1033-92-51   **Jia Li*** (`li@math.uah.edu`), Department of Mathematical Sciences, University of Alabama in Huntsville, Huntsville, AL 35899. *Mathematical Modeling of Malaria with Partial Immunity.* Preliminary report.

We formulate a mathematical model for malaria transmission, based on a system of ordinary differential equations, which includes incubation periods for both infected human hosts and mosquitoes. We assume infected humans gain partial immunity after infection and divide the infected human population into subgroups based on their infection history. Threshold conditions, which determine whether the disease spreads in the human and vector populations or dies out, are obtained. We derive an explicit formula for the reproductive number to characterize the threshold conditions, and investigate the existence of the endemic equilibrium when the disease spreads in the human and mosquito populations. (Received August 26, 2007)