

## Virus-Like Particle for Newcastle Disease Vaccine Applications

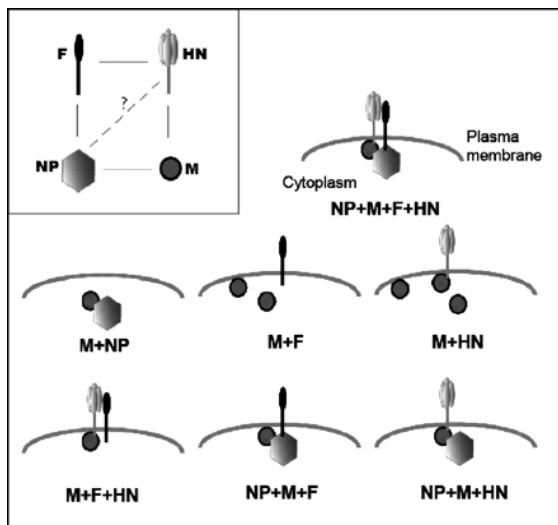
**Keywords:** Newcastle Disease, VLP, NDV, Virus, Vaccine, Chicken, Avian cells  
**US application:** US2007/0178120 A, WO/2007/019247

### Background

Newcastle Disease (ND) caused by Newcastle disease virus, a paramyxovirus is a highly contagious and fatal viral disease affecting most species of birds. Current vaccines for ND include live/attenuated viruses. Despite generating a robust immune response these vaccines have several disadvantages. Safety and scale up difficulty in case of a pandemic are foremost among them. Next generation of vaccine candidate should address these and other concerns.

### Technology

UMass Medical School investigator Dr. Trudy Morrison and colleagues have developed methods for generating virus like particles containing New Castle Disease Virus (NDV) antigens for vaccine application. In an elegant study [*Pantua et al. (2006) J. Virol. 80(22):11062-73*] the investigators described the intrinsic properties of Newcastle Disease Virus proteins to generate **virus like particles (VLPs)** devoid of viral genetic material. These VLPs were generated with very high efficiency in **Avian cells**. Further, the NDV VLPs incorporate viral proteins that are structurally and conformationally similar to the native viral proteins.



### Application:

Veterinary vaccine

### Salient Features and Competitive Advantages

- ◆ **Preserves Native Antigens:** No inactivation required. Hence, the proteins are in their native immunogenic form.
- ◆ **Robust immune Response:** Elicit immune response similar to live viruses
- ◆ **Safety:** No live virus hence minimum side effects and no exposure to viral genetic material.
- ◆ **Cell Based Technology:** Cell-based technology can shorten vaccine production time; is suitable for rapid, large-scale manufacture; and can be easily scaled up in case of a pandemic
- ◆ **Broad applicability:** The technology can be easily adapted for the production of vaccines directed against other infectious agents and cancer targets.
- ◆ **Ease of Manufacturing:** VLPs can be manufactured using uniform fermentation and purification procedures.
- ◆ **Cost-Effectiveness.** Cell based production will be more time and cost effective.
- ◆ **Market potential:** Animal vaccine market reached \$ 3.2 billion in 2004 and is set to grow at a CAGR of 7% for several years. Since VLP technology can be adapted to multiple vaccines it has the potential to influence a large portion of animal vaccine market

### 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.

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