

CONSERVED ELEMENTS VACCINE FOR HIV

SUMMARY (1024-CHARACTER LIMIT)

Researchers at the National Cancer Institute (NCI) developed a DNA vaccine using conserved elements of HIV-1 Gag, administered in a prime-boost vaccination protocol. Two of the HIV Gag CE DNA vectors have been tested in a rhesus macaque model. Priming with the Gag CE vaccine and boosting with full length Gag DNA showed increased immune responses when compared to vaccination with Gag alone. Researchers seek licensing and/or co-development research collaborations for development this DNA vaccine.

NIH REFERENCE NUMBER

E-132-2012

PRODUCT TYPE

- Vaccines

KEYWORDS

- HIV, Vaccine, DNA Vaccine, Prime-boost Vaccination, Conserved Elements, Pavlakis

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

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STATUS

Active

DESCRIPTION OF TECHNOLOGY

The development of an effective HIV vaccine has been an ongoing area of research. High variability in HIV-1 virus strains, however, represents a major challenge. Ideally, an effective candidate vaccine would provide protection against the majority of clades of HIV. Two major hurdles to overcome are immunodominance and sequence diversity. Researchers at the National Cancer Institute (NCI) have developed a vaccine that overcomes these major hurdles by utilizing a strategy that identifies conserved regions of the virus and exploits them for use in a targeted therapy.

NCI researchers used conserved elements (CEs) of the polypeptide Gag as an immunogenic composition to induce an immune response to HIV-1. This invention is based, in part, on the discovery that the administration of one or more polypeptides comprising seven CEs of HIV Gag provides a robust immune response compared to administration of a full-length Gag protein. In vivo studies of rhesus macaques vaccinated with variants of these constructs elicited strong, cellular T-cell and humoral antibody immune responses. The Gag-specific antibody responses were high titer and cross-clade.

A robust increase in immunity was observed when rhesus macaques were subjected to a prime-boost protocol. Rhesus macaques primed with Gag-CE DNA and boosted with full length Gag had increased cellular and humoral responses. The CE vaccines described in this invention are potential prophylactic and therapeutic HIV vaccines.

POTENTIAL COMMERCIAL APPLICATIONS

- Prophylactic and therapeutic vaccines for HIV-1 infection

COMPETITIVE ADVANTAGES

- Addresses two key hurdles faced by current HIV vaccines: sequence diversity of HIV and immunodominance.
- Induces cross-clade cellular and humoral responses.

INVENTOR(S)

[George Pavlakis \(NCI\)](#), [Barbara Felber \(NCI\)](#), [James Mullins \(NCI\)](#)

DEVELOPMENT STAGE

- Clinical

PUBLICATIONS

Hu X., et al. [[PMID](#)]

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PATENT STATUS

- **U.S. Patent Issued:** U.S. Patent Number 9,415,099, Issued 16 Aug 2016
- **U.S. Patent Filed:** [U.S. Patent Application Number PCT/US2013/028932](#) , Filed 04 Mar 2013
- **Foreign Filed:** [Patent Application EP2820035 A1](#) , Filed 04 Mar 2013
- **U.S. Patent Filed:** U.S. Patent Application Number 15/235,430 , Filed 12 Aug 2016

RELATED TECHNOLOGIES

- [E-087-2015 - Vaccines for HIV](#)

THERAPEUTIC AREA

- Infectious Diseases