



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP100841

Project Title:  
Osteoclast Regulation of Bone Metastasis of Cancer

Award Mechanism:  
Individual Investigator

Principal Investigator:  
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Entity:  
The University of Texas Southwestern Medical Center

### Lay Summary:

Current cancer research often focuses on characterizing the primary tumors. However, most cancer morbidity and mortality relates to metastasis, a complex process involving not only cancer cells but also their microenvironment in the host tissues such as bone. Bone metastasis is a frequent, debilitating and essentially incurable cancer complication. Yet, its regulation remains poorly understood. It is associated with increased bone degradation. Inhibition of the activity of bone-degrading cells by anti-osteoporosis drugs can reduce bone lesions, tumor burden, bone pain and likely mortality. We hypothesize that signaling pathways that regulate the formation of bone-degrading cells are important modulators of bone metastasis, and drugs that inhibit this formation are plausible strategies to improve cancer outcome. Therefore, the proposed investigation creates a new paradigm in cancer research by shifting the focus to a key cell type in the bone metastatic lesion. Our study will elucidate the fundamental mechanisms underlying the development of bone-degrading cells, provide important insights to bone metastasis prevention and treatment, and identify novel compounds and genes as potential cancer therapies and drug targets. Thus, this investigation will significantly impact cancer research by opening exciting new paths to the understanding of cancer etiology and the improvement of cancer outcome.