



**Susan G. Komen
Research Grants – Fiscal Year 2014**

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Efficacy Of DNA damaging and non-damaging regimens according to molecular subtypes defined on CTCs

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Public Abstract:

Breast cancer is now recognized as being, not a single disease entity, but multiple diseases with varying prognoses, clinical courses, and treatment responses. In particular breast cancers are often divided into different subtypes based on these different biological features. There is research showing that different types of chemotherapy may be particularly active in some subtypes of breast cancer. Currently, treatment decisions for metastatic breast cancer often use the biological information of the primary tumor. However, breast cancers have the potential to change some of their biological characteristics during the time they progress from primary disease to metastatic disease. These changes can be hard to evaluate as this requires repeat invasive biopsy of a site of metastatic cancer, such as in the liver, lung, or bone. Rather than attempt an invasive tissue biopsy, a potential alternative approach might be to evaluate these biological characteristics on circulating tumor cells (often known as CTCs). CTCs are detectable in many patients with metastatic breast cancer, in a simple peripheral blood sample, and have been associated with outcome in breast cancer. Currently they are not yet routinely used to make treatment decisions. This project aims to explore the effect of two different chemotherapy regimens in women with metastatic breast cancer, with 'real-time' definition of biological characteristics defined on CTCs. Women with CTCs detectable in a peripheral blood sample will be treated in a randomized fashion with either DNA-damaging or non-DNA-damaging chemotherapy. The response to treatment will be determined and correlated with biological characteristics.