1033-82-205   **Waiyuan Tan*** (`waitan@memphis.edu`), Department of Mathematical Sciences, The University of Memphis, Memphis, TN 38111, and **Ping Zhang** (`pzhang@mtsu.edu`), Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro, TN 37130. *A Stochastic and State Space Model for Cancer Risk Assessment Via Initiation-Promotion Experiments.*

In this paper we will develop a stochastic and state space model for cancer risk assessment of environmental agents (carcinogens) with the observation model based on data from animal initiation-promotion experiments. In this state space model, the stochastic system model is based on a two-stage model with papillomas developed from initiated cells via clonal expansion (stochastic birth-death process) and with carcinomas developed from the second-stage initiated cells via clonal expansion (stochastic birth-death process). The observation model is based on data from animal initiation-promotion experiments. These data include numbers of animals with papillomas over time, the average number of papillomas per animal over time, and some data on numbers of animals with papillomas and the average number of papillomas per animal. In this paper we will develop procedures to estimate the mutation rates and birth and death rates of initiated cells as well as the mutation rate of initiated cells. We will apply our model to data from EPA on initiation-promotion experiments using Nissan extracts as initiator. (Received September 11, 2007)