CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP150232

Project Title:
The Role of Progesterone Receptor in Early Stage Breast Cancer.

Award Mechanism:
Individual Investigator

Principal Investigator:
Edwards, Dean P

Entity:
Baylor College of Medicine

Lay Summary:

The estrogen receptor (ER) signaling axis stimulates growth and progression of human breast cancers and targeted anti-estrogen therapies are a standard of care treatment of ER+ tumors. However, it has become increasingly appreciated that the other ovarian steroid hormone progesterone (P4) also plays a role in breast tumorigenesis but progesterone receptor (PR) has not been fully exploited as a therapeutic target. During the reproductive years of women, P4 stimulates continuous cycles of proliferation of breast luminal epithelial cells. Clinical studies and other epidemiological studies indicate that P4 is a risk factor for breast cancer. A number of experimental mouse mammary tumor models have also demonstrated an important role for P4 in promoting tumor formation. It has been hypothesized that the life-time of proliferative cycles stimulated by P4 can be pre-disposing for cancer initiated by other genetic events and that P4 plays a role in early stage of the breast tumorigenesis process. A major obstacle in our understanding of the role of P4/PR in early stages of disease is lack of suitable experimental systems to study P4 in the normal breast and in pre-invasive breast lesions including ductal carcinoma in situ (DCIS). DCIS is a non-obligate precursor of invasive breast cancer and currently there are few reliable markers to predict progression or recurrence. This research proposal will develop and apply novel experimental systems to examine and understand the role of P4 and its receptor during transition from the normal mammary gland through pre-invasive lesions (hyperplastic diseases and DCIS) to invasive cancer. The ultimate goal and importance of this research is to use the information on the effects of P4 in our experimental models of early stage breast disease to provide insights into how to develop PR or its downstream cellular events as novel preventive therapeutic targets.