



# **PHENOIMAGER HT 2.0**

## **The Fastest Spatial Signature Solution**

# SPATIAL SIGNATURES: A NEW STANDARD FOR PREDICTIVE VALUE

## What are Spatial Signatures?

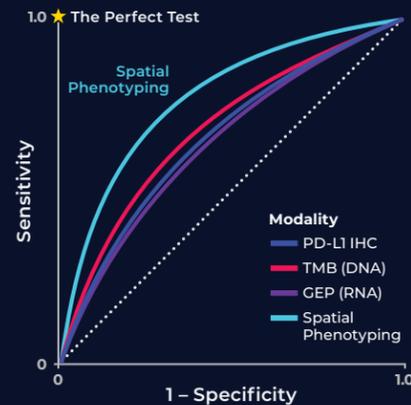
Spatial Signatures are predictive biomarkers based on spatial relationships and protein co-expression of specific cellular subsets assessed within the context of the tumor micro-environment (TME). These spatially determined predictive biomarkers measured by multiplex immunofluorescence provide deeper insights into tumor-immune biology and could inform treatment response.



These unique predictive biomarkers can be based on the following within the TME:  
presence or absence of a phenotype, proximity, density, structures or unique neighborhood or a combination of these features.

## Spatial Signatures Outperform Other Biomarker Modalities in Predicting Immunotherapy Response

A large-scale meta-analysis of data from more than 50 studies, 10 types of cancer and outcome data from more than 8,000 patients, published in JAMA Oncology<sup>1</sup> showed that spatial phenotyping measured by multiplex immunofluorescence (mIF) more accurately predicts patient response to anti-PD-1/PD-L1 therapy than other biomarker assays, including PD-L1 IHC, tumor mutational burden (TMB), and gene expression profiling (GEP).



1. Lu S, et. al., JAMA Oncol. 2019, 5(8):1195-1204

# EXPERIENCE THE FASTEST SOLUTION FOR SPATIAL SIGNATURES

## Why choose the PhenImager<sup>®</sup> HT 2.0?

As the premier and most highly cited imager for spatial phenotyping and spatial signature development, the PhenImager HT 2.0 is the fastest whole-slide multispectral imaging system that can be easily integrated into high-throughput workflows to accommodate for scalability.



### SPEED

The fastest imager for spatial phenotyping and signature development



### ACCURACY

Onboard spectral unmixing enables quantitative and accurate phenotyping



### HIGH THROUGHPUT

Image 400+ multiplex stained slides per week to fit any project of your scale



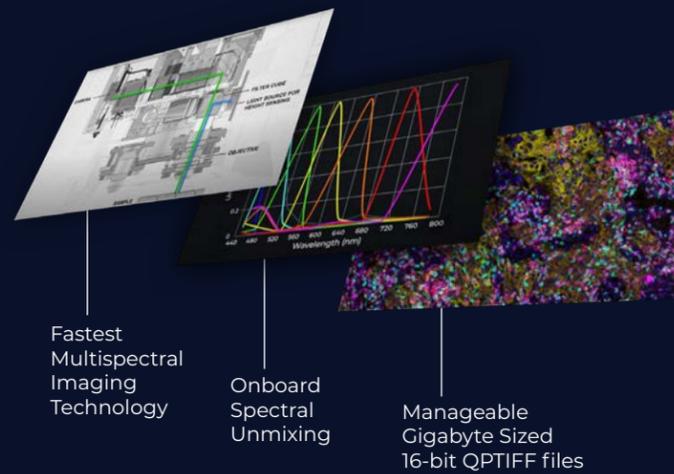
### PROVEN

350+ instrument installations; 1000+ cited publications

# PHENOIMAGER HT 2.0

## A Unique Technology Stack Designed to Provide Best-in-Class Performance

Spatial Biology 2.0 is about developing spatial signatures at scale. To accomplish this Phenolmager HT 2.0 equips researchers with a unique technology stack combining onboard spectral unmixing, rapid imaging and manageable data outputs, delivering unparalleled performance for spatial signature development.



