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Quantitative Biology > Cell Behavior

Multiple steady states in a mathematical model for interactions between T cells and macrophages

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The aim of this paper is to prove results about the existence and stability of multiple steady states in a system of ordinary differential equations introduced by R. Lev Bar-Or to model the interactions between T cells and macrophages. Previous results showed that for certain values of the parameters these equations have three stationary solutions, two of which are stable. Here it is shown that there are values of the parameters for which the number of stationary solutions is at least seven and the number of stable stationary solutions at least four. This requires approaches different to those used in existing work on this subject. In addition, a rather explicit characterization is obtained of regions of parameter space for which the system has a given number of stationary solutions.

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