

Quantitating and visualizing CD8 T cell response to the intracellular parasite *T. gondii*

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T. gondii is the causative agent of Toxoplasmosis. During the acute phase of infection, the parasite rapidly disseminates throughout the body and despite a vigorous immune response, establishes chronic infection by forming cysts in brain and muscle. The precise mechanism of the adaptive immune response to *T. gondii* is yet to be defined. Using a fluorescent strain of *T. gondii* we showed that during the initial stages of infection macrophages and dendritic cells (DCs) are infected preferentially to lymphocytes. In addition we provided evidence that proteins secreted by *T. gondii* can escape the parasitophorous vacuole and be presented by the endogenous class I pathway. This process was dependent on the transporter associated with antigen processing (TAP) and occurred primarily in infected rather than bystander cells, with DCs accounting for much of the antigen presenting activity in the spleen. These results provided a mechanism for direct recognition of infected cells by CD8 T cells (1).

Since endogenous *T. gondii* antigens are not yet known we have used *Toxoplasma* strains genetically engineered to secrete ovalbumin to examine the timing of CD8 T cell priming. Within three days of infection increased expression of activation markers and production of IFN-gamma by OVA-specific CD8 T cells could be detected in the spleens and lymph nodes of infected mice. These results demonstrate that a rapid and specific CD8 effector response could be generated against antigens secreted by *T. gondii*. We are currently setting up a system to visualize the CD8 T cell response against *T. gondii* by taking advantage of several reporter mice and fluorescently labeled strains of *T. gondii*. These experiments should provide new insight into the interactions that occur during an immune response to natural pathogen.

1. Gubbels, M. J., B. Striepen, N. Shastri, M. Turkoz, and E. A. Robey. 2005. Class I major histocompatibility complex presentation of antigens that escape from the parasitophorous vacuole of *Toxoplasma gondii*. *Infect Immun* 73:703.