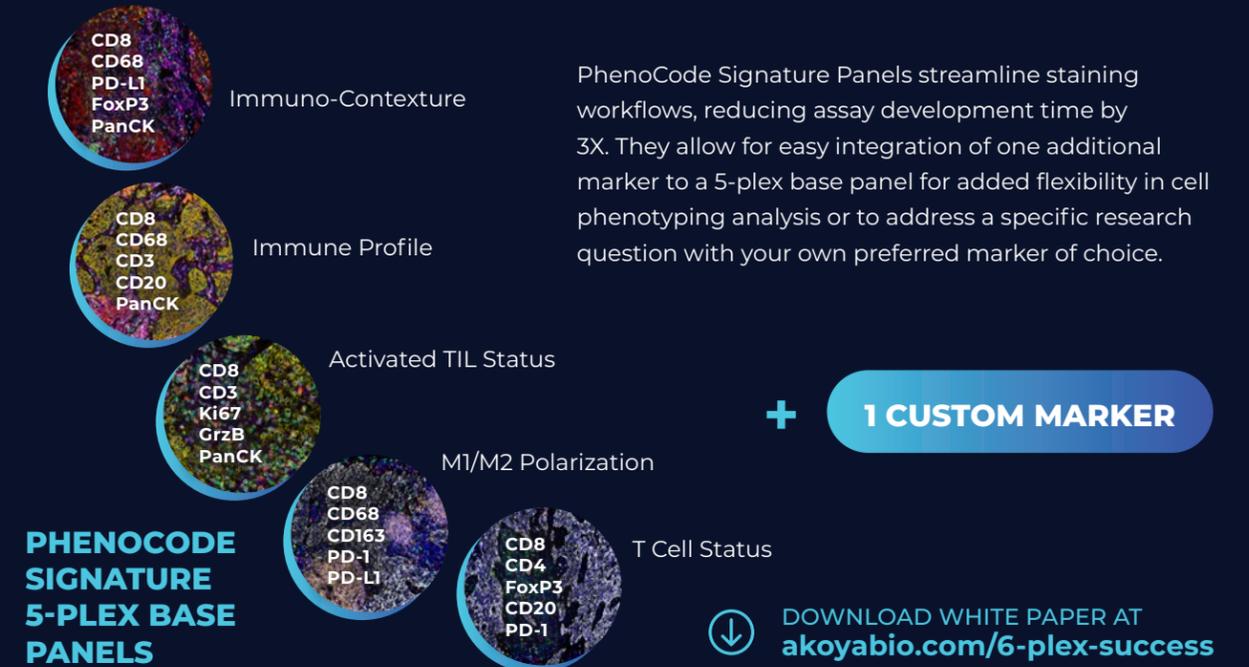
## The Fastest End-to-End Solution for Spatial Signature Development

The discovery and validation of Spatial Phenotypic Signatures requires a solution that easily integrates staining, imaging, and analysis using existing workflows while providing speed, accuracy and reproducibility.



