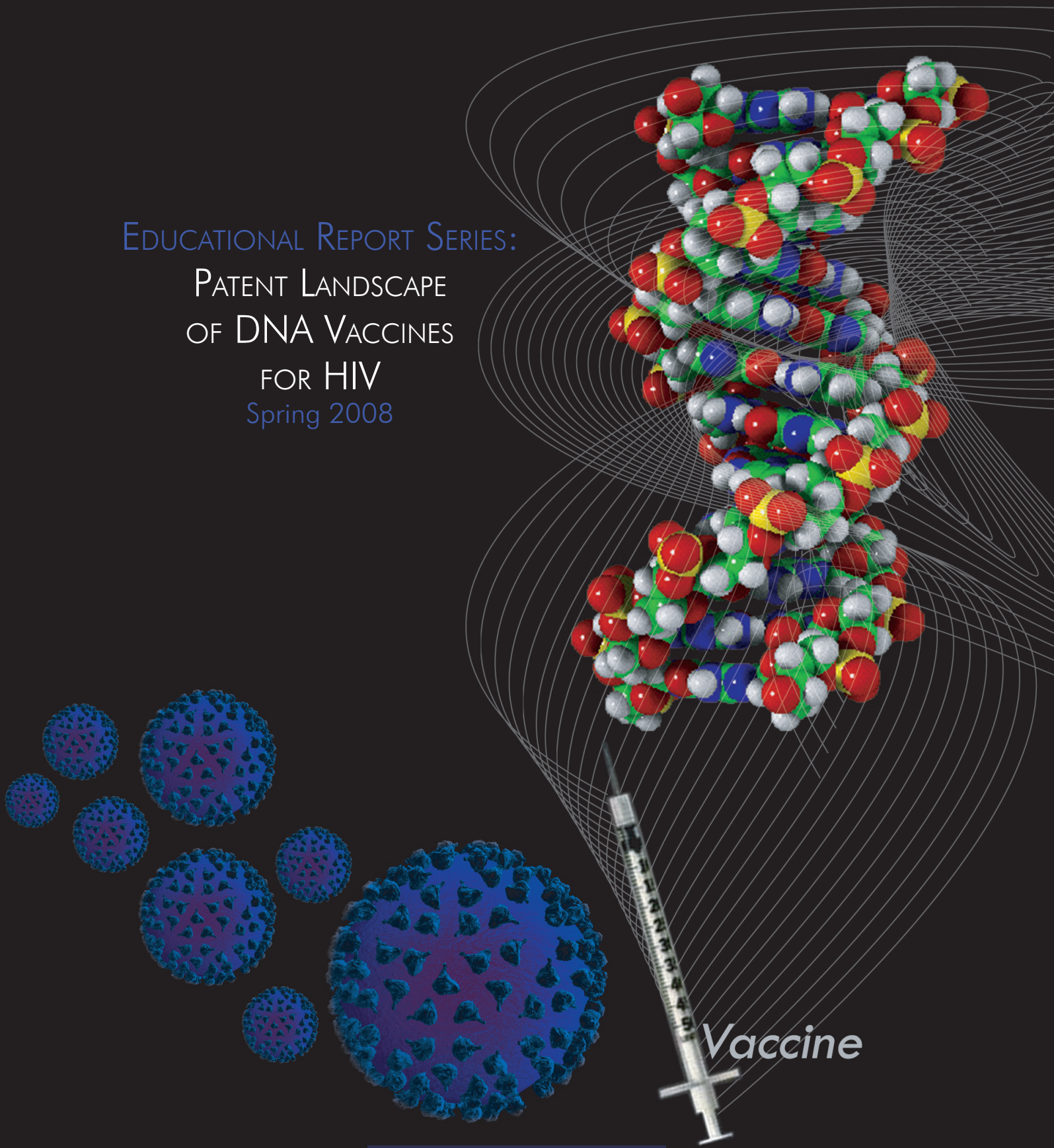
Educational Report Series:

Patent Landscape of DNA Vaccines for HIV

Spring 2008



Pierce Law
Franklin Pierce Law Center

FRANKLIN PIERCE LAW CENTER EDUCATIONAL REPORT: PATENT LANDSCAPE OF DNA VACCINES FOR HIV

SPRING 2008

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We would also like to express our deep appreciation for the tireless effort of Jon R. Cavicchi, J.D., L.L.M., Stanley P. Kowalski, Ph.D., J.D. and Bum Rae Cho, candidate for J.D./LL.M at Franklin Pierce Law Center, who spent countless hours directing our research and are directly responsible for the completion of this project.

