

Bankhead-Coley Cancer Research Program

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*Biomedical Sciences
Florida Atlantic University*

*2008 Program
Bridge (1-year project)*

Project Title: PAK6 Activation in Advanced Prostate Cancer

Project Summary: The current grant aims at studying a novel signal pathway that regulates prostate cancer metastasis. Tumor metastasis is the major cause of treatment failure for cancer patients. Most current treatment modalities such as surgery, radiation, hormonal therapy, and chemotherapy have limited effect in treating metastatic tumors. Novel targets aimed at blocking tumor metastasis for future development of new therapeutic modality are urgently needed. In steroid hormone-dependent human cancers, hormones are known to promote metastasis of prostate, breast, and ovarian cancers. We recently identified a novel molecular regulator, a protein kinase enzyme named PAK6, to be a dominant factor in controlling androgen-regulated tumor metastasis in prostate cancer cells.

The grant is designed to fully delineate the molecular process of how androgen influences the development of advanced metastatic prostate cancer. We are using state-of-the-art proteomic technology, including chromatography and mass spectrometer, to identify cellular components that interact directly with PAK6 in this signal pathway. Once we identify the candidate interacting partners, we will subject each of them to a stringent authentication process to prove that the interactions are physiologically genuine. Bona fide interacting partners will then be identified and their roles in regulating androgen-stimulated prostate cancer metastasis will be defined. We firmly believe that the results obtained from this project will open a new avenue to define various new targets pivotal to the future development of clinical modalities for the intervention of prostate cancer metastasis. Given the urgency in the need for new drug targets, immediate application of our research results will undoubtedly benefit the drug discovery effort. The ultimate goal for this grant is to deliver valid, drug-able therapeutic targets for prostate cancer treatment.