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Human Kidney, Urinary Tract, and Lung Cell Type Mapping Pipeline for the Human Biomolecular Atlas Program (HuBMAP) V.2

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ABSTRACT

This document provides an overview of the protocols used by the Human Kidney, Urinary Tract, and Lung Mapping Center (KULMAP) for generation of spatially resolved mulitomic cell type organ maps within HuBMAP. This involves sequencing of the transcriptomes and epigenomes of dissociated single cells in a massively parallel manner, which will then inform on a highly multiplexed RNA *in situ* imaging method (DART-FISH) for spatial mapping of hundreds of molecular targets in the tissue sections, at a subcellular resolution. These spatial molecular maps will serve as scaffolds for computational registration of cell types and the associated transcriptome/chromatin maps to the tissue space.

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1 Collection and processing of human tissues.

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Bladder, Ureter, Kidney: dx.doi.org/10.17504/protocols.io.568g9hw
Lung airways and parenchyma: dx.doi.org/10.17504/protocols.io.bjuxknxn and dx.doi.org/10.17504/protocols.io.bjtnknme

2 Isolation of single nuclei for omic assays.
Bladder, Ureter, Kidney: dx.doi.org/10.17504/protocols.io.ufketkw
Lung airways and parenchyma: dx.doi.org/10.17504/protocols.io.bh26j8he

3 Running of multimodal single cell/nucleus assays.
10X snRNA-seq: dx.doi.org/10.17504/protocols.io.86khzcw
10X snATAC-seq: dx.doi.org/10.17504/protocols.io.bvssn6ee
SNARE-Seq2: dx.doi.org/10.17504/protocols.io.be5gjg3w

4 Spatial in situ mapping of multiomic profiles.
DART-FISH: Protocols coming soon.

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