1080-92-266 **David Murrugarra*** (davidmur@vt.edu), Virginia Bioinformatics Institute, Blacksburg, VA 24060. *Stochastic Discrete Dynamical Systems.*

This talk will introduce a new modeling framework for gene regulatory networks. This framework incorporates propensity parameters for activation and degradation and is able to capture the cell-to-cell variability. It will be presented in the context of finite dynamical systems, where each gene can take on a finite number of states and where time is a discrete variable. One of the new features of this framework is that it allows a finer analysis of discrete models and the possibility to simulate cell populations. An application will be presented using one of the best known stochastic regulatory networks, that is involved in controlling the outcome of lambda phage infection of bacteria. (Received January 29, 2012)