

Multiscale Model of the CD8 T Cell Immune Response
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- Abstract : I will present a hybrid discrete-continuous model developed to describe the dynamics of the CD8 T cell immune response. This model focuses on early molecular and cellular events: encountering of antigen-presenting cells in a lymph node, activation of differentiation pathways, and differentiation in effector cells. The molecular scale consists in a small regulatory network including the key proteins involved in the early differentiation of CD8 T cells, and is described by an ordinary differential equation system. The cellular scale consists in discrete objects (cells) moving in a 2D domain (lymph node) and interacting with other cells and their environment. Cells secrete IL2, a cytokine involved in CD8 T cells proliferation and survival, which influences neighbor cells when released in the environment. I will focus on the presentation of the construction of the model and its ability to reproduce key features of the CD8 T cell immune response.