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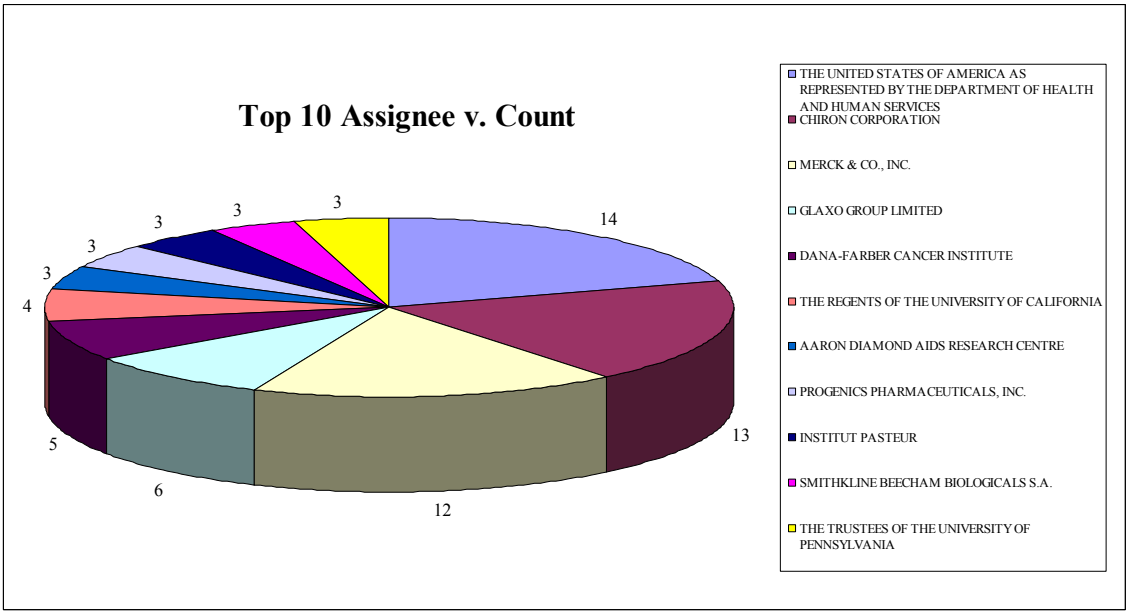
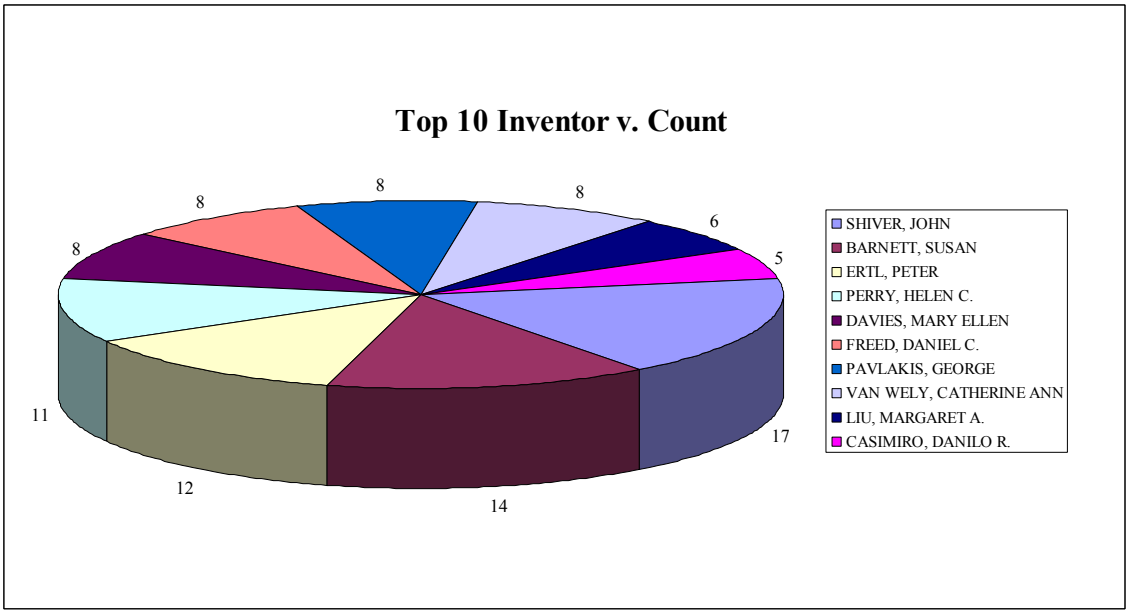
EXECUTIVE SUMMARY



This figure illustrates the patent count by assignee for the patent landscape for DNA HIV vaccines. The top assignees include Merck, Chiron and SmithKline Beecham.

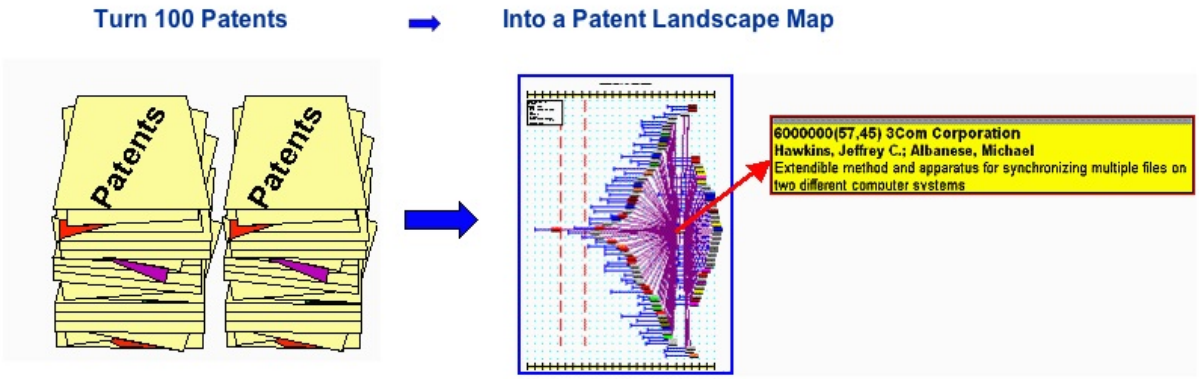


This figure illustrates the patent count by inventor for the patent landscape for DNA HIV vaccines. The top inventors include Shiver, Barnett and Ertl.

Value Added Features

This Report enhances previous Pierce Law Patent Landscape Reports Series by adding innovative capacity building features including:

1. Greater in depth technical expert-based needs assessment (open and frequent communication with Dr. Kerri Clark of PIPRA) from the outset of the project, in light of the tight project schedule, complexity of the subject and the projected used of the data as a Web based publically accessible HIV Vaccine Database.
2. Sub-categorization of patent documents in the Master Spreadsheet to facilitate future indexing in the Web based publically accessible HIV Vaccine Database.
3. Utilization of HIV DNA clinical trials resources to identify key non-patent literature leading to top inventors and assignees.
4. Greater utilization of the Derwent World Patent Index classification system and re-written titles and abstracts due to the obfuscation of HIV-related nomenclature in patent documents.
5. Greater utilization of key inventors and assignees to yield most relevant classifications used in hybrid searches (e.g., combining classification codes with keywords for powerful coordinated search strategies).
6. Introduced use of new patent analytic tools (e.g. IPVisions that enables building and extracting enhanced value from your innovations and patents).



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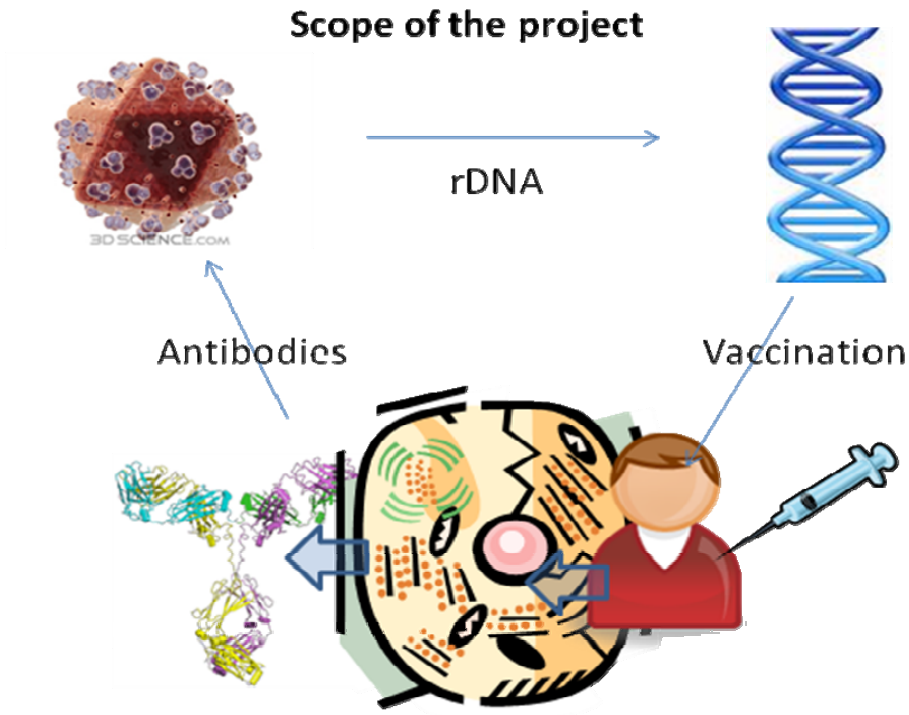