# SCALE MEETS FLEXIBILITY

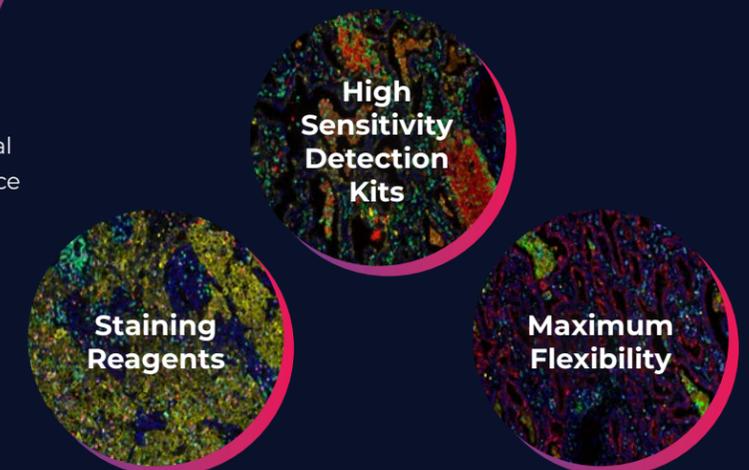
## PhenoCode Signature Panels



# SENSITIVITY & VERSATILITY

## Opal TSA Chemistry

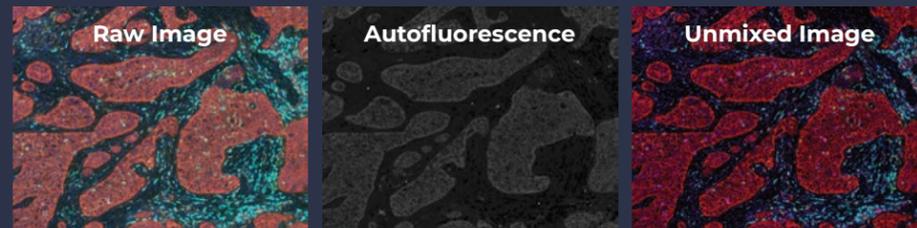
Akoya's Opal<sup>®</sup> Tyramide Signal Amplification (TSA) chemistry is the ideal choice for multiplex immunofluorescence with maximum flexibility. It offers the capability to identify low-abundance proteins with a sensitivity 10 to 100 times greater than chromogenic IHC, and an expanded dynamic range for the simultaneous detection of up to 8 markers.



# PHENOIMAGER HT 2.0: ACCURATE DATA FASTER

## Data Accuracy with Higher Plexing

Accurate multiplex immunofluorescence analysis is often complicated with issues such as tissue autofluorescence and spectral overlap.



Lung Cancer stained with a 6-plex Panel:

DAPI    PD-1  
CD8    panCK  
PD-L1 CD68  
FoxP3

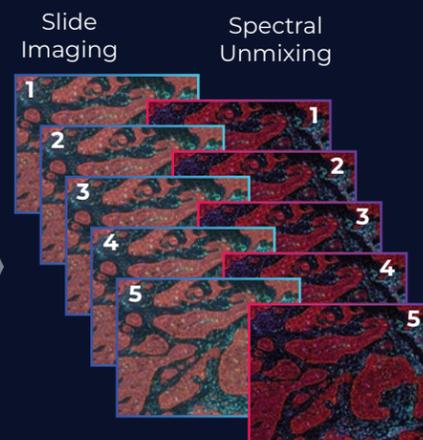
Akoya's patented multispectral imaging (MSI) and spectral unmixing technology applied to stained fluorescent images can isolate autofluorescence, **increasing accuracy** of phenotyping up to 50%.

## Fast and Easy: One-click Spectral Unmixing



Phenolmager HT 2.0

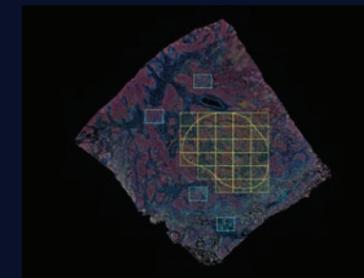
Parallelized Spectral Unmixing provides a **5X faster** workflow



Ready-to-analyze spectrally unmixed 16-bit QTIFF Images

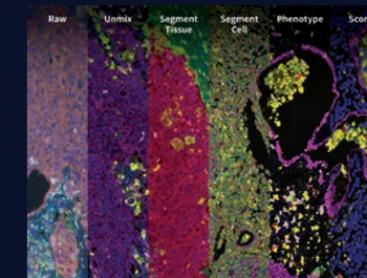
# FROM IMAGES TO PHENOTYPES TO SIGNATURES

Akoya's QTIFF file format revolutionizes spatial imaging, rendering it manageable and efficient with Gigabyte-sized files while preserving high data quality. The QTIFF file format seamlessly integrates into Phenolmager HT 2.0 image analysis software suite (Phenochart, inForm and phenoptrReports), Akoya's software partner platforms, and open-source solutions.



