



**THE CHINESE UNIVERSITY OF HONG KONG
FACULTY OF MEDICINE
SCHOOL OF BIOMEDICAL SCIENCES**

SBS PI Seminar Series 2023-2024

Prof. WAN Chao

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will present a seminar entitled

“Lysosomal cathepsin D as a modulator for bone and cartilage homeostasis”

Deficiency or mutation of genes encoding lysosomal enzymes causes a group of inherited metabolic disorders - lysosomal storage disorders (LSDs). Skeletal pathologies are frequently observed in LSDs, yet the relevance of specific lysosomal enzymes in the regulation of skeletal homeostasis are largely unclear. Recently, we examined the molecular and cellular mechanisms of lysosomal CtsD mediated autophagosome or lysosome function in the homeostasis of the skeleton. Our results showed that mice lacking CtsD had severe bone loss and impaired cartilage development compared with their control littermates. These phenotypes were characterized by impaired osteoblastic bone formation, increased osteoclastic bone resorption, and altered cartilage homeostasis. Deletion of CtsD reveals differential expression patterns of the autophagic pathway gene profiles between osteoblasts and osteoclasts, as well as impaired production or degradation of collagen type II in cartilage tissue. In addition, we identified the CtsD mediated cleavage sites of Col II. These results indicate that CtsD acts as a distinct mediator of the autophagic pathway in regulation of osteoblastic bone formation, osteoclastic bone resorption and cartilage matrix deposition, which subsequently control the homeostasis of the skeleton.

11 April 2024, Thursday, 4:00 pm– 5:00 pm

Room G02, Lo Kwee-Seong Integrated Biomedical Sciences Building,
Area 39, The Chinese University of Hong Kong