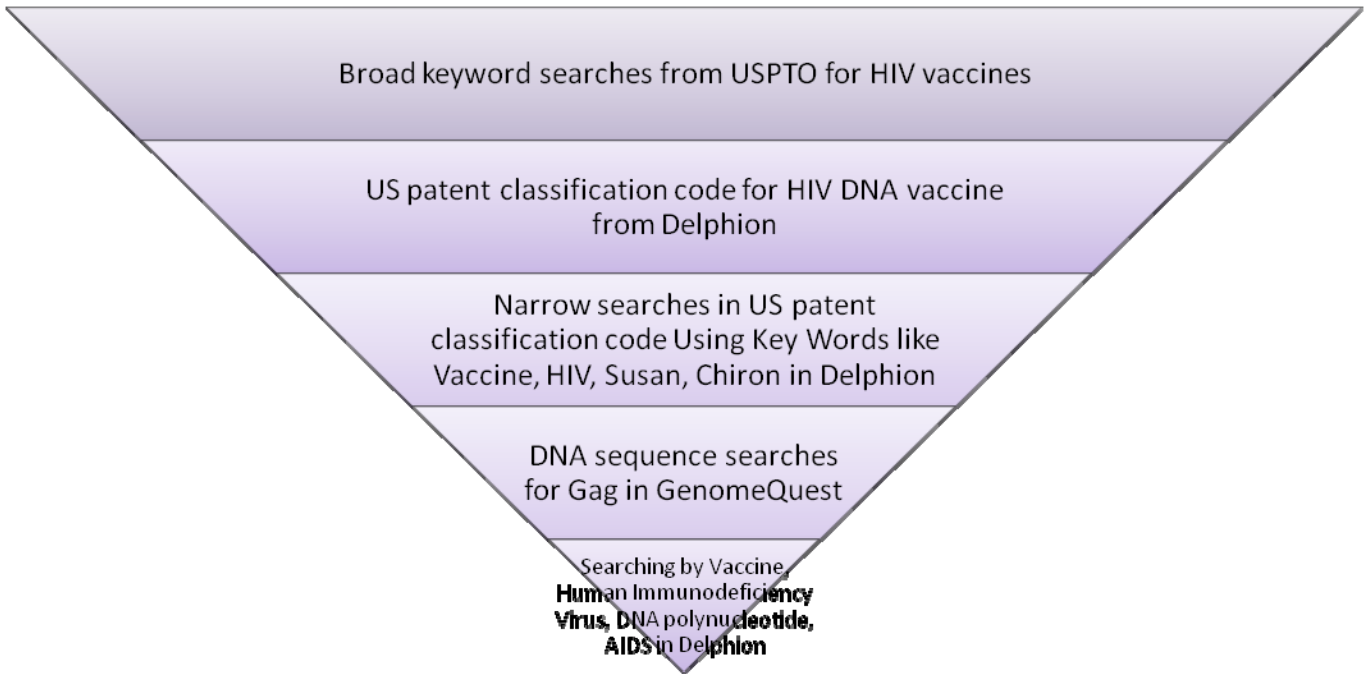
[1]

The project is to provide a patent literature landscape of DNA Vaccines against HIV. As a first step, generally, recombinant DNAs (rDNA) based on the genes from various strains of HIV are generated within the context of other DNAs commonly employed in vaccine development, and used as a vaccine by a direct administration to a host, where the injected DNAs are expressed and eventually produce antibodies against HIV. The DNA vaccines are often optimized at the DNA sequence level or may require the use of a special delivery system for better efficacy as a vaccine.

[1] 3dscience: HIV, http://www.3dscience.com/3D_Images/Biology (last visited April 16, 2008); PatentDocs: DNA, http://patentdocs.typepad.com/patent_docs/2007/05/implications_of.html (last visited April 16, 2008); Australian Motor Neuron Disease DNA Bank: Antibody: http://www.dnamnd.med.usyd.edu.au/ (last visited April 16, 2008).

SEARCH SUMMARY
Search Logic Flow Diagrams

Researcher 1:



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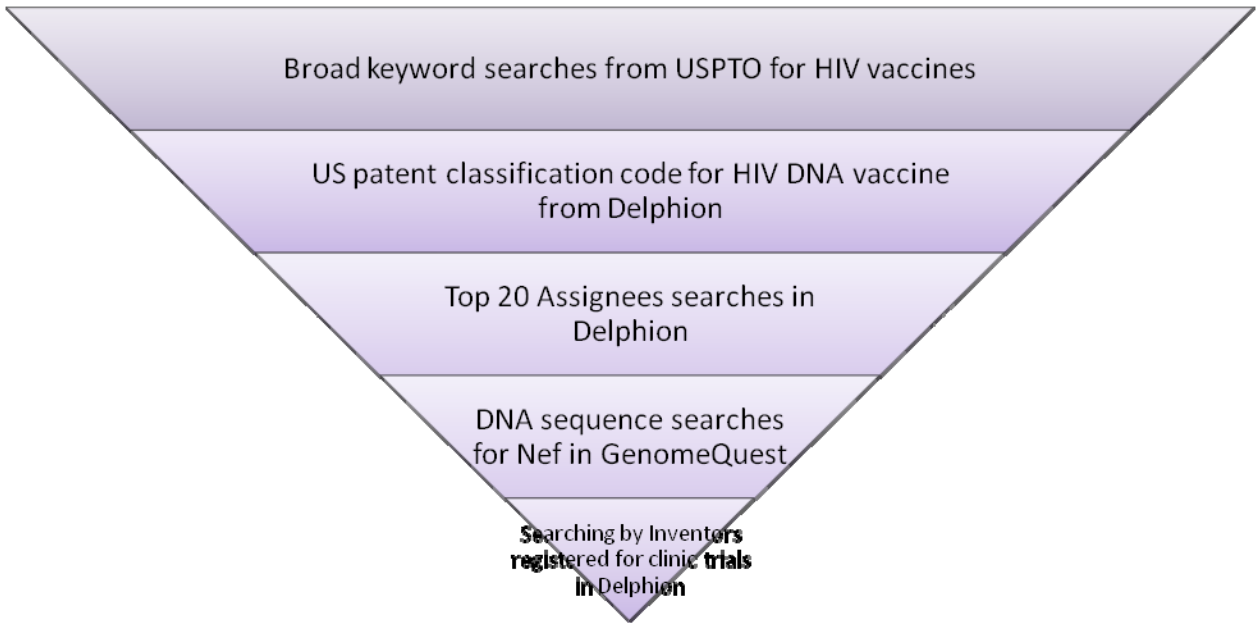

