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Modeling CD8 T cell dynamics following acute and chronic viral infections

Mathematical modeling is a re-emerging field of current immunology. I review some of our work in which we have used mathematical models to address interesting questions in immunology. First, I show how simple models can be used to quantify and compare the dynamics of T cell responses following acute and chronic viral infections. Second, I will demonstrate how one can use models to discriminate between different hypotheses on the generation of memory CD8 T cells following an acute infection. Finally, I discuss how models can be used to investigate validity of a verbal hypothesis on whether and how cross-reactivity of memory CD8 T cells influences the rate of loss of immunological memory.