



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

SBS PI Seminar Series 2023-2024

Prof. KO Wing Hung

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will present a seminar entitled

“Are electronic cigarettes less harmful to airway epithelial cells than traditional cigarettes?”

Abstract

The popularity of electronic cigarettes (e-cigarettes) has grown exponentially over the past few years, and teenagers now prefer them to tobacco cigarettes. This study aimed to investigate whether exposure to e-cigarette vapour (e-vapour) adversely affects human airway epithelial function, specifically, the ion transport activity in two commonly used human airway epithelial cell lines (16HBE14o- and Calu-3) and well-differentiated primary human bronchial epithelial cells (HBEs). We used a simultaneous measurement technique to concurrently measure fluorescent signals and short-circuit current (I_{SC} ; an indicator of electrogenic ion transport) in polarised epithelia. The P2Y receptor-mediated signalling pathway was used to induce an increase in intracellular calcium concentration ($[Ca^{2+}]_i$) and I_{SC} . To determine dynamic changes in cAMP concentrations, a single-polypeptide fluorescence resonance energy transfer (FRET) reporter based on Epac was employed to study forskolin-induced increases in cAMP and I_{SC} . In addition, single-cell RNA sequencing (scRNA-seq) was used to examine the transcriptome profiles of different cell types in primary HBEs exposed to e-vapour. According to our data, e-vapour is not harmless and causes similar ion transport dysfunction as cigarette smoke. E-vapour exposure can alter the transcriptome profile, thereby predisposing smokers to lung injury associated with vaping.

14 September 2023, Thursday, 4:00 – 5:00 pm

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