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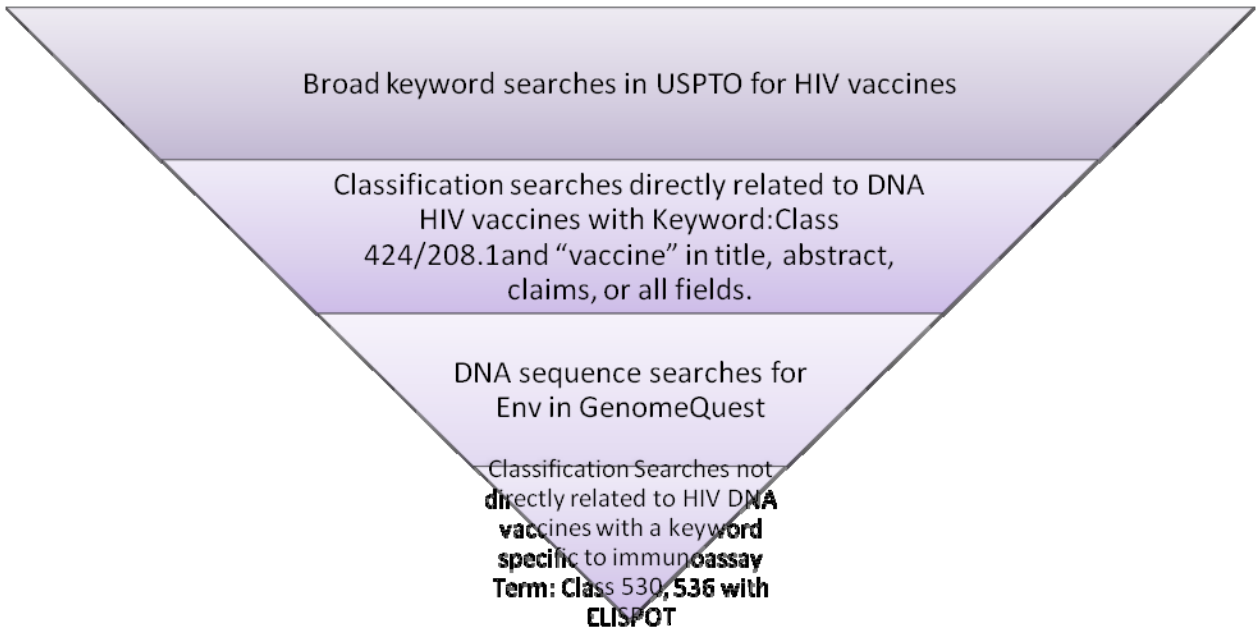

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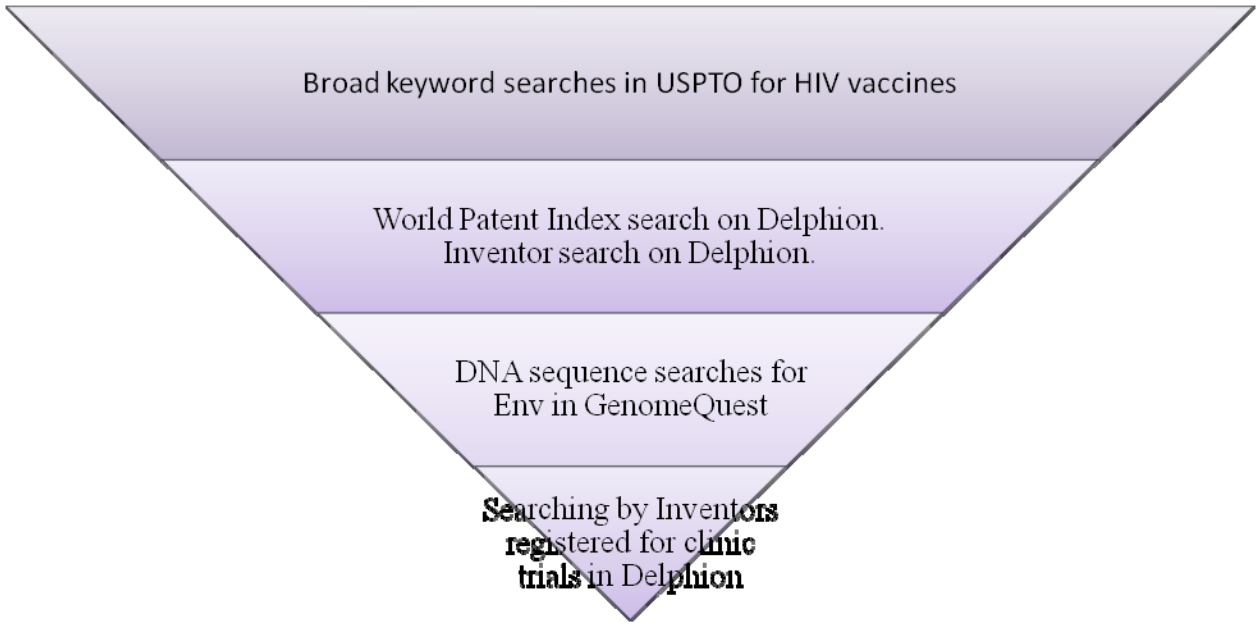

DISCLAIMER

This is an educational report and is neither inclusive nor comprehensive. Rather, it is an informational resource to facilitate a better understanding of the international patent literature landscape with regard to DNA vaccines for HIV.

This report is not a list of all potentially relevant patent documents. It is not a Freedom to Operate (FTO) opinion. Furthermore, this report does not reach the level of a FTO analysis, but instead constitutes an educational presentation of potentially relevant information.

