999-62-38 **W. Y. Tan*** (`waitan@memphis.edu`), Department of Mathematical Sciences, University of Memphis, Memphis, TN 38152, **P. Zhang** (`pzhang1@memphis.edu`), Department Mathematical Sciences, University, of Memphis, Memphis, TN 38152, and **X. Xiong** (`Xiaoping.Xiong@stjude.org`), Deartment of Biostatistics, St Jude Childrens Research Hospital, Memphis, TN 38118. *A state space model for HIV pathogenesis invloving plasma and lymph nodes.* Preliminary report.

It is well documented that most of the HIV are generated in the lymph nodes than in the plasma. To assess effects of treatment by drugs, in this paper we have developed a state space model for HIV pathogenesis involving both plasma and lymph node. By combining this model with the multi-level Bibbs sampling procedure we have developed some some statistical procedures to estimate both the effects of drugs and the number of infectious and non-infectious HIV in both the plasma and lymph nodes. We have applied the model and methods to the data collected by Lafeuillade et al. (1996). Our results showed that the HIV infection process was about 100% to 1000% faster in the lymph nodes than in the plasma. These results indicated that 99% of HIV were generated in the lymph node than in the plasma. These results thus provide strong support for the model proposed by Bajaria et al. (2000, 2002) who have assumed that HIV are generated in the lymph nodes, not in the plasma. (Received July 20, 2004)