JACQUES BELAIR, Université de Montréal
Modelling myelosuppression with a stage-structured model

The destruction of neutrophils (white blood cells) is a common side effect of chemotherapy. We present a stage-structured model of neutrophil regulation taking the form of a system of nonlinear delay-differential equations. The stability of its equilibria are determined, and possible Hopf bifurcations are detected. We then add the kinetic of a chemotherapeutic drug to this system, and analyze the ensuing periodic system as a function of the drug parameters to determine the amplitude and frequency of the solutions.