

MPI(s): Joseph W Landry, PhD & Harry D. Bear, MD, PhD

Academic Rank: Landry (Associate Professor) / Bear (Professor)

Title: Prevention of Breast Cancer Recurrence by Targeting Epigenetic Complexes to Stimulate Antitumor Immunity

The majority of triple negative breast cancers (TNBC) respond to chemotherapies, particularly when the disease is diagnosed at early stages. Unfortunately, tumor cells can remain in a state of dormancy for years before re-emerging as a deadlier form of the disease. How this recovery can be stopped is one focus of our laboratory. We completed a genetic screen to identify epigenetic regulators which are required for the recovery from chemotherapy exposure. Epigenetic regulators are a druggable class of complexes which regulate the ability of the cell to use its DNA with impacts on TNBC biology. We hope that the results of this screen will identify druggable targets which can be exploited to prevent the recovery from therapy exposure. The Aim of this project is to validate our initial screen using a combination of established cells lines and primary patient derived TNBC tissue in cell culture and animal models to identify epigenetic regulators which can be targeted therapeutically. We will then apply these same objectives but to include the immune system as a contributing factor. These studies will utilize human innate immune cells by adoptive transfer and thorough the humanization of the mouse immune system. The immune system, particularly the innate immune system, is well known to interact with therapy treated TNBC to influence recovery from therapy exposure. These experiments are anticipated to study the interface between the human immune system and TNBCs recovering from chemotherapy, which will provide future novel therapeutic strategies to prevent recovery from chemotherapy exposure.