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Intellectual Property Status

US Patents:

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Vaccinia Virus Vectors and Methods to Prevent the Pathology Caused by Infectious Agents

AzTE Cases: 99-044, M01-021, M01-044, and M02-056

Invention Description

Modified vaccinia virus can be used as a vector to deliver genes encoding proteins for therapeutic and vaccine applications. Researchers at the Biodesign Institute of Arizona State University and their collaborators at the Massachusetts Institute of Technology have developed a form of vaccinia virus with genetic modifications that decrease the risk of recipient viral infection.

Potential Applications

The modified vaccinia virus of this technology has numerous potential applications. An almost limitless variety of foreign DNAs can be recombined with the virus for subsequent expression in the infected host. The attenuated and hence safer vaccinia virus developed here may also find use as a smallpox vaccine. This may be important, as smallpox has been defined as a potential biological weapon.

- **Gene therapy vector**
- **Delivery of Anticancer Agents and Other Medically Useful Molecules**
- **Immunization Against Various Diseases in Mammals**
- **Smallpox Vaccine**

Benefits and Advantages

The modified vaccinia virus offers benefits over the form of the virus currently in use in the following ways:

- **Reduced Pathogenicity** – reduced pathogenicity decreases the chance of side effects such as host infection and excessive host immune response
- **Increased Effectiveness** – the reduced pathogenicity of the modified virus has the potential to allow the virus to live longer in the infected host and thus produce a more robust immune response or, in the case of a gene therapy vector, allow for the production of higher levels of the protein encoded for delivery