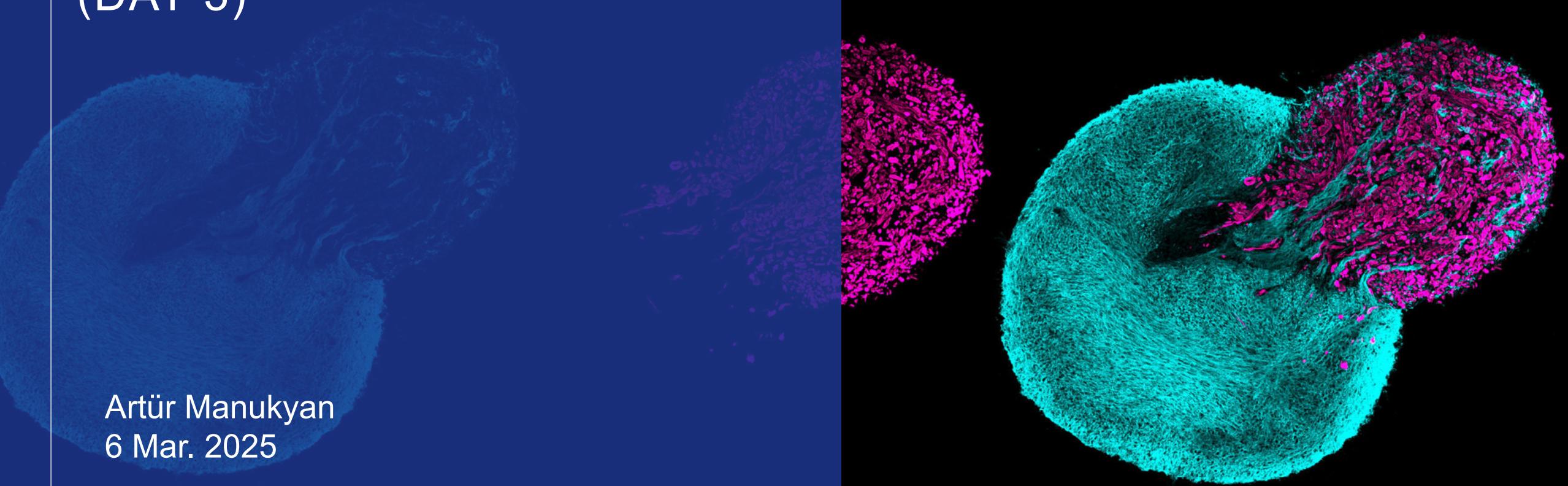


SPATIAL OMICS INTEGRATION (DAY 3)

Artür Manukyan
6 Mar. 2025

BIMSBBioinfo
CompGen2025 Module 2



AGENDA

Spot-level Spatial Omics

1. Spatial Data Alignment

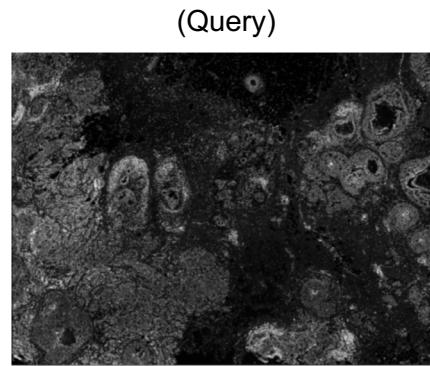
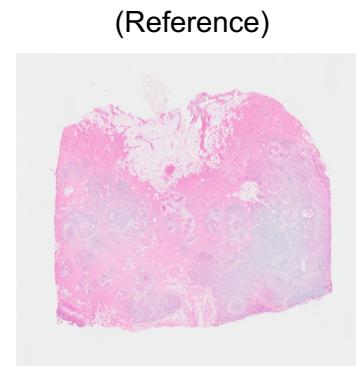
1. Introduction to Image Registration
2. Same Section Alignment (Xenium vs H&E)

