

Origin and Ontogeny of Human Lung Macrophages

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日時：2022年10月14日（金）16:00～17:30

場所：第二講堂（ハイブリッド開催） ※ミーティングURLは各講座に通知します

Abstract

I will discuss our recent research to dissect the cellular origin and ontogeny of human lung macrophages. Macrophages are the most abundant type of immune cell in the airways and are essential for tissue homeostasis and host defense in the lung. Lung macrophages have been extensively studied in mice, but their developmental pathways in humans have remained poorly understood. We used a unique humanized mouse model (MISTRG) to investigate the origin and ontogeny of human lung macrophages in vivo. With the help of this in-vivo model, we identified both the fetal and the adult progenitor of human lung macrophages. Using intravascular cell labeling and single-cell RNA-sequencing, we also defined how blood monocytes give rise to distinct types of lung macrophages. Finally, we determined the impact of cell origin on the identity and function of human lung macrophages.

References

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2. Evren E, Ringqvist E, Doisne JM, Thaller A, Sleiers N, Flavell RA, Di Santo JP, **Willinger T**. CD116⁺ fetal precursors migrate to the perinatal lung and give rise to human alveolar macrophages. *J Exp Med* 219(2):e20210987, 2022.