While the search engines utilized in this project are extensive, it is likely that the entire spectrum of patent documents was not obtained utilizing the various search strategies and methods articulated herein. Therefore, it is not the supposition of this team that all relevant patent documents were discovered during the creation of this report.

As the team members are not experts in the field of DNA vaccines for HIV, it is also highly possible that the categorization of the patent documents found, coded and compiled are incomplete. The team cannot guarantee that these patent documents were evaluated at the level of expert scientific sophistication.

Due to the limited time frame imposed upon this project, the number of patent documents evaluated was established by this constrained schedule, the overall semestrial demands, and the general press of business. As such, additional patents may have been available for evaluation, but without the necessary time, they may not have been considered.

Again, this report should not be viewed as FTO analysis but is instead constitutes an educational report.

1. Overview of Immunology[2]

Immunity is the body's biological defense against disease, infection and biological invasions or abnormalities. The two mechanisms of immunity are termed nonspecific, innate immunity and specific, acquired immunity. While these two mechanisms can work together to eliminate or prevent infectious organisms, each has its own method of accomplishing this goal. A specific immune response works to stop particular types of organisms; whereas, nonspecific protection repels all organisms in the same way.

1.A. Nonspecific, Innate Immunity

Nonspecific, Innate Immunity works to provide protection through various defense mechanisms such as chemical barriers (i.e. antimicrobial proteins that eliminate or damage invaders), physical barriers (i.e. epidermis, mucous membrane linings of the respiratory, gastrointestinal and genitourinary tracts), and specific cells (i.e. cells which attack unfamiliar cells and body cells containing infectious organisms). Each of these defense mechanisms operates in a specific manner to provide protection to the body.

1.A.1 Barriers
1.A.1.a. Physical Barriers

The body's physical barriers are the first step in its defense against infectious organisms (refer to Figure 2 for an illustration of the body's physical barriers). The skin, for example, is constantly being shed and renewed in a process that serves as a mechanical defense to infection. Additionally, the skin can secrete certain disease destroying substances such as an oily matter containing oleic acid which can destroy some bacteria and lysozyme which can cause the outer wall of certain bacteria to deteriorate. The mucus membrane linings of the respiratory, gastrointestinal, and genitourinary tracts also provide an example of physical barriers against infectious organisms. Like the skin, these linings provide a mechanical defense against disease as they are constantly being renewed. Additionally, the linings have various other mechanisms harmful to infectious organisms: secretion of phlegm by the respiratory tract which traps small particles; cilia in the respiratory tract which forces mucus and any ensnared particles up and out of the nose and throat; secretion of mucus by the gastrointestinal tract which ensnare potentially infectious particles or prevent them from connecting to cells comprising the lining of the gut; secretion by the gastrointestinal tract of protective antibodies; and the stomach's secretion of hydrochloric acid potent enough to kill many microorganisms.

1.A.1.b. Chemical Barriers

The body's next defense against infectious organisms is the chemical barriers contained within it. If the body's physical defenses are unable to subdue the foreign particles, it is then up to the chemical substances to prevent their growth. The protective chemical substances are chemicals whose primary duty is to damage or eliminate infections organisms, chemicals formed by naturally occurring bacteria, and chemicals whose shielding effect comes second to their main role in the body. Chemicals whose protective duty is second to their primary function include:

[2] The New Encyclopædia Britannica 773–88. (Chicago Encyclopaedia Britannica) (2005).

chemicals which hinder the harmful digestive enzymes freed from body cells that have died in the natural course of events and can hinder similar enzymes produced by bacteria thus inhibiting bacterial growth; and blood protein transferrin which when bound to the infectious organism prevents it from obtaining the necessary iron to grow thus stunting the growth of the organism.

Proteins are another substance which can contribute to the chemical defense system (refer to Figure 2 for an illustration of proteins in chemical defense system). One example of such defensive proteins is, as mentioned above, interferons. This protein group seeks to inhibit the replication of a large number of, though not all, viruses. Virus-infected cells produce interferon which signals other cells to prevent viral growth. Interferon seeks to accomplish this goal by "interfering with the transcription of viral nucleic acid," regulating the degree to which cells express certain molecules on their surface membranes, and stimulating the activity of natural killer cells. Different cells produce different types of interferon. For example, lymphocytes, produce gamma interferon, leucocytes produce alpha interferon and fibroblasts produce beta interferon. Another example of defensive proteins is called complement which works in conjunction with other defense mechanisms in the body to help eliminate infectious organisms. Complement proteins operate with other cells to lyse harmful organisms which lack a protective coating.

1.A.1.c. Cellular Barriers

If an infectious organism evades detection and destruction from the physical and chemical barriers, the body's next defense against infectious organisms is cellular (refer to Figure 2 for an illustration of the body's cellular barriers). These defensive cells include scavenger cells and natural killer cells. Natural killer (NK) cells indirectly attack body cells which contain infectious organisms. These cells consist of granules which contain cytotoxic chemicals. The NK cells attack infectious cells by binding to the infectious cell, inserting its granules through the cells' outer membrane and into the cytoplasm. The end result of this attack is the cells' death. Scavenger cells, on the other hand, attack the infectious cells directly. The two main types of scavenger cells are macrophages and microphages. Macrophages are the mature form of a monocyte which is created by stem cells in the bone marrow and travel through the blood. Monocytes become macrophages upon differentiation. Macrophages identify and consume infectious cells in a slow and incomplete method. The second category of scavenger cells is microphages which can be referred to as polymorphonuclear leukoctyes or granulocytes. Granulocytes are continuously being produced from precursor cells in the bone marrow. Microphages can be grouped into three categories according to shape and dye stain. These categories are neutrophils, eosinophils, and basophils (refer to Figure 1 for a illustration of the differences between these three categories). These cells may have granules storing digestive enzymes which are able to break down proteins or bacteriocidal compounds which kill bacteria. The drawbacks to granulocytes, however, are that many organisms produce toxins poisonous to the granulocytes and thus evade destruction. Other infectious cells avoid death by the simple fact that granulocytes are unable to digest them.

