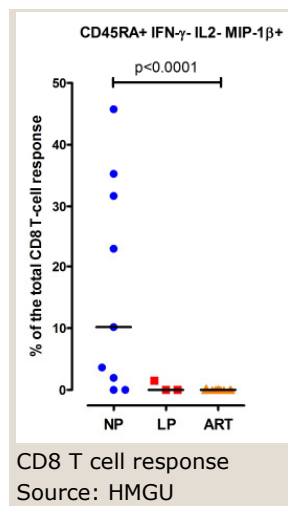


## MIRA CD8 T cells: a correlate of non-progressive HIV-1 infection

Reference Number: TO 01-00748

### Challenge

The mechanisms underlying non-progression in HIV-1 infection are not well understood. CD8<sup>+</sup> T cell responses are thought to be crucial for controlling or limiting HIV-1 replication by direct elimination of infected cells and secretion of a number of soluble factors, but ultimately fail to control virus replication in most infected persons. Consequently, durable control of HIV-1 is achieved by administration of combination anti-retroviral therapy (ART). Long-term non-progressors (LTNP) represent a minority of HIV-1 infected individuals able to achieve long-term control of HIV-1 replication without the administration of ART. The analysis of the immune response in LTNP may help to uncover possible mechanisms and correlate of protection from HIV-1 disease. The identification of immunological correlates of protection will be key for the development of a vaccine against HIV.



### Technology

To elucidate the role of CD8<sup>+</sup> T-cells in the control of HIV-1 infection, HIV-1-specific CD8<sup>+</sup> T cell responses in a cohort of LTNP in comparison to late-progressors (LP) and chronic infected HIV individuals (CHI) were studied. The inventors optimized a method of peptide designing, called Variable Overlapping Peptide Scanning Design (VOPSD). The new peptides have been shown to be superior in detecting CD8<sup>+</sup> T-cell responses without losing the ability to uncover CD4<sup>+</sup> T-helper responses. The combination of the VOPSD peptides together with an *ad hoc* developed protocol of multiparametric flow-cytometry lead to the identification of the **MIP-1 $\beta$ <sup>+</sup> IFN- $\gamma$ <sup>-</sup> CD45RA<sup>+</sup> CD8<sup>+</sup> T cell population almost exclusively present in LNTP.**

### Commercial Benefit and Opportunity

The present invention discloses a novel CD8<sup>+</sup> T cell population exclusively present in HIV-1 infected individuals with a non-progressive course of the disease. MIRA represents a potential marker to identify those individuals able to control or limit HIV-1 replication. Detection of the MIRA T cell population will allow the testing of candidate HIV-1 vaccines for the capacity to elicit efficacious anti-HIV-1 immune responses and to ameliorate the timing of ART in HIV-infected individuals. Evaluation of MIRA can be easily done by FACS analysis. The technology is available for (non)-exclusive licensing. Parties interested in collaborative research and development are highly welcomed.

### Developmental Status

A preliminary longitudinal study demonstrated the stability of the MIRA CD8 T cells in LTNP over the time. Ongoing experiments are performed to better characterize the new population regarding additional functions and mechanism of action.

### Patent Situation

An EP and PCT application have been filed.

### Relevant Publication

Kutscher et al. (2008), AIDS Res. Therapy 5:22

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