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A Novel Strategy to Target Breast Cancer Stem cells Utilizing microRNA100
Investigator(s): Suling Liu, PhD
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Public Abstract:
Recent evidence suggests that many cancers, including those of the breast, are maintained by a population of cancer cells that display stem cell properties. These “cancer stem cells” may also contribute to tumor metastasis, treatment resistance and relapse. This suggests that more effective cancer treatments will require the effective targeting of this cell population. Recently, miRNAs (small none-coding RNAs) have been reported to be able to suppress tumor growth and metastasis, some of which have been shown to regulate the cancer stem cell. Both miRNA93 and Let7 have been shown highly depleted in mammary stem/progenitor cells. We have found that expression of miRNA100 (mir100) in breast cancer cell lines reduces their stem cell populations suggesting a strategy for targeting breast cancer stem cells. We propose that mir100 may hold significant potential as a novel molecular therapy for breast cancer stem cells. Therefore, the role of mir00 will be determined. We will asses its role in the regulation of breast cancer stem cells and the fundamental mechanisms by which over-expression of mir100 in breast cancer cells will impair tumor growth and metastasis and make the cells more sensitive to chemotherapy. The proposed experiments will explore a novel therapeutic approach to target and eliminate cancer stem cell populations which have been strongly implicated in therapy resistance and recurrence of advanced tumors.

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