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Multimodal imaging pipeline for molecular and cellular characterization of Liver tissue - HuBMAP TTD-Columbia/PSU

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Protocol status: Working

We use this protocol and it's working

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Keywords: cellular characterization of liver tissue, spatial organization of liver tissue, multimodal imaging pipeline, human biomolecular atlas program, multimodal imaging on consecutive tissue section, multimodal imaging workflow, liver tissue, performing multimodal imaging, multimodal imaging, metabolic heterogeneity at tissue, rnascope, single cell level resolution, cellular characterization, hubmap ttd, imaging, hubmap, metabolic heterogeneity

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Abstract

We have developed a workflow to assess the spatial organization of liver tissue with regard to its cellular and metabolic heterogeneity at tissue and single cell level resolution - by performing multimodal imaging on consecutive tissue sections using H&E staining, DESI, $(\text{H}_2\text{O})_n\text{-GCIB-SIMS}$, C60-SIMS, and RNAscope.

This document provides the collection of protocols within the multimodal imaging workflow implemented by Columbia University/Pennsylvania State University Transformative Technology Development Center as a part of Human Biomolecular Atlas Program (HuBMAP, NIH).

Troubleshooting



- 1 Acquire human tissue blocks.
dx.doi.org/10.17504/protocols.io.rm7vzy5wrlx1/v1
- 2 Prepare tissue sections for multimodal imaging on appropriate substrates.
dx.doi.org/10.17504/protocols.io.e6nvwmjzlmk/v1
- 3 H&E staining is performed using standard protocol.
- 4 DESI-IMS is performed as described here.
dx.doi.org/10.17504/protocols.io.ewov1nze7gr2/v1
- 5 (H₂O)_n-GCIB-SIMS-IMS is performed as described here.
dx.doi.org/10.17504/protocols.io.81wgbyynovpk/v1
- 6 C60-SIMS for multiplexed antibody staining is performed as described here.
dx.doi.org/10.17504/protocols.io.b5qmq5u6
- 7 RNAScope imaging is performed as described here.
dx.doi.org/10.17504/protocols.io.kqdg3p3e7l25/v1