



Influenza Glycoprotein DNA Vaccines and Vaccination Methods

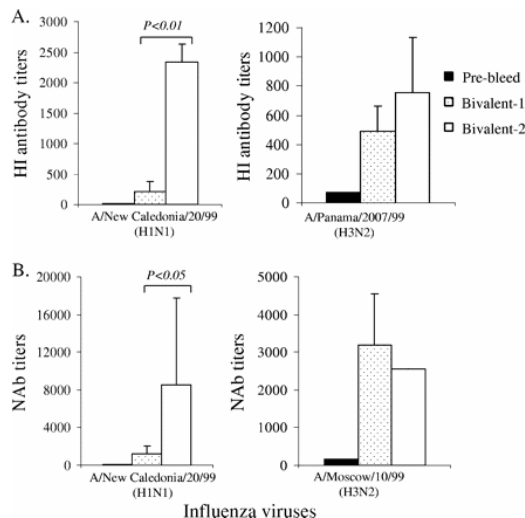
Keywords: DNA, influenza, Flu, Virus, Vaccine,

Background

Influenza is a highly contagious viral disease. It has the potential to cause considerable loss of human life in case of an epidemic. Current vaccines for Influenza include live/attenuated viruses. Despite generating a robust immune response these vaccines have several disadvantages. Foremost among them are: safety and scale-up difficulty in case of a pandemic. The next generation of vaccine candidates should address these and other concerns.

Technology

Developed by UMass Medical School Professor Dr. Shan Lu and colleagues, the technology is comprised of methods and composition utilizing plasmid DNA encoding influenza virus proteins. The immune response is directed against the encoded influenza proteins, namely, hemagglutinin and/or neuraminidase. The polypeptides can be from various subtypes of influenza (H1-H15). They incorporate viral proteins that are structurally and conformationally similar to the native virus. Depending upon the route of administration, the immune response to DNA vaccines results from uptake of plasmids into cells, where expression of the target antigen gene (s) occurs.



Reference: Wang et al (2006) J Virol. p. 80, 11628

Application

Microbial vaccines particularly, Influenza Vaccines

Salient Features and Competitive Advantages

- 👍 **Robust and Specific Immune Response:** Like live vaccine DNA vaccines generate Cell based (MHC class 1) and Antibody (MHC II) responses without the risk associated with live viral vaccines. DNA vaccines can in principle lead to long-term persistence of immunogen.
- 👍 **Safety.** Utilizes no viral components that may cause unwanted immune responses, infections, or malignant and permanent changes in the targeted cells' genetic makeup,
- 👍 **Broad Applicability.** DNA vaccines may be useful in developing vaccines for infectious diseases, novel therapies for cancer, and therapeutic protein delivery,
- 👍 **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:** Influenza vaccine market reached \$1.3 billion (2004) and is forecast to reach \$3.7 billions by 2010

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.

Contact

Kevin Lehman, PhD
Licensing Officer
Phone: (508) 856-5494
Fax: (508) 856-1482
E-mail: Kevin.Lehman@umassmed.edu