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DNA-Based Immunotherapy for Chronic Disease Such as Tuberculosis

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Current chemotherapy has shown immediate and strong effect on suppression of replication of infectious agents. However, these conventional treatments had transient effect on chronic diseases such as tuberculosis, chronic hepatitis, AIDS and cancer. As a novel targeted immunotherapeutic strategy, therapeutic vaccine has been introduced to induce long-lived antigen specific killer T cells which may safely eliminate the pathogen and tumor cells from patients. Among several vaccine strategies, DNA vaccine has several advantages compared with conventional vaccines because it appears to induce relatively long-lasting T helper 1 and CTL immunity which is required properties of therapeutic vaccine. We found that TB therapeutic DNA vaccination combined simultaneously with chemotherapy completely blocked tuberculosis reactivation and significantly prevented from the secondary infection. In addition, broad immunity appeared to closely correlate with inhibition of the bacterial burden after reinfection.