FROM IMAGES TO INSIGHTS: DEEP SPATIAL PROFILING REVELS DISEASE AND TREATMENT BIOMARKERS

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Background Selecting the right biomarkers is important for success in phase transitions of clinical trials. Biomarkers selected using conventional techniques (TMB, PD1/PD-L1 IHC) have several limitations. There is a growing need to identify high-quality biomarkers to support clinical research and spatial biology is showing promise in providing these answers.1

Methods Multiplex immunofluorescence (mIF) has increasingly allowed us to select high-quality protein biomarkers that correlate more strongly with patient outcomes. We are using a 51-plex panel that covers a range of functional and tumor microenvironment-related biomarkers, including lymphoid and myeloid cell markers, tissue biomarkers, antigen presenting cells, and immune checkpoint and activation markers.2

Results By analyzing this comprehensive panel of biomarkers, we have identified cell types that are up or downregulated in different disease states. Further, we have explored the spatial relationships between cells, uncovering important differences in cell-to-cell interactions and neighborhoods between disease states.

Conclusions These spatial profiles provide a powerful toolkit for discovering key biomarkers in various diseases and treatments. These spatial profiles also form the basis for predicting treatment outcomes with high accuracy.

REFERENCES

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