



# Polyvalent HIV-1 Glycoprotein DNA Vaccines and Vaccination Methods

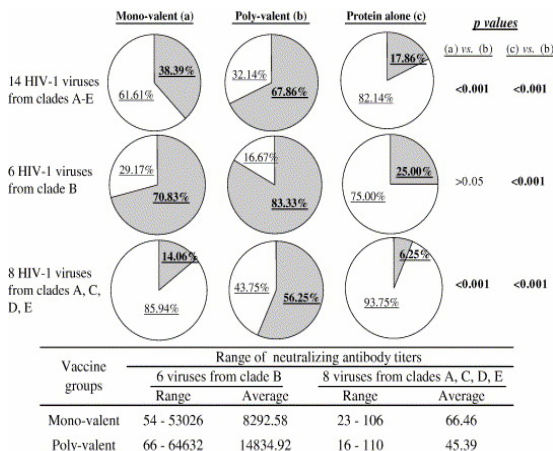
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## Background

According to UNAIDS (WHO) estimates, in 2007, 33.2 million people were living with HIV, 2.5 million people became newly infected and 2.1 million people died of AIDS. There are a number of drugs available for AIDS treatment. These treatments have decreased the mortality rates and improved quality of life for infected people. There are however, no therapeutic interventions to prevent the spread of AIDS to an uninfected population. This can only be achieved by an effective vaccine. The AIDS vaccine research has suffered major setbacks in recent years. This has prompted development and emergence of newer vaccine technology. DNA vaccine is foremost among them.

## Technology

Developed by UMass Medical School Professor Dr Shan Lu and colleagues, the technology is comprised of methods and compositions generating novel plasmid DNA vaccine encoding multiple HIV virus envelope proteins representing different clades. The viral proteins are selected from a group consisting of gp120, gp140, gp160 and gp41. The invention also discloses a method for enhancing the potency of DNA vaccine by including a set of isolated HIV envelope protein representing multiple clades.



Reference: Wang et al. (2006) *Virology* 350, 34.

## Application

AIDS Vaccines

## Salient Features and Competitive Advantages

- 👍 **Robust and Specific Immune Response:** Response is directed against the encoded HIV proteins. DNA vaccines can in principle lead to long-term persistence of immunogen. Like live vaccine DNA vaccines generate Cell based (MHC class 1) and Antibody (MHC II) responses without the risk associated with live viral vaccines.
- 👍 **Combination compatible.** The potency of DNA vaccine was enhanced when combined with protein boost.
- 👍 **Broad Applicability.** DNA vaccines may be useful in developing vaccines for infectious diseases, novel therapies for cancer, and therapeutic protein delivery,
- 👍 **Safety.** Contain no viral components that may cause unwanted immune responses, infections, or malignant and permanent changes in the targeted cells' genetic makeup,
- 👍 **Repeat Administration.** DNA vaccines contain no viral components that may preclude multiple dosing with a single product or use in multiple products,
- 👍 **Longer Shelf Life.** DNA is more *thermo-stable* compared to *live/attenuated* viral vaccines
- 👍 **Cost-Effectiveness.** DNA will be cheaper to manufacture in a shorter time period as compared to current vaccines.
- 👍 **Market Potential:** The global vaccine market is expected to top \$10 billion this year and \$23.8 billion by 2012

## Business Opportunity

UMass OTM is seeking statements of interest from parties interested in licensing and/or sponsoring collaborative research to further develop, evaluate, or commercialize this technology. Technology includes all Biological Material and associated Intellectual Properties

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