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**Jacqueline M Dresch\*** (jdresch@clarku.edu), Mathematics and Computer Science Department, Clark University, 950 Main Street, Worcester, MA 01610, and **Robert A Drewell** and **Gregory D McCarthy**. *Global Parameter Sensitivity Analysis on a Dynamic Model of Gene Regulation*.

The study of gene regulation has been an important topic in biology for decades, and it is well known that this activity is tightly controlled during early organismal development. However, the roles of key processes involved in this regulation, such as transcription and translation, are less well understood. Using a discretized reaction-diffusion model incorporating terms for each of the key processes involved, we perform global sensitivity analyses using various different initial conditions and spatial and temporal outputs. Our numerical results indicate that transcription and translation are often the key parameters driving protein abundance; an observation that is in close agreement with the experimental results from mammalian cells for various initial conditions at particular time points. These results suggest that a simple dynamic model is capable of capturing the intricate behavior of a gene. (Received September 22, 2015)