2. Multiomics Integration

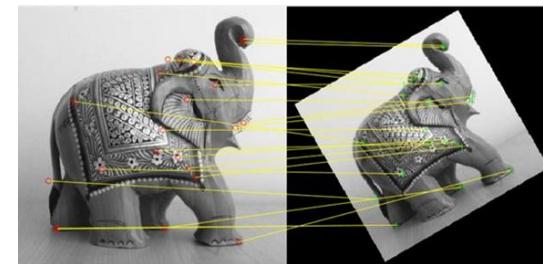
1. Xenium lung COVID19 example
2. Overlaying viral molecules with H&E annotations
3. Label Transfer
4. Interactive Visualization
5. Interactive Annotation

SPATIAL DATA ALIGNMENT

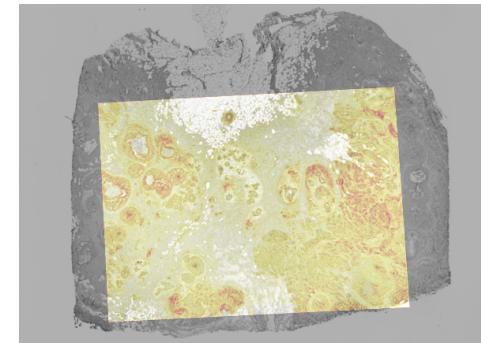
Aligning adjacent tissue sections



