

5th World Congress on **Cell & Stem Cell Research**

March 23-25, 2015 DoubleTree by Hilton Chicago - North Shore, USA

Chemo-residual triple-negative breast tumor cells exhibit increased metastatic potential

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Although many tumors are initially responsive to chemotherapy, residual tumor cells frequently persist, and are thought to be responsible for future tumor growth at local and distant sites. Recent studies indicate that chemotherapy can alter the tumor micro environment in a manner that enables increased tumor metastasis. However, to date, an ability of chemotherapy to promote tumor metastasis by directly influencing tumor cell signaling has not been demonstrated. In the current study, we show that short-term exposure of triple-negative breast tumor cells to chemotherapy *in vitro* results in: 1) die-off of the majority of tumor cells, and 2) survival of chemo-residual tumor cells with increased invasive and metastatic potential. Notably, tumor cells derived from our short-term chemotherapy model do not exhibit increased cancer stem cell behaviors relative to untreated tumor cells. We demonstrate that tumor cells surviving short-term chemotherapy express a pro-form of an adhesion molecule (Pro-N-cadherin) on their cell surface, which drives their invasive behavior. Collectively, our results indicate that short-term chemotherapy treatment models can identify novel signaling molecules in chemo-residual tumor cells that confer a metastatic phenotype. Importantly, our findings also suggest that chemotherapy enriches for a subset of triple-negative tumor cells with enhanced metastatic potential.

Biography

Robin E Bachelder obtained her Ph.D. from Harvard University in 1995, and pursued Postdoctoral studies at Harvard Medical School for an additional 10 years. She joined the faculty in the Department of Pathology at Duke University School of Medicine in 2005, where she initiated her studies of triple-negative breast cancer chemotherapy resistance. Her research focuses on understanding tumor heterogeneity, and its implications for therapy resistance. She has published more than 20 peer-reviewed manuscripts, and is the recipient of multiple grants from the Department of Defense, National Institutes of Health, and private foundations.

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