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**Rachel Leander, Zack Jones\*** (zvj2a@mtmail.mtsu.edu) and **Darren Tyson.** *Implications of Stochasticity in Cellular Proliferation.* Preliminary report.

Cell division is one of the most fundamental processes of life, yet it is subject to significant random variation. Experiments have shown that, even in a population of homogeneous cells, the distribution of intermitotic times (IMTs) is highly variable. Furthermore, IMT distributions exhibit interesting temporal dynamics, especially in response to perturbations such as drug treatment. Using a top-down approach, we have developed a stochastic model of the cell cycle that is based on our conception of the cell cycle check point. This model enables us to frame the problem of determining a cell's IMT as a first exit time problem, through which we derive an expression for the distribution of IMTs. This distribution can be analyzed in order to relate distribution properties and dynamics to model parameters. (Received February 03, 2015)