Susan G. Komen for the Cure
Research Grants – Fiscal Year 2011

This research grant was approved by Komen's national board of directors for FY2011 Research Programs funding. This grant will be funded upon the execution of grant agreements between Komen and the grantee institutions.

Ecdysoneless, a novel regulator of breast cancer cell proliferation

Investigator(s): Vimla Band, PhD
University of Nebraska, NE
Grant Mechanism: Post Doctoral Fellowship - Basic Research

Fellow: Sameer Mirza, PhD
Awarded**:** $180,000.00
Research Focus: Biology

Public Abstract:
Public Abstract: Breast cancer is the most common type of cancer and second leading cause of cancer-related deaths in women in the United States. Breast cancer basically is a disease of uncontrolled growth of cells that line the milk-forming ducts of the breast (called mammary epithelial cells). Our laboratory has identified a protein, designated as hEcd (human ortholog of Drosophila Ecdysoneless) as a novel regulator of human mammary epithelial cell (hMEC) cycle. We have observed that removal of Ecd in hMECs leads to proliferative defect. Consistent with role of Ecd in cell cycle, forced expression of Ecd in hMEC leads to increased growth and traits resembling tumor cells. Significantly, Ecd is overexpressed in about 30% of ductal carcinoma in situ (early stage breast cancer), as well as infiltrating ductal carcinoma (late stage breast cancer), in comparison with normal and benign breast tissue specimens. These findings led us to hypothesize that hEcd is a novel regulator of the cell cycle pathway and alteration of Ecd function may therefore help override the cell cycle controls in cells and contribute to breast cancer formation. This proposal will investigate a new and paradigm-shifting mechanism of how cell cycle is regulated. Our studies are therefore focused on investigating the role of Ecd in breast cancer using unique cellular and biochemical reagents specifically created for this project. We will use a variety of biochemical, molecular and cell biological approaches to understand the novel pathway of mammary epithelial cell proliferation and oncogenesis. Not only that this research will advance knowledge of breast cancer by defining a novel pathway and provide potential novel diagnostic/prognostic new marker but given the fact that proteins those are overexpressed in breast cancers as compared to normal cells are eminent targets for drug development, these studies carry the potential of developing novel therapeutics in breast cancer in a very near future.

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