

4G10 is a monoclonal antibody raised against a synthetic peptide derived from the N-terminus of CXCR4 that may prove useful in the context of the above CXCR4 functions, 4G10 is an excellent reagent for detection and quantitation of CXCR4 by Western blot, immunoprecipitation, ELISA, and flow cytometry. It can also be used to purify CXCR4 by affinity chromatography. With these known characteristics, it would also function in immuno-histochemical assays as well. Thus, this invention is a good research tool and is available for licensing through a Biological Materials License Agreement as no patent application has been filed.

Decreased Side Effects of DRYVAX® Vaccination by Prior Immunization With Highly Attenuated Poxvirus in Immune-Compromised and Competent Hosts

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The invention describes new data relating to a vaccine against smallpox. Smallpox was once worldwide in scope; before vaccination was practiced almost everyone eventually contracted the disease. Variole virus is the etiological agent of smallpox. Symptoms of smallpox begin 12-14 days after exposure to the virus and are characterized by the appearance of multiple, eruptive pustules that cover the entire body. The eradication of smallpox was brought about by the use of the vaccinia virus vaccine, known as DRYVAX®. DRYVAX® is a replication competent vaccinia virus distinct from smallpox. Although the vaccine is highly efficacious, it is also associated with significant serious adverse effects. Specifically, DRYVAX® can cause serious side effects in immunocompromised patients, such as AIDS patients. The last natural case of smallpox occurred in 1977. In 1980 the World Health Organization (WHO) declared the global eradication of smallpox and recommended that all countries cease vaccination. The recent events of September 11, 2001, however, brought the issue of smallpox vaccination to the forefront of the national homeland security efforts.

The current invention describes the use of DRYVAX® in conjunction with (modified vaccinia Ankara strain) MVA or NYVAC, an attenuated poxvirus vector obtained from Connaught Technology Corporation (CTC), an Aventis company. Specifically, the inventors demonstrate, with animal studies, that prior immunization with

NYVAC or MVA appear to help contain the adverse effects of the DRYVAX® vaccine. The adverse effects were tempered in immune-competent as well as in immune-compromised hosts. The overall concept of the invention is to immunize first with an attenuated poxvirus or an attenuated vaccinia virus and then with DRYVAX® to overcome the side effects of the latter vaccination.

gp64 Pseudotyped Vectors and Uses Thereof

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This invention relates to a general gene therapy technology which uses an HIV-1 based vector containing a baculovirus gp64 protein. HIV-1 based gene therapy vectors hold great promise due to their ability to deliver genes to non-dividing cells including hematopoietic stem cells. However native HIV only binds to cells with a CD4 receptor, while gene therapy vectors would need to be delivered to a variety of cells. Various different envelope proteins have been tried to replace the native envelope protein of HIV with a new envelope protein whose origin is another enveloped virus (pseudotyping) that has more general binding capabilities. However, to date, no one has been successful for practical purposes, due to either low titers or cytotoxic effects of the expressed proteins. The inventors have developed a family of nontoxic vectors using baculovirus gp64 protein (which binds to a variety of cells) and HIV proteins that efficiently deliver genes of interest to target cells. Furthermore, since gp64 expression in producer cells is not accompanied by cytotoxic side effects, this protein is an ideal candidate for the development of cell lines for constitutive expression of gp64 for the process of construction of the hybrid HIV (packaging cell lines).

Novel Acylthiol Compositions and Methods of Making and Using Them

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This invention provides a novel family of acylthiols and uses thereof. More specifically, this invention provides effective inhibitors of HIV that

selectively target its highly conserved nucleocapsid protein (NCp7) by interacting with metal chelating structures of a zinc finger-containing protein. Because of the mutationally intolerant nature of NCp7, drug resistance is much less likely to occur with compounds attacking this target. In addition, these drugs should inactivate all types and strains of HIV and could also inactivate other retroviruses, since most retroviruses share one or two highly conserved zinc fingers that have the CCHC motif of the HIV NCp7. Finally, this invention could be very useful for the large-scale practical synthesis of HIV inhibitors, because these compounds can be prepared by using inexpensive starting materials and facile reactions. Thus, it opens the possibility that an effective drug treatment for HIV could be made available to much larger populations than is now the case.

This research has been described in Turpin *et al.*, *J. Med. Chem.* 42: 67-86, 1999; Basrur *et al.*, *J. Biol. Chem.* 275: 14890-14897, 2000; Song *et al.*, *Biorganic and Medicinal Chemistry* 10: 1263-1273, 2002; Goel *et al.*, *Biorganic and Medicinal Chemistry Letters* 12: 767-770, 2002; Schito *et al.*, *AIDS Research and Human Retroviruses*, in press.

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

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