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Stem Cell Hypothesis for Breast Cancer

Elizabeth Zollinger
St. Joseph's College, Brooklyn, ezollinger@sjcny.edu

Emek Kose
St. Mary's College of Maryland

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Emek Kose, PhD
Elizabeth Zollinger, PhD
Stem Cell Hypothesis for Breast Cancer

Breast cancer is prevalent among women all over the world. A recent theory, called *the stem cell hypothesis* states that cancerous stem cells are the reason tumors persist and grow, and proposes targeting treatments towards the cancerous stem cells instead of tumor cells. This is a groundbreaking theory and one that can alter the existing cancer treatment protocols and methods, favoring immunotherapy. Developing a model for the stem cell hypothesis and mathematically experimenting with different treatment options is important and timely. Building on previous models we develop a compartmental ordinary differential equation model for breast cancer including the cancer stem cell, tumor cell, and activated T-cell populations to investigate how they interact within the tumor. We fit the parameters and analyze the stability of the tumor subjected to various treatments.