

POSTER PRESENTATION

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Immune-cancer interactions in tumors and tumor-draining lymph nodes: Novel prognostic indicators for breast cancer

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It is becoming clear that immune cells play many important but sometimes conflicting roles in cancer. Immune profile changes at sites of immune-cancer interactions, such as the tumor microenvironment and tumor-draining lymph nodes (TDLNs), may represent a sensitive predictor of local and distant tumor metastasis. However, standard pathologic analysis of tumor sections has remained at the visual assessment of one marker per serial section level; it would be extremely useful to be able to visualize the distributions of multiple phenotyped immune and other cells in-situ in solid tumors to dissect the complex interplay between immune/stromal cells and cancer cells within tumors, tumor-draining lymph nodes (TDLNs), and blood. We generate immune profiles that include complete immunophenotyping and identification of cellular spatial relationships within and between the tumor microenvironment and TDLNs from formalin-fixed paraffin-embedded lymph node and tumor specimens from cancer patients using a combination of multiplexed IHC/IF, multispectral imaging, and automated image analysis which delivers quantitative per-cell measures of each marker. These per-cell intensities are then translated into a phenotype for each cell. We have found that immune cell populations as well as their spatial distributions and clustering patterns have strong correlation with clinical outcome.

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