

*Eighth Workshop Dynamical Systems Applied
to Biology and Natural Sciences DSABNS 2017
Évora, Portugal, January 31st - February 3rd, 2017*

CD4⁺ T CELLS AND TREGS STABILITY ANALYSIS

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We study immune responses by CD4 + T cells, with the presence of CD4 + CD25 + Regulatory T cells (Tregs). We consider asymmetric death rates - the active cells have lower death rates than the inactive - emulating the presence of memory T cells. Here, we show explicit formulas for the equilibria. We observe that the relation between the concentration of T cells, the concentration of Tregs and the antigenic stimulation of T cells is a hysteresis. Inside the region bounded by two antigenic thresholds we found two stable equilibria and one unstable equilibria. We observe that the hysteresis can be unfolded for some values of the parameters.