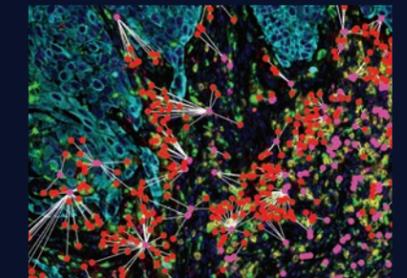
### Phenochart™ Viewer

Whole-slide contextual viewer enabling viewing and annotation



### inForm™ Software

Patented automated tissue analysis software for segmentation, phenotyping and scoring



### phenoptrReports

Powerful analytical tool to analyze spatial relationships

Learn more about software solutions for spatial signature development at [akoyabio.com/software](https://akoyabio.com/software)

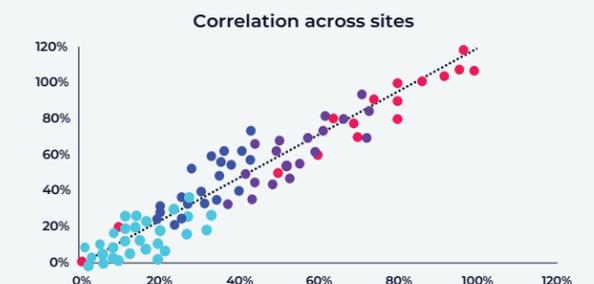
## CASE STUDY

### Spatial Signature End-to-End Workflow Standardization

#### The First Multi-Institutional Analytical Demonstration of a Spatial Biology Workflow

The MITRE Study established the high reproducibility and robustness of Akoya's Phenolmager platform for spatial phenotyping in clinical and translational research.

Learn more about workflow validation at [akoyabio.com/mitre-validation](https://akoyabio.com/mitre-validation)



# From Spatial Discoveries to Spatial Signatures At YOUR Scale

## DISCOVERY

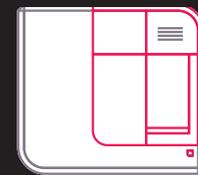


PhenoCycler®-Fusion 2.0

Supports 100+ biomarkers depending on barcode compatibility

### MULTIPLEXING CAPABILITIES

## TRANSLATIONAL



Phenolmager® HT 2.0

Separates up to 9 colors, even if overlapping

2 slides

### SLIDE AUTOMATION

80 slide (with continuous loading technology)

25 minutes per cycle

### SPEED (1.5 CM X 1.5 CM)

Fluorescence: 12 min (7 colors);  
Brightfield: 6 min

Whole-slides FFPE and Fresh Frozen;  
Tissue sections and microarrays

### TISSUE FORMAT

Whole-slides FFPE and Fresh Frozen;  
Tissue sections and microarrays

Fluorescence, Brightfield

### DETECTION METHOD

Fluorescence, Brightfield

10X (1.0  $\mu\text{m}/\text{pixel}$ ), 20X (0.5  $\mu\text{m}/\text{pixel}$ ) or  
40X (0.25  $\mu\text{m}/\text{pixel}$ )

### RESOLUTION

10X (1.0  $\mu\text{m}/\text{pixel}$ ), 20X (0.5  $\mu\text{m}/\text{pixel}$ ) or  
40X (0.25  $\mu\text{m}/\text{pixel}$ )

Akoya & third-party solutions

### IMAGE ANALYSIS SOFTWARE

inForm®, phenoptrReports &  
third-party solutions

Akoya Biosciences' whole-slide scan  
image (.QTIFF)

### FILE FORMATS

Akoya Biosciences' whole-slide scan  
image (.QTIFF), Multispectral images  
(.im3), color images (.JPEG, .BMP, .PNG)