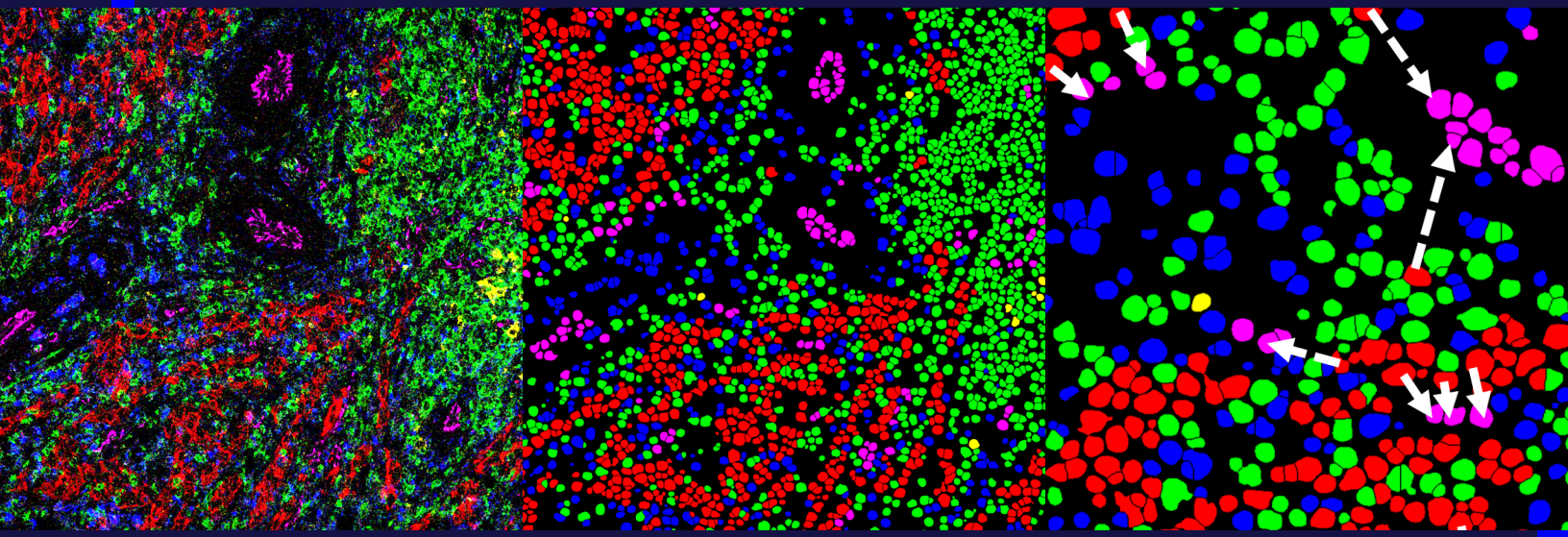
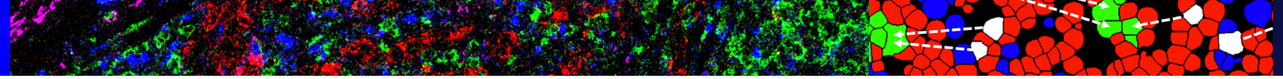
Ionpath MIBI™

MULTIPLEXED IMAGING & QUANTITATIVE, SPATIAL CELL PHENOTYPING



Leverage the power of MIBI and obtain actionable insights from the tissue microenvironment



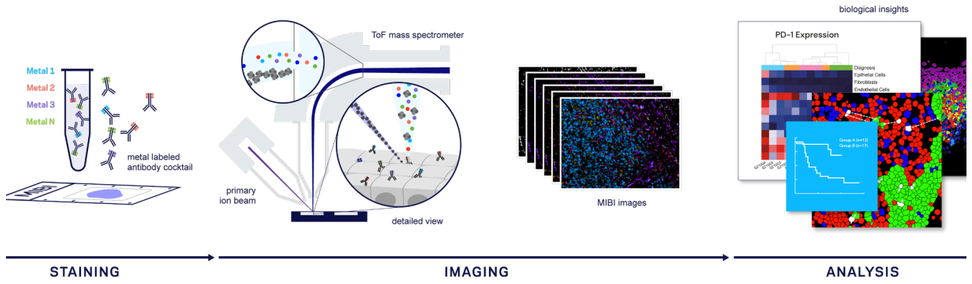
Ionpath MIBI™

HIGH-RESOLUTION, MULTIPLEXED TISSUE IMAGING & QUANTITATIVE, SPATIAL PHENOTYPING

Actionable insights from quantitative spatial phenotyping with MIBI technology

Reveal the composition of the tissue microenvironment with speed and reproducibility

