



HIV Vaccine Development

Historically, vaccination has been the best method for protecting people from infectious diseases. While an array of techniques are available for preventing HIV infection, the development of a safe and effective HIV vaccine remains key to realizing a durable end to the HIV pandemic. NIAID-supported scientists are working toward an HIV vaccine from two complementary angles: an empirical approach that quickly moves vaccine candidates into human testing, and a theoretical approach that designs vaccine candidates based on an understanding of the immune response to HIV infection.

An Empirical Approach

An empirical approach to HIV vaccine development relies on observation and experimentation to quickly move vaccine candidates into human clinical trials. The quest to develop a preventive HIV vaccine was reinvigorated in 2009 when results from the large RV144 trial showed for the first time that an investigational vaccine regimen could confer a modest degree of protection against HIV infection. Today, NIAID and its

global partners are continuing to learn from and build upon findings from this and other HIV vaccine trials. [Read more about the empirical approach.](#)

A Theoretical Approach

This alternative approach to developing an HIV vaccine is based on theory, and involves establishing an understanding of the immune response to HIV infection and finding ways to generate and enhance that response through vaccination. Some of these theoretical approaches aim to prevent HIV infection by developing broadly neutralizing antibodies, better understanding the virus' structure, and generating a protective cellular response. [Read more about the theoretical approach.](#)

Historical and Current HIV Vaccine Research

[See a timeline that tracks the history of HIV vaccine research.](#)

[See an infographic summarizing current approaches in HIV vaccine development.](#)

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