



Department of
Biomedical Engineering

香港城市大學
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Hosted by Prof. Chenjie XU

Decoding MASLD: Unraveling the Gut-Liver Connection in Metabolic Liver Disease

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Yeung Kin Man Academic Building

Abstract

The gut-liver axis plays a pivotal role in the development of metabolic dysfunction-associated steatotic liver disease (MASLD), yet the intricate links between gut microbiota, intestinal barrier integrity, and liver health remain unclear. Although diet-induced gut dysbiosis, increased gut permeability, and liver inflammation have been recognized as interconnected factors, current understanding remains largely associative, with the underlying mechanisms yet to be fully elucidated. In this presentation, I will explore findings from a human-relevant diet-induced MASLD model (LIDPAD), which revealed early hepatic responses to gut-derived endotoxins, pointing to compromised gut barrier function as an initiating factor in disease progression. Our research highlights how dietary factors and gut microbiota shifts influence key intestinal proteins, potentially exacerbating liver injury. I will also discuss promising non-invasive biomarkers for gut barrier dysfunction and the translational potential of microbiome-targeted therapies and precision nutrition in mitigating MASLD progression. By decoding the complex gut-liver interplay, this work opens new avenues for understanding and treating metabolic liver diseases.

Biography

Assoc. Prof. Andrew Tan is the Provost's Chair in Metabolic Disorders and is the incoming Vice Dean (Innovation and Enterprise) at the Lee Kong Chian School of Medicine, NTU. He previously served as Vice Dean (Faculty Affairs, 2020–2024) and Associate Chair (Students, 2015–2018) at the School of Biological Sciences. Prof. Tan has authored over 200 peer-reviewed publications, with > 12,000 citations and an h-index of 60 (WoS). His pioneering work on Angiopoietin-like 4 (Angptl4) has earned international recognition, ranking him in the top 0.19% of experts in this field (Expertscape). His research centers on Breaking Barriers and Redox Imbalances, addressing chronic wounds, metastatic cancer, and MASLD, conditions linked by disrupted physical, cellular, and metabolic barriers, as well as redox dysregulation. Prof. Tan's team was the first to identify Angptl4 as a redox modulator and extracellular matrix protein. His discoveries have reshaped our understanding of oxidative stress in metastasis and wound healing. Building on these achievements, Prof. Tan is now exploring gut-liver communication and hepatic redox imbalance, contributing to new insights into MASLD pathogenesis.