999-92-207 **Mostafa Adimy**, Laboratory of Applied Mathematics, University of Pau, 64000 Pau, France, **Fabien Crauste**, Laboratory of Applied Mathematics, University of Pau, 64000 Pau, France, and **Shigui Ruan*** (`ruan@math.miami.edu`), Department of Mathematics, University of Miami, P O Box 249084, Coral Gables, FL 33124-4250. *A Mathematical Study of the Hematopoiesis Process with Applications to Chronic Myelogenous Leukemia.*

This paper is devoted to the analysis of a mathematical model of blood cells production in the bone marrow (hematopoiesis). The model is a system of two nonlinear differential equations with distributed time delay, corresponding to the cell cycle duration. By constructing a Lyapunov functional, it is shown that the trivial equilibrium is globally asymptotically stable if it is the only equilibrium. It is also shown that the non-trivial equilibrium, the most biologically meaningful one, can become unstable via a Hopf bifurcation. Numerical simulations are carried out to illustrate the analytical results. The study maybe helpful in understanding the connection between the relatively short cell cycle durations and the relatively long periods of peripheral cell oscillations in some periodic hematological diseases. (Received August 23, 2004)