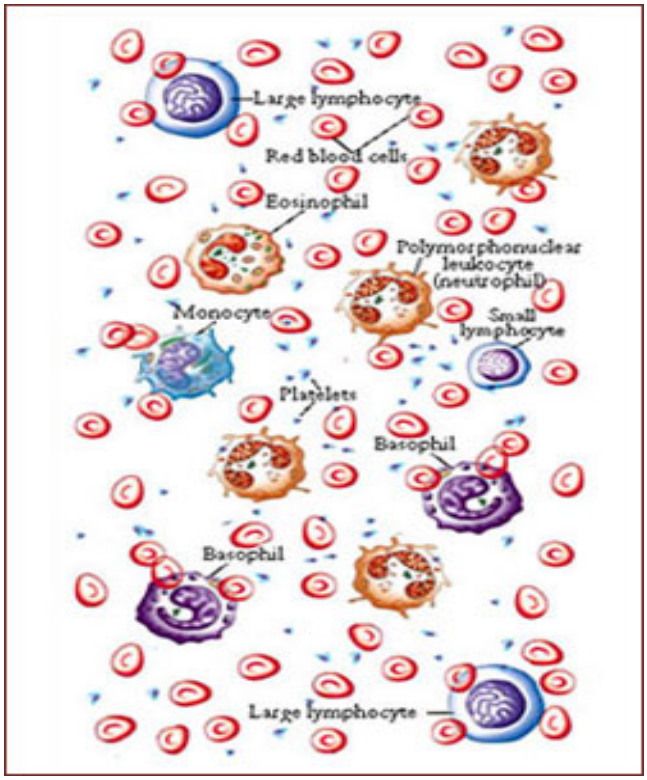

Figure 1: Illustration of the Differences between Eosinophil, Basophil and Neutrophil[3]

1.A.2 Additional Responses to Infection

In addition to protective barriers formed by the body to combat infectious organisms, there are also a number of nonspecific means of fighting infection termed early induced responses (refer to Figure 2 for an illustration of the body's additional responses to infection). These responses seek to either stall or eliminate the infection and include the inflammatory response and acute-phase response. The effect of these responses may not be long-term but they do happen in a rapid manner as compared to acquired immune responses. These responses are effectuated by chemical signals called cytokines which induce fever, acute-phase response and inflammatory response. The acute-phase response is a general innate defense method of the body which initiates the increased temperature in the body (i.e. fever). Since most bacteria survive at a lower than normal body temperature, this increased temperature is effective in eliminating those bacteria. In addition to fever, acute-phase proteins are secreted by the liver to bind to the infectious organism and thus, trigger complement proteins which eliminate the bacteria.

[3] Sportron Info, http://www.sportron.info/english/health_issues/images/immune_system.jpg (last visited April 2, 2008).

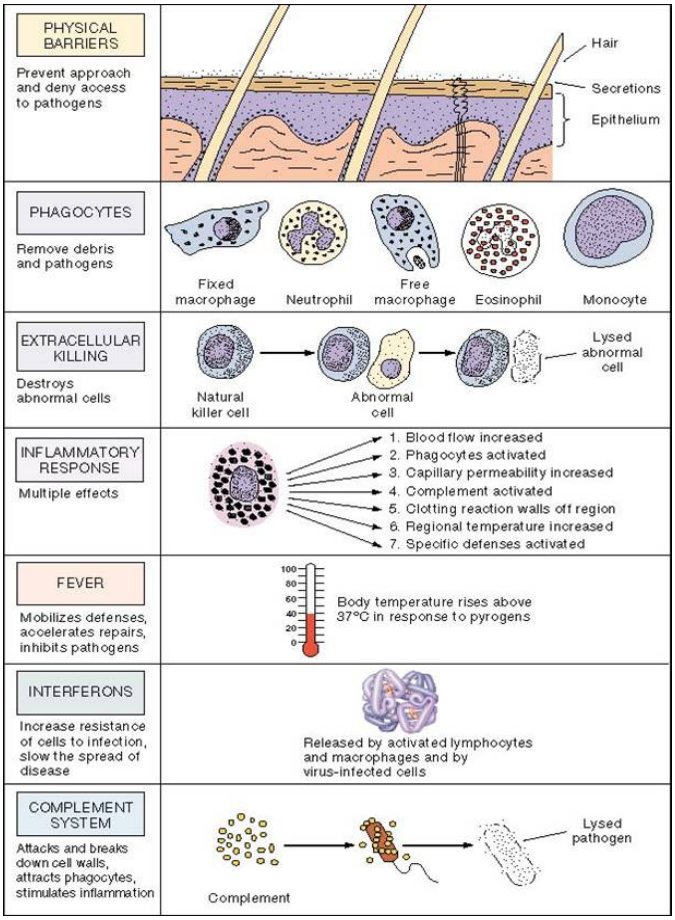

Figure 2: Synopsis of Non-specific, Innate Immunity[4]

1.B. Specific, Acquired Immunity

The concept of specific, acquired immunity, also known as adaptive immunity, arose from the knowledge that people who have survived certain infections do not contract such diseases again. This immunity is strictly dependent upon lymphocytes, specialized white blood cells. The defenses acquired by contracting such an infection are specific to that disease. Many diseases, however, seem to contradict the notion of acquired immunity. Such infections as the common cold do not bar a person once infected from becoming infected again. However, the key is this situation is to understand that there are many infectious organisms that cause the symptoms of the common cold. As such, even though infection with a certain organism does prevent re-infection with that same organism, it does not prevent infection by a different organism which may cause the same symptoms.

As is mentioned above, adaptive immunity relies upon lymphocytes. These cells are responsible for the body's capacity to react and identify any number of unknown organisms. Lymphocytes remain dormant until called to action. There are over 2 trillion lymphocytes in the body of an adult human with only a small fraction of that number found in the bloodstream. The

[4] Indian River Community College, http://faculty.ircc.edu/faculty/tfischer/images/non%20specific%20defenses%20summary.jpg (last visited April 2, 2008).

rest of these cells are located throughout the body's lymphatic system. Organs or tissues containing large qualities of lymphocytes are termed lymphoid. These lymphocytes are restricted in movement to the lymph capillaries located in connective tissues which guide the lymphocytes into contact with other cells (i.e. macrophages).

1.B.1. T cells and B cells

Lymphocytes are created from stem cells in the bone marrow and continue to divide. This division causes the release of immature lymphocytes into the blood stream where they can travel to various organs. Those immature lymphocytes which travel to the thymus to multiply and divide are termed T cells. Upon leaving the thymus, these mature T cells continue to multiply and divide as they circulate through the bloodstream to other lymphoid organs. The second type of lymphocytes is termed a B cell. B cells are lymphocytes which remain in the bone marrow during differentiation and then travel directly to the lymphoid organs. B and T cells each perform separate functions to identify and destroy unknown particles. T cells directly attack the infectious organisms. This type of immunity is termed cell-mediated immunity. T cells can only identify infectious organisms which have entered body cells. On the other hand, B cells secrete antibodies. This type of immunity is termed humoral immunity. B cells, with their antibody secretion, only attack cells which remain outside the cells of the body.