Multiplexed Ion Beam Imaging (MIBI) combines state-of-the-art focused ion beam imaging with time-of-flight mass spectrometry to provide rapid, robust, high-resolution multiplexed tissue imaging of 40+ protein markers in a single scan. And, the sophisticated AI-powered analysis enables fast, accurate cell phenotyping results a pathologist would provide.



Phenotype
40+
cell populations

Single Staining Step

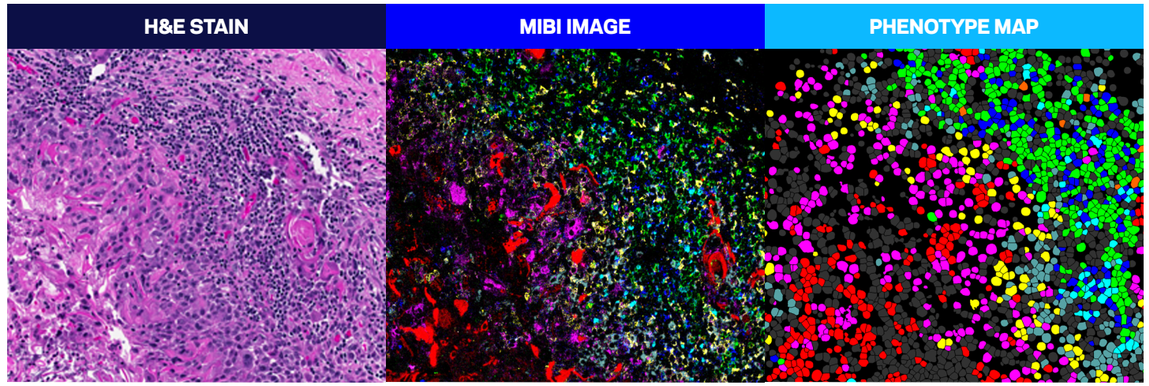
Following an IHC workflow, MIBI antibody staining is flexible and extensible to a wide variety of biological models for up to 40 markers in one single staining step, thus eliminating batch effects.

Single Imaging Step

The location of each protein is detected by scanning a highly focused ion beam across the tissue surface in a pixel-wise manner gently removing the metals and sending them into a time-of-flight mass spec for precise quantification of the proteins expressed at each scanned pixel—resulting in 40+ simultaneous images with subcellular resolution.

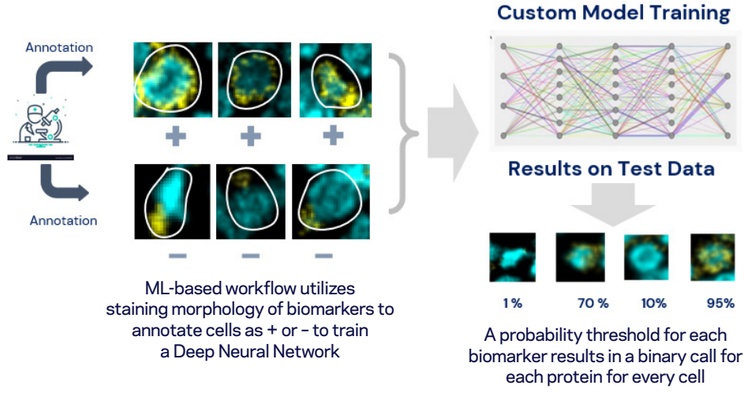
Single Cell Results

MIBI is inherently free of tissue background and bleed-through effects making it highly quantitative and reproducible. Robust segmentation and phenotyping algorithms based on state-of-the art AI/ML techniques quickly identifies cell boundaries and types, mimicking pathologist criteria.



