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Emek Kose and **Allison L Lewis*** (lewisall@lafayette.edu), 210 Pardee Hall, Lafayette College, 730 High St., Easton, PA 18042, and **Elizabeth Zollinger**. *Investigating the effects of cancerous stem cells on tumor growth*. Preliminary report.

The stem cell hypothesis states that cancerous stem cells are the reason that tumors grow and persist, and proposes targeting treatments towards the cancerous stem cells instead of, or in addition to, the standard tumor cells. Building upon previous models, we develop a compartmental ODE model that includes the cancer stem cell, tumor cell, activated T-cell, regulatory T-cell, and TGF- β populations to investigate how they interact within the tumor. We apply a standard chemotherapy treatment protocol and show that even after treatment, the cancer stem cells are often strong enough to overcome the initial deterioration of the tumor from the effects of chemotherapy, aiding in the later resurgence of the tumor cell population. (Received September 22, 2018)