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Rebecca Blaire Hoehne* (rhoehne01@saintmarys.edu), **Zachary Abernathy**, **Kristen Abernathy**, **Claire Burgess** and **Kelsey Brown**. *Global Dynamics of a Colorectal Cancer Treatment Model with Cancer Stem Cells*. Preliminary report.

We present and analyze a mathematical model of the treatment of colorectal cancer using a system of nonlinear ordinary differential equations. The model describes the effectiveness of immunotherapy and chemotherapy for treatment of tumor cells and cancer stem cells (CSCs). The effects of CD8⁺T cells, natural killer cells, and interleukin proteins on tumor cells and CSCs under the influence of treatment are also illustrated. Using the method of localization of compact invariant sets, we present conditions on treatment parameters to guarantee a globally attracting tumor clearance state. Numerical simulations and sensitivity analyses of the model are examined using biologically sound parameters to assess the validity of the model. (Received September 19, 2016)