Advanced AI-powered analysis provides fast, accurate spatial cell phenotyping the way a pathologist would

Machine Learning Based Classification Workflow

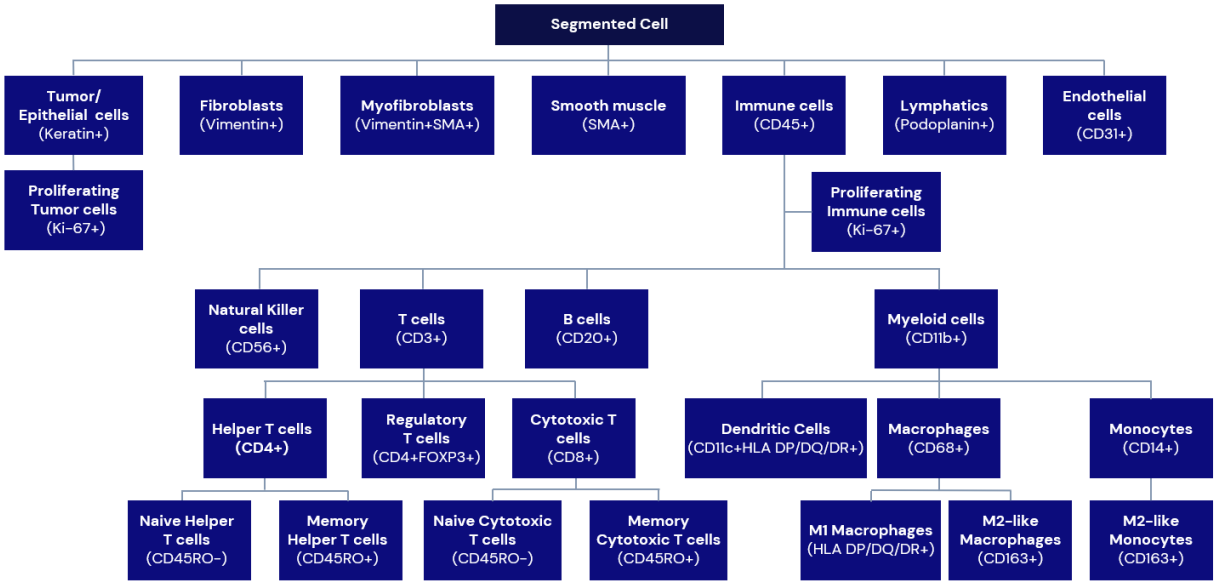


ML-based workflow utilizes staining morphology of biomarkers to annotate cells as + or – to train a Deep Neural Network

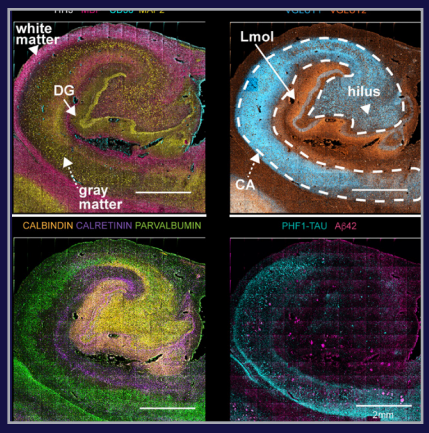
A probability threshold for each biomarker results in a binary call for each protein for every cell

ML-based workflow utilizes
staining morphology of biomarkers as well as cell gating
via cell classification markers

Cell Classification Hierarchy



RESEARCH SPOTLIGHT I NEUROPATHOLOGY RESEARCH ENABLED BY MIBI



MIBI images of archival human brain tissue from an individual with Alzheimer's disease dementia

PROFILING HUMAN NEUROPATHOLOGY IN ALZHEIMER'S

In a study of archival brain tissue from individuals with different stages of Alzheimer's Disease Dementia (ADD), **MIBI** analysis of FFPE hippocampal tissue enabled researchers to visualize the tissue architecture and related subregions (e.g., the dentate gyrus [DG]) as well as see proteopathic accumulation of Tau proteins and additional salient neuropathological features of disease progression.

With MIBI, the researchers were able to overcome common challenges of brain tissue imaging such as autofluorescence or the daunting task of visualizing such a diverse landscape of cell types and cell shapes -- including ramified neuronal cells.

Talk to us about your research needs

Set up an appointment with our expert scientific team.

Email us at
research@ionpath.com

IONPATH

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