One of the important features of lymphocytes is their ability to identify unknown particles within the body. Receptor molecules are located on the surface of the lymphocyte or secreted into fluids of the body. These receptor molecules are responsible for the ability of lymphocytes to recognize foreign particles. The shape of a receptor molecule complements a specific foreign molecule which allows the receptor and foreign molecule to fit together. While both B and T cells have receptor molecules, only B cells produce antibodies which are unattached receptor molecules. Foreign molecules that attach to these receptor sights are termed antigens. Antigens include a wide range of molecules such as bacteria, viruses, fungi, dust, pollen, transplanted tissue and protozoans. When the binding of an antigen to a receptor molecule elicits an immune response, the response is termed an immunogen.

1.B.2. T cells

There are two main types of mature T cells: cytotoxic and helper T cells. Cytotoxic T cells eliminate cells which present a threat to the individual (i.e. cells with infectious microorganisms and cancer cells) and primarily recognize target cells containing antigens associated with class I MHC molecules (molecules which are present on the surface of most body cells with nuclei). Helper T cells, on the other hand, activate other white bloods cells (i.e. lymphocytes and macrophages) and recognize unknown antigens associated with class II MHC molecules (molecules which are limited to the surfaces of most B cells and some T cells, macrophages, and macrophage-like particles). Also, T cells have a co-receptor location on their surface to which the MHC molecule bind to provide added support to the bonding between T cell and foreign molecule. This co-receptor location is termed CD4 for helper T cells which bind class II MHC molecules and CD8 for cytotoxic T cells which bind class I MHC molecules.

In addition, T cells can be divided into two subcategories, T_H1 and T_H2. T_H2 cells' primary duty is to synthesize interleukins IL-4, IL-5, IL-6, IL-9, IL-10, and IL-13 and aid in the

production of antibodies by stimulation of the B cells. T_H1 cells' primary duty is to produce tumour necrosis factor-beta, interleukins (IL-2), and cytokines gamma interferon and to stimulate macrophages and cytotoxic T cells.

1.C. Immunization through Specific Immunity

Immunization through specific immunity can be divided into two types, active and passive immunization. Passive immunization refers to the transfer of preformed antibodies or lymphocytes from an individual whose immune system has been stimulated by the particular antigens. This type of immunization is very effective in situations where a person's immune system is unable to respond quickly enough to fight the infection. Examples of situations such as this include snake bits, botulism and tetanus. Active immunization, on the other hand, refers to the immunity protection conferred by a vaccine which stimulates the immune system to fight infection by production of antibodies and lymphocytes. Vaccination seeks to front load the victim with a supply of antibodies or T and B cells which fight whatever infectious organism is encountered before infection occurs or upon interaction with the infectious organism. The primary component of a vaccine is a sufficient amount and persistence of antigens to produce an immune response analogous to the natural infection. Killed vaccines (vaccines which comprise an entire microbe which has been killed without altering it significantly) have been effective in situations such as influenza, typhoid, and the plague. Attenuated vaccines (vaccines which comprise a weakened strain of bacteria or virus) may cause a number of symptoms of the disease it is seeking to eliminate; however, the introduced infectious organism never becomes virulent. This type of vaccine has been useful against yellow fever, measles and tuberculosis.

2. HIV Overview

2.A. HIV Biology

HIV/AIDS is a pandemic. The figures are overwhelming. As of 2006, 39.5 million people worldwide are estimated to live with HIV.[5] The World Health Organizaton (WHO) projects that worldwide deaths from HIV will rise from 2.8 million in 2002 to 6.5 million in 2030 and be among the 4 top causes of death in 2030.[6] Since its identification in 1981, AIDS has claimed the lives of more than 25 million people.[7]

Human Immunodeficiency Virus (HIV) adversely affects the immune system of the host it infects by specifically infecting cells expressing CD4 molecules which are found in immune cells for both cellular and innate immunity – T cells and macrophages, respectively.[8]

HIV belongs to a group of viruses called retrovirus and a subgroup called lentiviruses, or "slow" viruses. It contains 2 copies of single stranded (+) RNA as a genome from which it synthesizes DNA, and then the DNA gets integrated into the host genome, becoming part of the

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[5] WORLD HEALTH STATISTICS 11 (2007), available at http://www.who.int/whosis/en/index.html.
[6] *Id*. at 12.
[7] HIV/AIDS Factssheets Introduction, http://oversight.house.gov/features/hivaids (last visited April 17, 2008).
[8] National Institute of Allergy and Infectious Diseases, *How HIV cause AIDS*, *available at* http://www.niaid.nih.gov/factsheets/howhiv.htm (last visited April 22, 2008).

host system. This is exactly the reverse of normal cellular process, which is reflected in part of its name "retro~." Another very notable feature of HIV is that it is highly error prone when replicating, i.e., synthesizing a DNA copy of its RNA genome and therefore highly mutagenic/variable. This leads to high strain variability among different hosts and regions, and even within an infected host.

2.B. HIV Phylogeny

The HIV strains may be classified into types, groups and subtypes based on its genetic makeup.[9] There are two types of HIV: HIV-1 and HIV-2. Despite their divergent genetic sequences, they share many similar characteristics including mode of transmission (by sexual contact, through blood and from mother to child) and clinically indistinguishable symptoms– AIDS. However, HIV-2 is less infective, particularly early in the course of disease. Thus, it is less easily transmitted and the latent period is longer than HIV-1. Geographically, HIV-2 is rarely found except in West Africa and the predominant type is HIV-1.[10]

HIV-1 strains are further classified into three groups based on the envelope gene: M (major), N (new) and O (outlier) (see Figure 3). M group is most prevalent and responsible for more than 90% of reported HIV/AIDS cases, while O and N groups are found very rarely. Group M is further divided into 9 distinct subtypes (or clades) based on HIV's whole genome: A, B, C, D, F, G, H, J and K. Each subtype is geographically distinct (see Figure 4). Group N and O also have subtypes; however, they do not give distinct clades like group M group using a similar method to the M group. Intersubtype recombinants known as "circulating recombinant forms" or "**CRFs**"– new hybrid viruses created by a genetic recombination of different subtypes- have also been identified.[11]

[9] Avert, http://www.avert.org/hivtypes.htm (last visited April 3, 2008).

[10] Centers for Disease Control and Prevention, CDC Fact sheet HIV Type 2, *available at* http://www.cdc.gov/hiv/resources/Factsheets/hiv2.htm (last visited April 22, 2008).

