Retrovirology

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Oral presentation

Preservation of a subset of SIV-specific central memory CD4+ T cells correlates with control of viremia in SIVmac251 infected macaques

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The identification of protective immune responses preventing progression towards AIDS is critical for the design of prophylactic and therapeutic vaccines against HIV infection. We study 3 cohorts of chronically SIV-infected macaques controlling viral replication for long periods of time. These animals were monitored for plasma viremia and the presence of SIV specific T-cell memory subsets using intracellular staining and 10-parameters flow cytometry. We found preservation of central memory T cells (CM), defined as CD3+ CD45RA- CD28+ in the 3 cohorts of 'controllers'. We also found that a subset of SIV-gag-specific CD4+ CM cells was preserved in all the macaques with significant control of viremia, whereas this population was absent in macaques with progressive disease. Animals with progressive disease had increased CD8+T cell responses with effector memory (EM) phenotype. Our goal is to optimize DNA vaccination to induce the subset of SIV-specific CD4+ CM.

DNA vaccination using a mixture of SIV antigens and cytokine DNA as molecular adjuvants together with improved DNA delivery resulted in high and broad immune responses, including high levels of SIV specific CD4+ CM cells. Our results demonstrate that preservation of SIV-specific CD4+IFNgamma+ CM T cells in infected macaques correlate with control of viremia and lack of progression towards immunodeficiency; DNA vaccination approaches are able to recruit this subset of cells.