Background: Pancreatic ductal adenocarcinoma (PDAC) is one of the most aggressive forms of cancer with a five-year survival rate that has remained below 10% for the past two decades. While immunotherapy-based treatment in recent years has demonstrated great success in stimulating anti-tumor T cell immunity in a wide variety of cancers, immunotherapy has had very limited success in pancreatic cancer patients. PDAC is characterized by a highly immunosuppressive tumor microenvironment (TME), dominated by Myeloid Derived Suppressor Cells (MDSCs), Type 2 Tumor-Associated Macrophages (M2 TAMs), and T regulatory cells (Tregs). While the presence of these cell types in the PDAC TME is well characterized, much still remains to be understood about how they function within the TME and how they co-operate with each other and tumor-resident lymphocytes to regulate antitumor immunity.

Methods: MultiOmyx™, a novel hyperplexed multi “omic” technology, enables visualization and characterization of multiple biomarkers on a single 4 μm tissue section. MultiOmyx protein immunofluorescence (IF) assays utilize a pair of directly conjugated Cyanine dye-labeled (Cy3, Cy5) antibodies per round of staining. Each round of staining is imaged and followed by novel dye inactivation chemistry, enabling repeated rounds of staining and deactivation for up to 60 protein biomarkers. In this study, MultiOmyx hyperplexed IF assay was utilized to measure CD11b, CD14, CD15, CD16, CD33, CD45RO, CD68, CD163, FoxP3, HLA-DR, Arginase1, PD-1, PD-L1, granzymeB, Ki67, and PanCK protein expression from a single 4 μm FFPE section.

Results: Using the MultiOmyx™ multiplexing assay in combination with proprietary algorithms for specific biomarker classification, we will report on the correlation between the presence of monocytic MDSCs (CD11b+CD33+CD14+CD15+HLA-DR+), granulocytic MDSCs (CD11b+CD33+CD15+CD14-HLA-DR+), M2 TAMs (CD68+CD163+), Tregs (CD3+CD4+FoxP3+) and the activation state of TILa, as well as their spatial relationship in tumor tissue from patients with PDAC.

Conclusions: Using the MultiOmyx™ multiplexing assay will allow us to analyze correlations between immunosuppressive cells and TILs in the pancreatic TME.

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Using MultiOmyx™ to analyze correlations between immunosuppressive cells and tumor-infiltrating lymphocytes in the pancreatic tumor microenvironment


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