Automated/Manual Image Registration



10X GENOMICS
FFPE-preserved
Breast Cancer Block

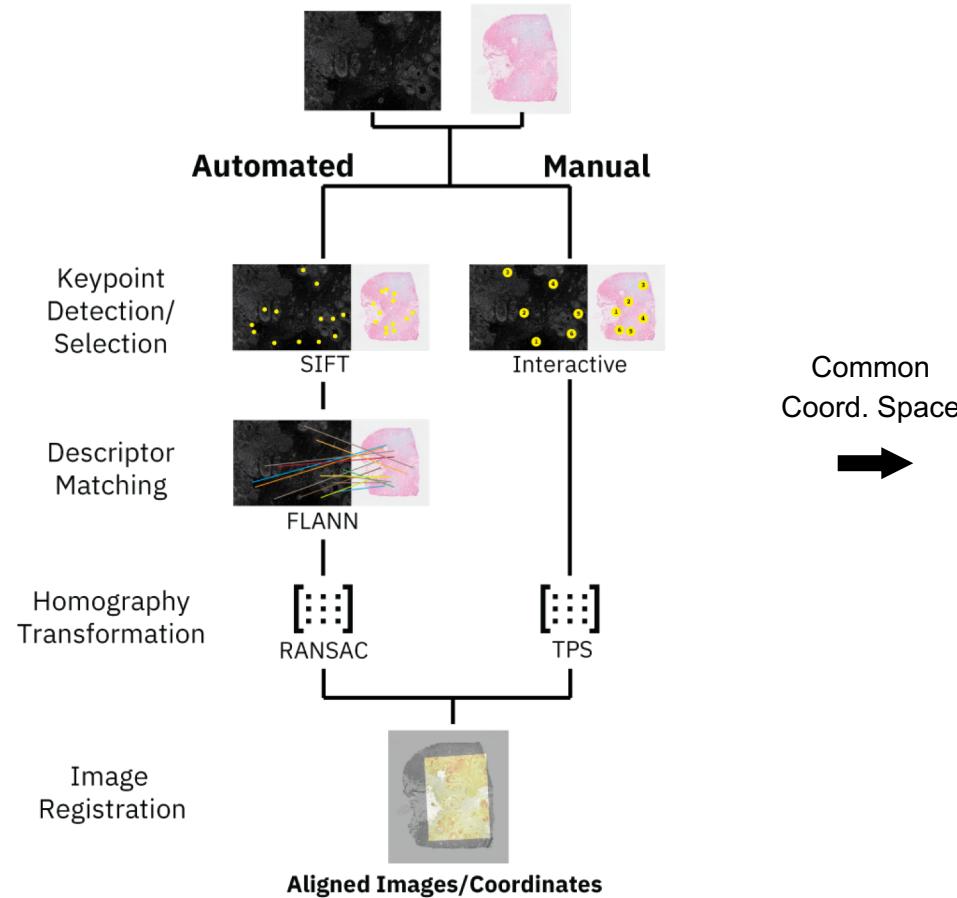


SPATIAL DATA ALIGNMENT

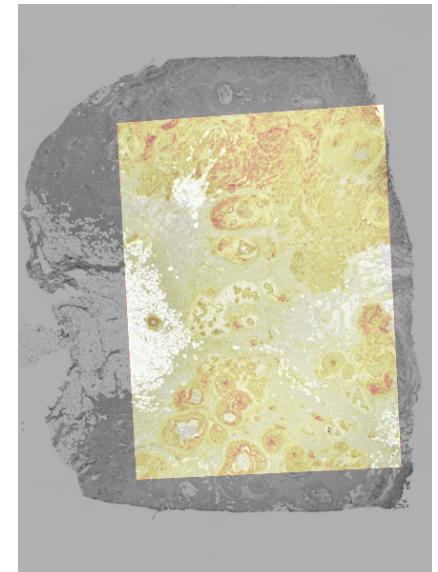
Image Registration



Spatial/Image
Alignment

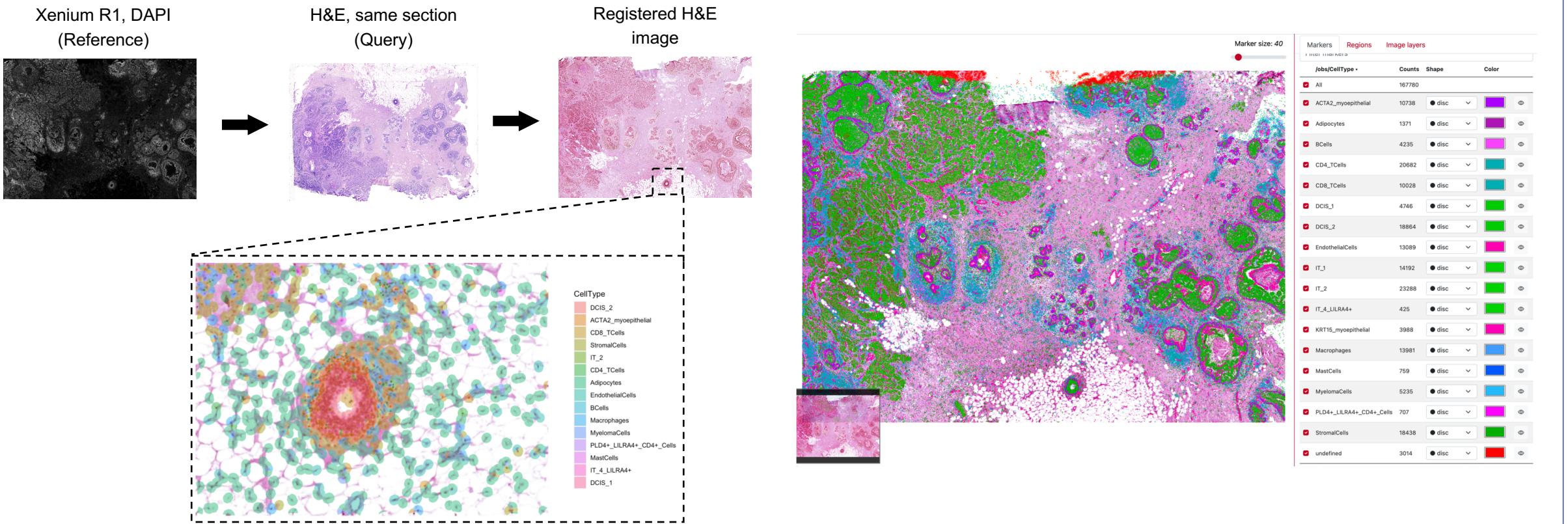


Common
Coord. Space



SPATIAL DATA ALIGNMENT

