



**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.

Mechanism by which BRCA1 elicits a state of mammary epithelial differentiation control

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Lead Organization: Dana-Farber Cancer Institute and Harvard Medical School

Grant Mechanism: KS

Grant ID: SAC110022

Public Abstract:

We have generated results that suggest the existence of a new step in the process by which breast cancer (BrCa) develops in BRCA1 mutation-bearing women. It involves the function of a complex of proteins that include BRCA1 and a known partner protein that operates in the formation of normal organs, BRG1. Our data, which emerged from studies of BRCA1-specific phenomena in ostensibly normal BRCA1 mutation-carrying mammary epithelial cells, predict that maintenance of the normal function of this complex represents a function by which BRCA1 insures the normal development of the human breast. A breakdown in this process would, in all likelihood, leave the gland open to the development of additional events that may well lead to malignancy. Our proposal is to test this hypothesis rigorously. Positive results would highlight the function of BRCA1/BRG1 complexes in normal mammary gland development and BRCA1-driven BrCa suppression. Positive results would create opportunities for the discovery of novel strategies that lead to mechanism-based BRCA1 BrCa prevention.