Analysis of Her-2 Positive Breast Cancer Cell Lines

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Analysis of Her-2 Positive Breast Cancer Cell Lines

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Breast cancer is a deadly disease, and approximately one in four women with breast cancer show overexpression of the Her-2 protein in their tumors. Our laboratory started at UTEP in January 2012, and our aim is to study how Her-2 positive breast cancers behave before and after treatment with Her-2 targeting agents. We are particularly interested in how Her-2 positive breast cancers can spread throughout the body—by a process termed metastasis—and how Her-2 positive breast cancer cells may escape therapies that target Her-2, such as the clinically used anti-Her-2 antibody rastuzumab (also known as Herceptin). This presentation will focus on our analysis of the BT474 (Her-2 positive) and the ZR75-1 (Her-2 negative) human breast cancer cell lines. In vitro, ZR75-1 cells grow as standard monolayers. In contrast, BT474 cells grow as compact islands which have a tendency to detach from the culture plate and float in the media as compact tumor spheroids, which is consistent with reports of high expression of the cell-cell adhesion molecule, E-cadherin, in these cells. Our preliminary data shows that BT474 cells can grow in immunodeficient mice and the resulting tumors initially respond to trastuzumab monotherapy before becoming drug resistant—a result independently confirmed in another human Her-2 positive breast cancer cell line termed MDA-MB-361. Our data shows that we have two working models to study how Her-2 positive breast cancers grow and respond to clinically relevant anti-Her-2 targeting strategies.