Vaccine based combinatorial immunotherapy converts pancreatic cancers into an immunologic disease
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Barriers to immunotherapy clinical successes for pancreatic cancer have been due to a lack of understanding of the immune pathways within the tumor microenvironment that hinder successful immune responses. We now know that non-neoplastic cells, including cancer-associated myofibroblasts, regulatory T cells, dendritic cells, myeloid-derived suppressor cells, and tumor-associated macrophages, are hijacked by pre-invasive and invasive cancer cells to create a tolerogenic tumor microenvironment. With the recent advances in molecular technologies and the development of relevant pancreatic cancer mouse models, it is now within our reach to dissect the inhibitory pathways within the pancreatic tumor microenvironment. This will in turn, lead to new therapeutic opportunities that will eliminate these barriers and convert this deadly cancer into a treatable disease. We are now developing combinatorial immunotherapies of T cell inducing agents with modulators of T cell down regulatory signals. These studies have shown for the first time that traditionally “non-immunogenic” cancers can be converted into tumors susceptible to immunotherapy. Results from both pre-clinical and clinical studies will be discussed.

References