Autonomous Signaling Loop for Cell Motility in Prostate Cancer

Primary Investigator Daotai Nie, Ph.D.
Funding Agency: IDPH Prostate Cancer Research Fund

Major causes of death in prostate cancer patients are the spread and metastasis of tumors. The goal of this project is to find out how prostate cancer cells move so that new methods can be developed to identify and treat prostate cancer. For a tumor cell to move (or migrate), it must push forward in the front and contract in the rear to power ahead. The hypothesis behind this project is that tumor cell migration can be inhibited by blocking tumor cell contraction. Dr. Nie's laboratory has identified a cell that receives information (a "receptor" cell) from the prostate cancer tumor and then participates in cell contraction. This receptor is called thomboxane A_2.

This project will determine whether thromboxane A2 receptor is activated when prostate cancer cells migrate and whether the migration can be blocked by inhibiting this receptor's activation. A second goal is to identify the specific isoform(s) of thromboxane A2 receptors involved in the contraction and mobility of prostate cancer cells. Specific inhibitors will be designed and/or evaluated for their ability to block prostate cancer cell mobility.

The project also will provide a potential way to diagnose malignant prostate cancer and determine the best treatment to fight it. The project will contribute significantly to the long-term goal of developing mechanism-based diagnosis and treatment of prostate cancer.

Exercise and Rural Breast Cancer Survivors

Primary Investigator: Laura Rogers, M.D.
Funding Agency: American Cancer Society Illinois Division

Physical activity provides psychological and physiological benefits for breast cancer survivors. Because physical activity declines after a breast cancer diagnosis and rural populations are generally more sedentary, it is especially important to address this decline among rural breast cancer survivors.

This project will determine, among Illinois breast cancer survivors living in rural areas and small towns, how physical activity correlates within a social cognitive framework and program preferences. Identification of correlates, behavior theory relationships among correlates and references are needed to design effective physical activity behavior change programs.

This cross-sectional population-based study will survey 943 breast cancer survivors living in the most rural Illinois counties. Specific aims are to test a multilevel theoretical social cognitive theory model of leisure-time physical activity behavior in these patients encompassing the constructs of self-efficacy, social support, physical activity enjoyment, pre-diagnosis activity, perceived barriers, environment, demographics and medical/psychological health factors and to determine the leisure-time physical activity program preferences of rural breast cancer survivors.

The proposal will provide pilot data for testing the long-term cancer control hypotheses related to exercise adherence, functional status and quality of life issues pertinent to the application of a social cognitive-based physical activity intervention for rural breast cancer survivors.

Multicenter Vitamin E Trial in Aging Persons with Down Syndrome

Primary Investigators: Robert J. Pary, M.D. and Arthur J. Dalton Ph.D.
Funding Agency: Research Foundation for Mental Hygiene, Inc.

Evidence indicates that persons with Down syndrome over the age of 50 are at a very high risk to develop Alzheimer disease (AD). A multicenter clinical trial showed that vitamin E slows the rate of clinical deterioration in individuals with moderately severe AD.

This study is investigating whether high-dose vitamin E taken every day for three years will stop or slow some of the changes that occur in people who develop AD. The Alzheimer Disease Cooperative Study is mounting a large study to test the effects of vitamin E in persons at the earliest stage of cognitive deterioration.

SIU School of Medicine is one of the institutions participating in this international, multi-center randomized double-blind study. Subjects with Down Syndrome who are at least 50 years old will be randomized into two treatment groups. The treatment period will be three years with evaluation visits every six months. The primary outcome measure will employ a subset of items derived for this purpose from the DYSPRAXIA Scale for Adults with Down Syndrome. Secondary outcome measures will include additional cognitive tests as well as informant-based measures of function and behavior. The study will be completed in 2006.

For more information about these projects, contact the Office of Research and Faculty Affairs at 217-545-7936.