Single-cell transcriptome and mass cytometry profiling reveals the mechanism of embryonic leukocyte migration

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Tissue-resident macrophages

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- Are critical in tissue development and in host defense
- A broad spectrum of diseases is associated with tissue-resident macrophages
- Currently available macrophagetargeting therapies target all the macrophages throughout the body
- Targeting only a particular macrophage subpopulation would be clinically beneficial



Corliss et al. 2015 Microcirculation





Embryonic monocyte migration

• The molecular players or the mechanisms are almost entirely unknown



 Our rationale is that finding the mechanisms underlying migration of the embryonic macrophages or their precursors can help us to understand their function and will provide a new step towards more detailed macrophage-targeted therapeutic strategies





Mouse fetal liver

Methods

- Single-cell RNA sequencing (scRNA-seq) approach (RNA level)
 - to understand the complex cellular interactions in single-cell resolution
- Mass cytometry (CyTOF) (Protein level)
 - Protein level analysis
 - functional state of cells
- Mass cytometry-based novel imaging (IMC)
 - Localization in tissue





Preliminary results



Thank you!





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