

YMC
XWC

2005
5002



THE IMPORTANCE OF PARAMETER ESTIMATION IN THE MODELING OF CELL PROLIFERATION

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Abstract of Talk: Methodical estimation of parameters is important in the mathematical modeling of biology for two reasons; it allows us to (i) describe accurately and (ii) make meaningful predictions about biological phenomena. In the first part of this presentation we provide a mathematical model for the competition of two species of growth factor for the same cell surface receptor. Through optimization and simulation in MATLAB we extrapolate biochemical parameters embedded within the model. Secondly, we present a one-dimensional model for the regulation of tumor dormancy that demonstrates the importance of accurate parameters. Our research was conducted under the guidance of Professors Boushaba, Levine, and Nilsen-Hamilton during the 2005 REU at Iowa State University.