Aligning H&E images and interactive visualization of spatial localization



VIRAL RNA AS MOLECULE ASSAY

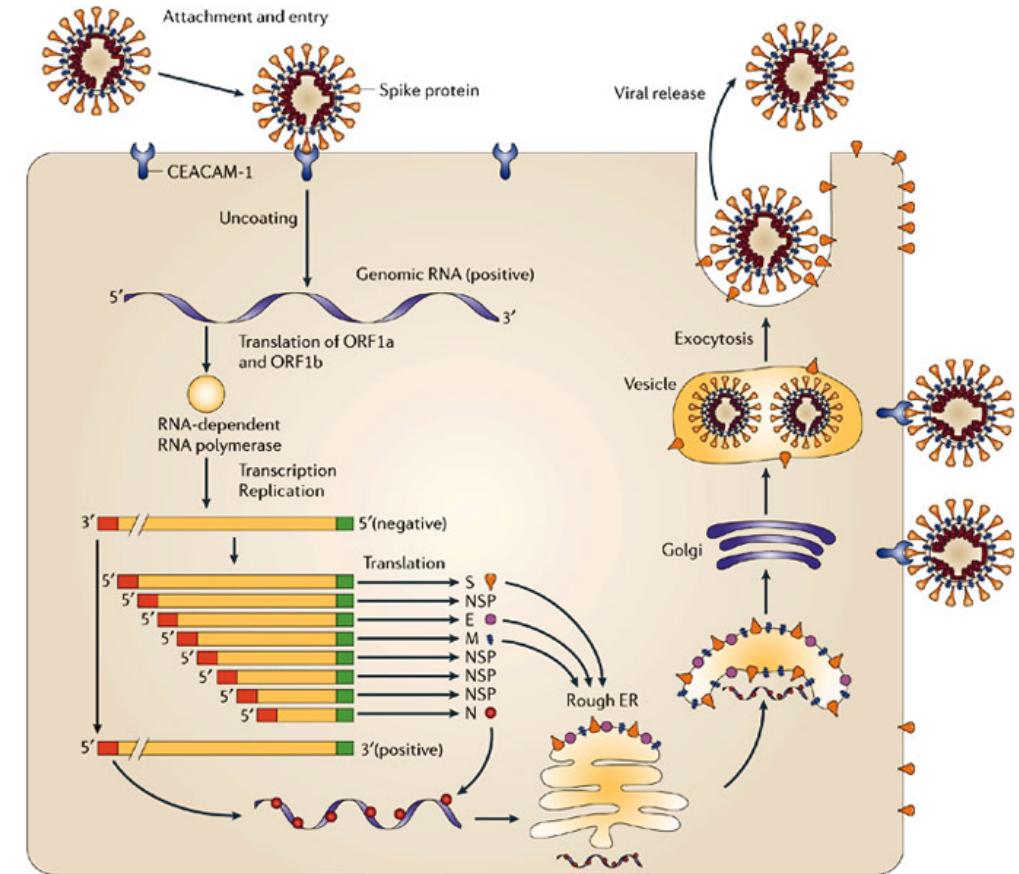
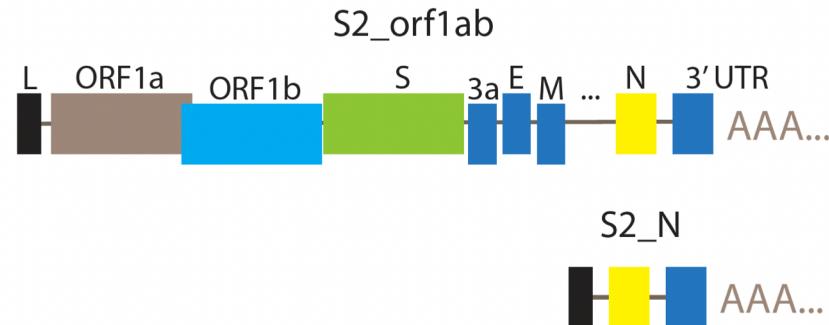
Xenium lung Panel (289)

+

Custom Panel (48)

+

S2_orf1ab, S2_N



AUTOMATED CO-REGISTRATION

Xenium molecules vs Pathology Annotations

