

Bankhead-Coley Cancer Research Program

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*Radiation Oncology
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*2010 Program
New Investigator Research
(3-year project)*

Project Title: Molecular Genetics of Radiation-Induced Skin Toxicities in a Tri-Racial/Ethnic Post-Mastectomy Breast Cancer Cohort

Project Summary: Studies show that radiation therapy after mastectomy for breast cancer, or post-mastectomy radiation (PMRT), improves survival in high-risk patients. PMRT carries the risk of side effects, including damage to the skin, or early adverse skin reactions (EASR), including skin reddening/darkening, peeling, and pain. In patients receiving PMRT, such reactions are common and result in a treatment break in up to 1/3 of patients, which can cause increased risk of breast cancer recurrence. The severity of EASR is variable; studies suggest that genetic factors as well as racial and ethnic differences play a critical role, with minority populations often developing more severe side effects and requiring treatment breaks. These factors may contribute to the finding that minority populations have a higher risk of dying from breast cancer. We are examining relationships between genetic factors and EASR in patients receiving PMRT. We will collect blood samples before and after radiation for genetic analysis, assess radiation-induced EASR, and perform statistical analyses to determine associations between genetic factors and EASR. Ultimately, the proposed work could lead to identification of genes that increase the risk of EASR due to radiation. Identifying these genes could lead to changes in radiation therapy to decrease toxicity and resultant treatment breaks, ultimately increasing survival in breast cancer patients.