CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP140616

Project Title:
Tenascin-C and Metastatic Prostate Cancer Progression

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
Baylor College of Medicine

Lay Summary:

Prostate cancer primarily metastasizes to bone and is difficult to treat effectively. The processes that control the ability of prostate cancer cells to attach to bone, to form colonies, and to grow to larger is not understood. We have found that there are increases in the tenascin-C protein at sites where metastatic prostate cancer forms in the internal bone. The bone cells lining the bone surface adjacent to cancer cells produce tenascin-C. Tenascin-C is a secreted protein that is part of the matrix of proteins deposited outside the cell onto the bone surface. Important to our study, tenascin-C affects cancer cell adhesion, migration, invasion, proliferation and protects cancer cells from programmed cell death. However, tenascin-C has not been studied in cancer that metastasizes to bone. It is our hypothesis that elevated tenascin-C in the bone lining cells is a key process that is both permissive and promotive to the formation of metastatic prostate cancer growth and progression to more lethal metastatic lesions. Progress in this area has suffered from lack of new models to study metastatic prostate cancer. We have developed two new models to study the mechanisms of prostate cancer cell interactions with bone. We can delete tenascin-C in both models to assess components of its action. We propose three Specific Aims. Aim 1 will address how important tenascin-C is to the initiation of colony formation. Aim 2 will address the mechanisms of how tenascin-C promotes tumor growth and expansion. Aim 3 will address how tenascin-C may affect progression of tumors to castration-resistant disease, common in patients being treated for metastatic prostate cancer. These studies represent proof-of-concept experiments and new discovery of mechanisms. The long-term goal is to use data generated from these studies to help develop novel therapeutic approaches designed to target the bone environment in order to control the growth and progression of prostate cancer metastases.