NOVEL METHOD OF PREPARING VACCINES

SUMMARY

This invention from the NCI Cancer and Inflammation Program describes methods to prepare vaccines for the treatment of human immunodeficiency virus (HIV) infections. The National Cancer Institute's Cancer and Inflammation Program seeks parties interested in licensing or collaborative research to further develop, evaluate, or commercialize novel methods of preparing vaccines.

REFERENCE NUMBER

E-322-2008

PRODUCT TYPE

- Therapeutics

KEYWORDS

- vaccine
- HIV

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

CONTACT

John D. Hewes
NCI - National Cancer Institute
240-276-5515

John.Hewes@nih.gov

DESCRIPTION OF TECHNOLOGY

A major direction in the development of an effective HIV vaccine has been the search for vaccine immunogens that are able to elicit broadly cross-reactive HIV neutralizing antibodies (bcrnAbs). Such antibodies are rarely elicited in HIV-infected humans, and only a few such monoclonal bcrnAbs are known. Despite a tremendous amount of money and work being put forth, this approach has failed.

This invention from the NCI Cancer and Inflammation Program describes methods to prepare vaccines for the treatment of human immunodeficiency virus (HIV) infections. The vaccine, which comprises a primary immunogen and a secondary immunogen, is able to effectively elicit broadly cross-reactive HIV neutralizing antibodies (bcrnAbs) against a target antigen. The primary immunogen is effective in eliciting B cell receptors (BCRs) that are on the maturational pathway of the desired antibody and have an intermediate degree of somatic mutational diversity (SMD). The secondary immunogen is able to provide additional diversification until the level of diversity typical for an HIV-specific bcrnAb is reached.

By providing additional information to the immune system in the form of the primary immunogen, the number of possible combinations the immune system must face in attempting to identify pathways leading to bcrnAbs is significantly reduced. The conceptual approach described by this invention could also be used to develop cancer vaccines.

Further R&D is needed to:

- Identify the maturational pathways for several antibodies using antibody libraries
- Produce antibodies with an intermediate extent of SMD to screen for proteins which could bind
- Identify antibody epitopes on these proteins and construct immunogens that could elicit intermediately diversified antibodies
- Determine immunogen combinations that can be used for immunization
- Test SMD level and cross-reactivity to various HIV isolates in monkeys
- Proceed to human clinical trials

POTENTIAL COMMERCIAL APPLICATIONS

- HIV therapeutics and preventatives
- Cancer Vaccines

COMPETITIVE ADVANTAGES

- Novel methods to design vaccines for HIV treatment and prevention
- Potential to effectively elicit broadly cross-reactive HIV neutralizing antibodies

INVENTOR(S)

Dimiter S Dimitrov (NCI)

DEVELOPMENT STAGE

- Discovery (Lead Identification)

PUBLICATIONS

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PATENT STATUS

- **U.S. Filed:** U.S. Patent Application Serial No. 14/601,040; Filed: January 20, 2015
- **Foreign Filed:** EP Application No 09820027.2 filed 11 October 2009

THERAPEUTIC AREA

- Infectious Diseases