Retrovirology

Poster presentation

Novel codon-optimized GM-CSF gene as an adjuvant to enhance the immunity of a DNA vaccine against HIV-1 gag

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Granulocyte-macrophage colony-stimulating factor (GM-CSF) is a potent immunomodulatory cytokine. Here we generated a novel codon-optimized murine GM-CSF gene as an adjuvant. The codon-optimized GM-CSF gene significantly increased protein expression levels in all cells tested. Although injection of the wild-type GM-CSF plasmids adjuvanted HIV-1 Gag DNA vaccine induced detectable immune responses, co-administration of plasmids encoding the codon-optimized GM-CSF sequence with the DNA vaccine resulted in a strong antibody and CTL responses and a protective immune response against infection with recombinant vaccinia virus expressing HIV-1 Gag. This novel codon-optimized GM-CSF gene offers a practical molecular strategy for potentiating immune responses to vaccines as well as other immunotherapeutic strategies.