Susan G. Komen
Research Grants – Fiscal Year 2014

This research grant was approved by Komen's national board of directors for FY2014 Research Programs funding. This grant will be funded upon the execution of grant agreements between Komen and the grantee institutions.

Exploratory Study of Immune Cells in Breast Cancer

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Lead Organization: Dana-Farber Cancer Institute
Grant Mechanism: KS **Grant ID:** SAC110055

Public Abstract:
There has always been hope that immune therapies would be effective In the treatment of breast cancer. In fact, Trastuzumab, pertuzumab and TDM-l in the treatment of HER2-positive breast cancers have transformed the treatment of HER2 positive breast cancers. Whiie some of their efficacy is because of their targeted effects on the HER2 and HER3 molecules, there are data that some of their effect is through an immune mechanismthey are antibodies. Other immune strategies have recently been shown to have remarkable activity in the treatment of melanoma (ipilumimab, anti PD-l and anti PD-Ll antibodies), the latter also in renal cell carcinomas and non-small cell lung cancer, leukemias (CARS), and specific vaccines (pancreatic cancers) and lymphomas (other antibodies). In this project, we will collaborate with Dr. Glenn Dranoff, a leading cancer immunologist, to examine a group of breast cancersthat are not HER2 positive. We will look at triple negative breast cancers, where many are shown to have a lot of immune cells associated with them, the function of which is unknown, and ER+HER2 negative tumors, where an immune treatment targeting the problem of tumor dormancy would be of interest. Ultimately, we hope to use the data from this exploratory analysis to help devise ways to identify breast cancer subsets that might benefit from targeted immune treatment strategies. in the second aim, we will compare the tumors to a group of tumors from BRCAl and BRCA2 patients, and see whether the distribution of immune cells is different by subtype. While there is no prospect for direct prevention implications at this time, if the BRCA-associated tumors have unique immune profiles, there may be the possibility of ultimately exploiting the immune findings for the development of vaccines for primary prevention for these high risk groups.