Physiology) from the Chinese University of Hong Kong, where she focused on the role of cyclooxygenase-2 in endothelial dysfunction and vascular inflammation. She then joined Boston Children's Hospital, Harvard Medical School, as a Postdoctoral Fellow to explore the impact of blood cells on vascular inflammation, and was later promoted to Instructor in Pediatrics. She found that diabetes predisposes individuals to form neutrophil extracellular traps (NETs), the cytotoxic chromatin released by activated neutrophils. She also identified the first detrimental implication of NETs in diabetes: impaired wound healing. Dr. Wong was awarded numerous honors, including the Higher Education Outstanding Scientific Research Output Award (Second-Class Award), Ministry of Education, People's Republic of China (2018), Young Investigator Award of the International Society on Thrombosis and Haemostasis (2013), and the prestigious Postgraduate Research Output Award of the Chinese University of Hong Kong (2010). She is a co-inventor of a pending patent regarding the use of anti-NET compounds in facilitating wound healing.