



HCMV Nucleic Acid, Proteins, Vaccines and Use

Keywords: Cytomegalovirus, Virus, Vaccine, Proteins, Plasmid

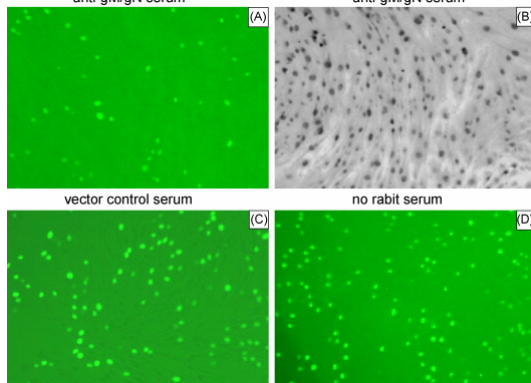
Background

In US every hour, congenital CMV causes one child to become disabled and about 40,000 children are born with congenital CMV infection each year. There is no vaccine available for preventing CMV infections. Hence, the Institute of Medicine ranked the development of a CMV vaccine as a highest priority. This underscores the urgent need for development of highly effective treatment.

Technology

Developed by UMass Medical School Professor Dr. Shan Lu and colleagues, the technology is comprised of composition and methods for generating novel DNA vaccines based on gM and gN antigens of the Human Cytomegalovirus. DNA vaccination is an effective approach to express the gM/gN antigen complex *in vivo* without the need to express and purify these highly insoluble and structurally complicated antigens response against the immunogen. Studies undertaken to determine the immunogenicity of these proteins showed that the combined gM and gN antigens induced the strongest antibody responses that recognized both gM and gN complex. Heterologous HCMV strains including Towne and Davis could also be neutralized by the anti-gM/gN antisera. The experimental data supports the rationale for the use of the HCMV gM/gN protein complex as protective antigens for subunit based HCMV vaccine development.

Reference: Shen et al. (2007) *Vaccine*. 25, 3319



Application

Microbial vaccines particularly, Human CMV infections

Salient Features and Competitive Advantages

- 👍 **Robust and Specific Immune Response:** Sera from mice or rabbits immunized with individual or combinations of gM and gN DNA vaccines contained gM and gN specific antibodies as confirmed by ELISA and Western blot analyses.
- 👍 **Broad Applicability.** It can be easily adapted to developing vaccines for infectious diseases, novel therapies for cancer, and therapeutic protein delivery,
- 👍 **Longer Shelf Life.** DNA is more *thermostable* compared to *live/attenuated* viral vaccines
- 👍 **Cost-Effectiveness.** Lesser doses of highly immunogenic vaccine will be needed.
- 👍 **Ease of Manufacturing:** Can be manufactured by using uniform fermentation and purification procedures,
- 👍 **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.

Address

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