Multispectral Imaging to Detect Immune Phenotypes Within the Tumor Microenvironment in a Multi-Tissue Study: A Fully Automated 7-color mIF Immuno-Oncology Workflow

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1. Background

Immunotherapy and precision medicine are rapidly developing approaches to cancer therapy. Biomarkers that detect the tumor and tumor microenvironment allow for the development of strategies that accelerate the advancement of treatments to enhance a patient’s immune system. Akoya’s MOTIF PD-1/PD-L1 Panel is a validated, multiplex immunoassay enabling detection of the 6 most clinically relevant immune-oncology and spatial biomarkers: PD-1, PD-L1, Foxp3, CD8, CD68, and PanCK. The MOTIF PD-1/PD-L1 Panel was used to analyze the tumor microenvironment and specifically assess immune phenotypes of different types of cancers: non-small cell lung cancer (NSCLC), colon adenocarcinoma, head and neck squamous cell carcinoma (HNSCC), and breast cancer. We demonstrate the utility of Akoya’s MOTIF PD-1/PD-L1 panel kit in studying the cellular diversity of various cancers while retaining spatial context. Stained slides were analyzed using the InForm and PhenoptrReports image analysis platforms to identify and better understand spatial relationships between a variety of samples and complex cell phenotypes. The MOTIF PD-1/PD-L1 panel kit provides reproducibility across different tissue types. These data provide insight into the innate and adaptive immune environment for targeted design of new immunotherapies and have implications for improving the treatment paradigm across many tumor types.

2. Methods

3. Results

4. Conclusions

The ready-to-use MOTIF PD-1/PD-L1 Lung Cancer kit was used to analyze the immune microenvironment of NSCLC, breast cancer, colon cancer, and head and neck squamous cell carcinomas across multiple patients in order to provide reproducibility data across the different tissue types. In tumor samples from NSCLC, breast cancer, colon cancer and head and neck squamous cell carcinoma indications, we were able to identify populations of PD-L1, CD8, Foxp3, CD68, and PanCK positive cells as well as co-localization of multiple phenotypes. Our goal is to help our clients utilize the customizable MOTIF PD-1/PD-L1 lung cancer kit to analyze the immune microenvironment in various cancer indications using the most relevant immuno-oncology biomarkers.

References