

Same-slide multiplex immunofluorescence and brightfield histological staining as a new research tool for fast and comprehensive pathology assessment of the tumor microenvironment



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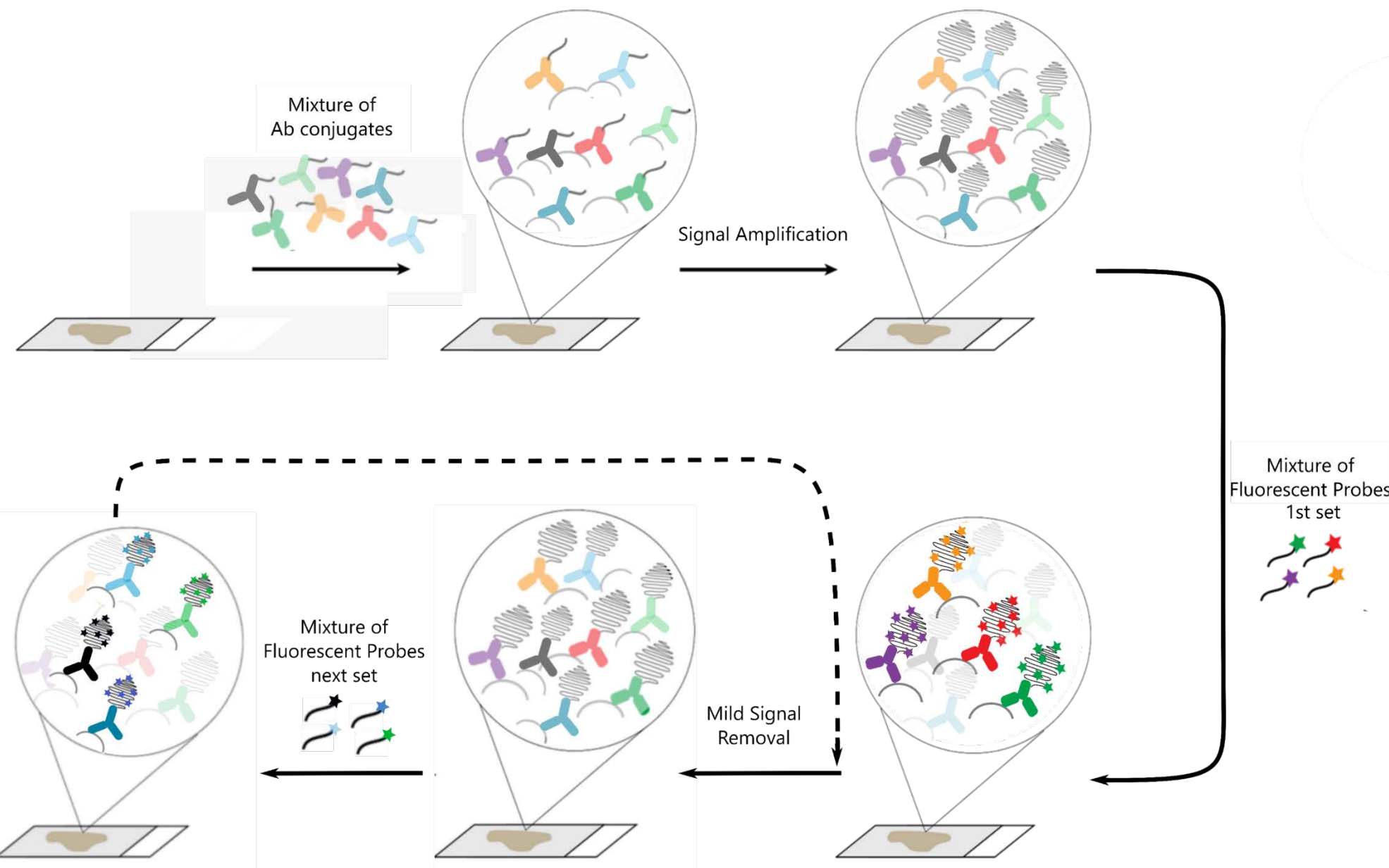
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Introduction:

Innovative and efficient translational research tools enabling a better understanding of the tumor and its microenvironment are critical for the development of digital pathology. Current immunohistochemistry (IHC) methods limit the depth of information from a single tissue sample to a single target in the case of chromogenic staining, or to sample morphology and general cell identification in the case of hematoxylin and eosin (H&E). Accurate phenotyping of each cell must be performed with a single section, as serial sections may not contain the same cells, especially small immune cells such as T cells. Multiplex immunofluorescence (mIF) methods have been established to provide insights into a wide number of markers of interest and their spatial context in a single sample. Here, we demonstrate a new research approach combining multiplexed detection of protein markers with standard H&E pathology review in tumor samples, in a streamlined, single-day sample-to-answer workflow.

