Public Abstract

First Name:Michelle

Middle Name:Cathryn

Last Name:Thoma

Adviser's First Name:Daniel

Adviser's Last Name:Hassett

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:Regulating the regulators: Using CD25 depletion to enhance immune responses to a model plasmid-based vaccine

Due to their ease of production and safety, plasmid-based vaccines have become prime candidates for both prophylactic and therapeutic human vaccination. In experimental animal models, vaccination with plasmid DNA expression vectors has been shown to induce robust cellular and humoral immune responses against a variety of infectious diseases and some cancers. However, DNA vaccines have proven to be weakly immunogenic in human clinical trials. The poor immunogenicity of DNA vaccines in humans necessitates the development of novel methods to enhance both cellular and humoral immune responses against the plasmid-encoded antigen(s). Previous in vivo studies have shown that CD4+CD25+Foxp3+ T regulatory cells can repress antigen-specific immune responses. We demonstrate here that depletion of CD25+ cells prior to plasmid vaccination significantly enhances primary and memory T cell responses and antibody responses to a model DNA vaccine against *Lymphocytic choriomeningitis virus*. If this approach can be safely applied to humans it may not only improve the clinical utility of DNA vaccines but also improve conventional vaccines as well.