**Award ID:**
RP150713

**Project Title:**
Identification of Therapeutic Targets on Breast Cancer Stem Cells

**Award Mechanism:**
High Impact/High Risk

**Principal Investigator:**
Lee, Jiyong

**Entity:**
The University of Texas at Dallas

**Lay Summary:**

Despite high response rate of breast cancer patients to initial systematic therapy treatment, breast cancer survivors still have a high risk of tumor recurrence. Since the first identification of cancer stem cells (CSCs) in leukemia, CSCs have been detected in various cancers including breast cancers. This population of cells claimed to be responsible for the high recurrence rate and chemoresistance of breast cancer. Therefore, identifying therapeutics targeting breast CSCs is a great strategy to develop novel therapeutics to kill breast cancer from its root. This project aims to identify cell surface molecules that are upregulated or uniquely expressed on breast CSCs and validate their therapeutic applicability. We hypothesized that small molecule drug candidates targeting breast CSC can be discovered by isolating small molecules that bind specifically to breast CSCs over non-CSC population of breast cancer cell. The isolated breast CSCs-specific ligands will be used as bait to isolate targeting cell surface receptors. If this project is successful, in short-term, we will be able to rapidly identify various novel cell surface molecules of breast CSCs, which provide unprecedented opportunity to better understand breast cancer. Long-term impact of this project is on the discovery of breakthrough therapeutic interventions to eradicate breast cancer without chemoresistance and cancer recurrence.