Methods:

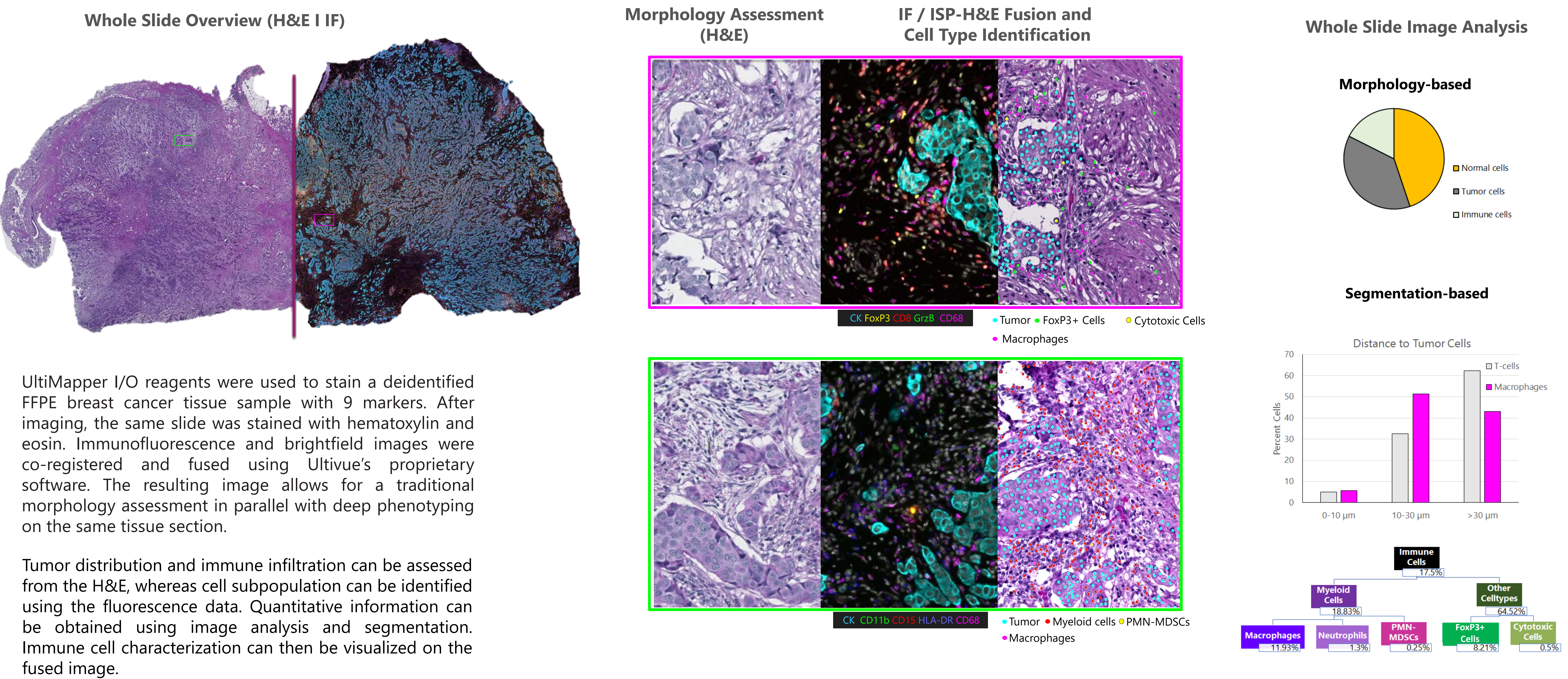


Key Assay Features

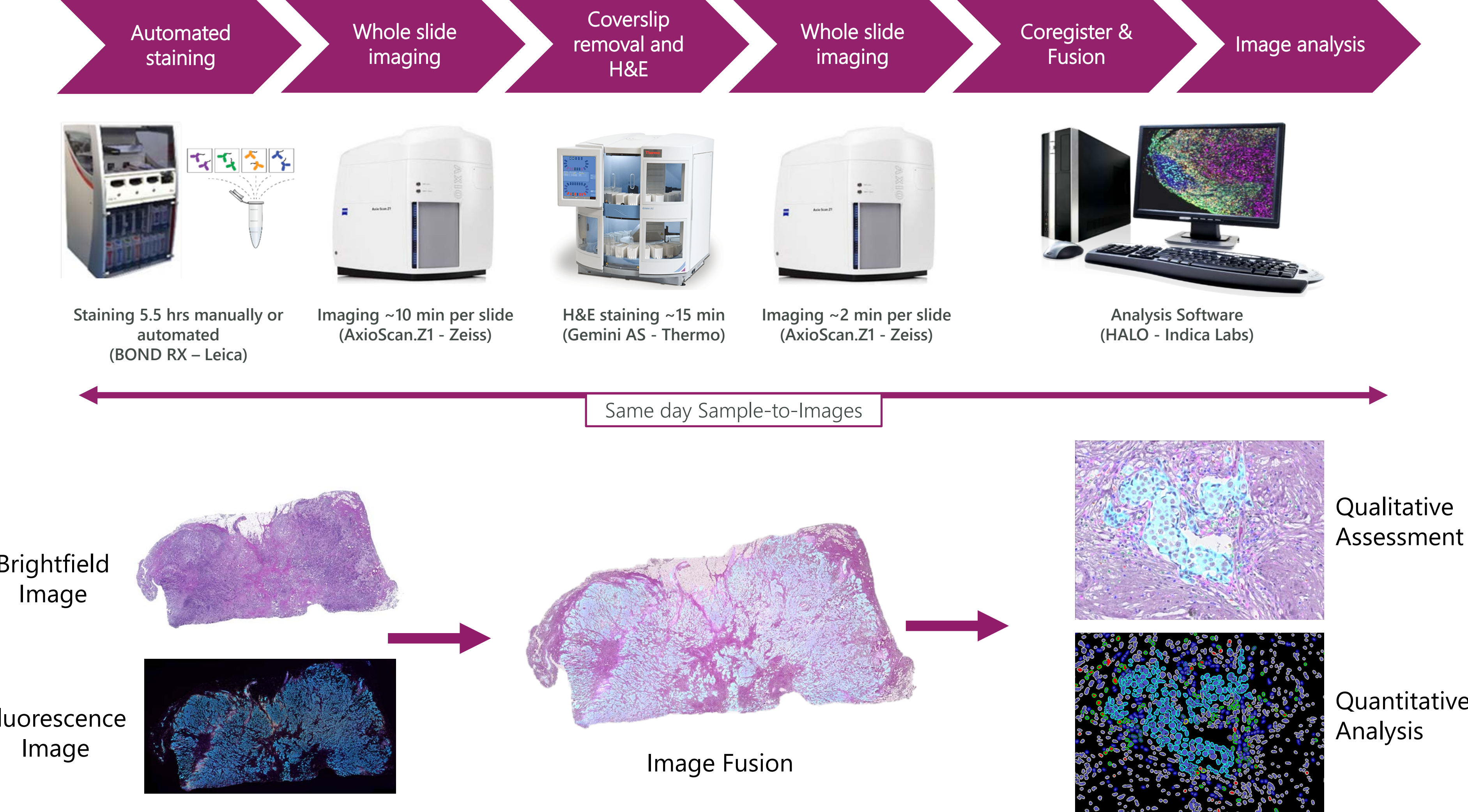
- ▶ Easy staining protocol allows for a fast workflow
- ▶ Whole slide imaging capabilities for all markers
- ▶ Gentle signal removal preserves specimen morphology
- ▶ Workflow compatible with conventional imaging and software analysis platforms

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Whole Slide H&E and ISP Fusion: Tumor Assessment and Phenotyping



ISP and H&E Fusion Workflow:



Conclusion:

The whole-slide H&E and ISP fusion workflow allows researchers to stack mIF images and H&E images from the same section into a single fused image available for tissue and cell analysis without the need for proprietary equipment or spectral unmixing.

This new workflow enables a quick and easy way to study high-plex, quantitative, cell-to-cell interactions the response of the immune system within the tumor microenvironment.

Combining the benefits of standard tissue morphology assessment with multiplexing allows researchers to benefit from fast qualitative assessment, deep phenotyping, and quantification of immune cells from the same section.

Key Technology Feature

Ultivue technology allows for fast and comprehensive analysis of the tumor microenvironment by combining novel mIF approaches with traditional staining methods on the same tissue section.