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Stanca Ciupe* (stanca.ciupe@duke.edu), 2424 Erwin Rd, Hock Plaza, Durham, NC 27705, and **Louise M Markert, Blythe Devlin** and **Thomas Kepler**. *Mathematical Models of T-cell Development*.

The immune response to infectious agents involves the presence and maintenance of a large number of T cells with highly variable antigen receptors and functional diversity. We develop a stochastic population-dynamic model that studies the mechanisms responsible for the establishment of T cell receptor diversity. We fit the model to human data from immunocompromised DiGeorge anomaly patients undergoing thymus transplantation. The dynamics we see in the evolution of T cells gives valuable information about the characteristics of the healthy immune system. (Received February 10, 2009)