Characterization of T Cell Receptor Clonotypes in an SIV Infected Pigtailed Macaque

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Human Immunodeficiency Virus (HIV) causes immunosuppression resulting in acquired immunodeficiency syndrome (AIDS). A closely related virus, Simian Immunodeficiency Virus (SIV), is commonly used in primate models to replicate the pathogenesis of HIV infection. A unique, robust model has been developed to study HIV-associated neurological disease by inoculating pigtailed macaques with SIV. In this model, a small percentage of animals consistently resist progression to neurological disease, suggesting different immunologic viral control in these animals. In humans, mature cytotoxic T cells (CTLs) have been shown to control HIV infection. Infected cells present viral peptide on a membrane-bound protein called the major histocompatibility complex-I (MHC-I). Each TCR clonotype binds specifically to an MHC-I/peptide complex, killing the infected cell. This MHC/CTL interaction modulates immunological control of HIV-1 infection. The goal of this project was to determine if CTL selection contributes to the resistance of certain animals to the progression of neurological disease. Since effectiveness of T cell therapy for HIV by prophylaxis or vaccination depends on the efficiency of the TCR, we must understand how TCRs are selected. By sequencing of gag KP9 specific CTLs from a pigtailed macaque infected with SIV-17E/Fr, I have shown selection of one dominant and two subdominant clonotypes.

Awards Won:

Third Award of $1,000