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Image Registration of MALDI IMS to Microscopy

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Nathan Heath Patterson[1], Elizabeth Neumann[1], Jamie Allen[1], Danielle Gutierrez[1], Jeff Spraggins[1]

[1]Vanderbilt University

VU Biomolecular Multim... | Human BioMolecular Atl...

Jamie Allen
Vanderbilt University

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Protocol status: Working
We use this protocol and it's working

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Abstract

Scope:
To process to register MALDI IMS images to different types of microscopy images.

1 Generate a MALDI imaging mass spectrometry (IMS) pixel map using regToolboxMSRC https://github.com/nhpatterson/regtoolboxmsrc

2 Using FIJI ImageJ, select corresponding laser ablation marks and IMS pixels in the post-acquisition autofluorescence (post-AF) and IMS pixel map, respectively. https://fiji.sc

3 Use a "Landmark Correspondences" FIJI plugin to find an affine transformation between the two images, resampling the post-AF image to the IMS pixel map by selecting post-AF image as source image, and IMS pixel map as the template image within the plugin.

4 Save the post-AF image.

5 Using regToolboxMSRC again, align other microscopy modalities (pre-IMS acquisition autofluorescence, brightfield PAS, multiplex immunofluorescence) to the newly saved post-AF image.

6 When complete, all images will be sampled in the same coordinates as the IMS pixel map.