



May 31st, 5:00 PM - 5:30 PM

# Stem Cell Hypothesis for Breast Cancer


Elizabeth Zollinger

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

Emek Kose

*St. Mary's College of Maryland*

Follow this and additional works at: <https://scholarscompass.vcu.edu/bamm>

 Part of the [Life Sciences Commons](#), [Medicine and Health Sciences Commons](#), and the [Physical Sciences and Mathematics Commons](#)

---

<https://scholarscompass.vcu.edu/bamm/2018/thursday/18>

This Event is brought to you for free and open access by the Dept. of Mathematics and Applied Mathematics at VCU Scholars Compass. It has been accepted for inclusion in Biology and Medicine Through Mathematics Conference by an authorized administrator of VCU Scholars Compass. For more information, please contact [libcompass@vcu.edu](mailto:libcompass@vcu.edu).

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.