[11] Marcia L. Kalish et al., Recombinant Viruses and Early Global HIV-1 Epidemic available at http://www.cdc.gov/ncidod/eid/vol10no7/03-0904.htm (last visited April 22, 2008). See Avert, *supra* note 9.

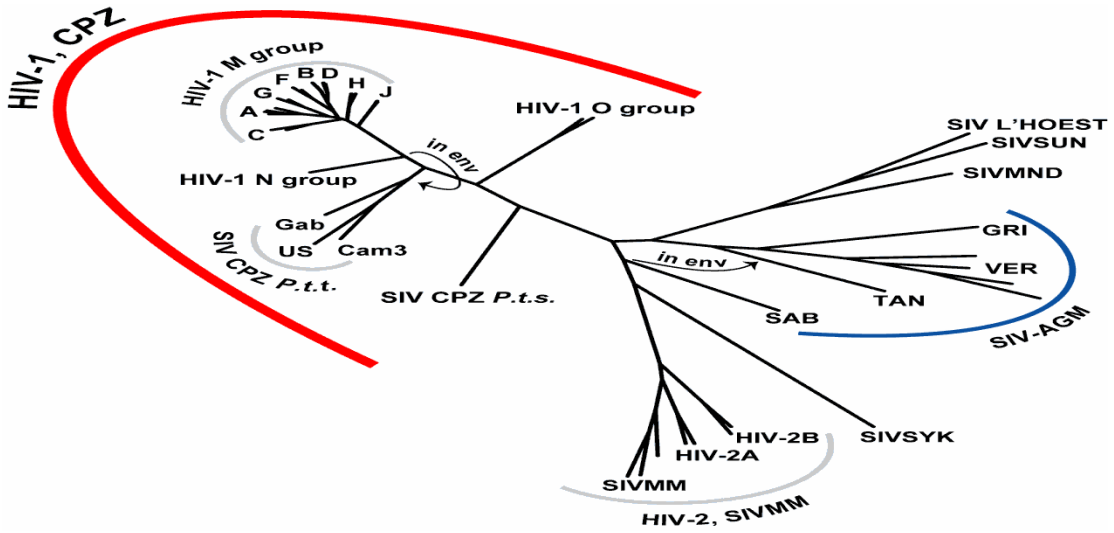

Figure 3: Phylogeny of HIV[12]

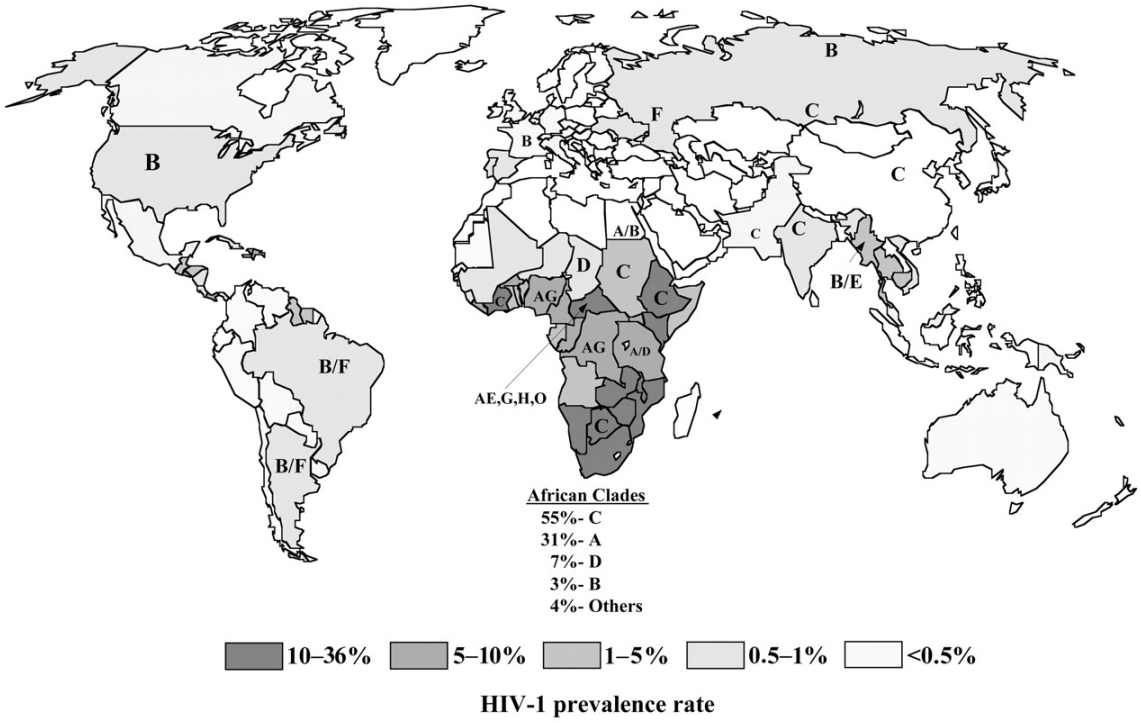

Figure 4: Geographic spread of HIV-1 Group M subtypes[13]

[12] Luigi Buonaguro et al., *Genetic and Phylogenetic Evolution of HIV-1 in a Low Subtype Heterogeneity Epidemic: the Italian Example*, 4 Retrovirology 34 (2007), available at http://www.retrovirology.com/content/pdf/1742-4690-4-34.pdf.

[13] Shalom Spira et al., *Impact of clade diversity on HIV-1 virulence, antiretroviral drug sensitivity and drug resistance*, 51 J. ANTIMICROBIAL CHEMOTHERAPY 229–240 (2003), *available at* http://jac.oxfordjournals.org/cgi/content/full/51/2/229?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=prevalence&searchid=1&FIRSTINDEX=0&volume=51&issue=2&resourcetype=HWCIT.

2.C. HIV Anatomy[14]

HIV is spherical in shape having a diameter of about 0.1 μM, and can be divided into two structural parts: viral membrane (envelope) and viral core (see Figure. 5). The viral envelope is the outer coat of HIV enclosing viral particles. The envelope originated from the membrane of a human cell which HIV infects and later buds off from. In addition to proteins from the host cells, embedded in the envelope are complex HIV glycoproteins called Env, glycoprotein (gp)160 or "spikes." The spikes consist of a cap made up of three molecules called gp120, and a stem made up of three gp41 molecules that function as an anchor. It is involved in the entry of HIV into a cell by binding and membrane fusion of the virus particle to the cell. Thus, the envelope proteins have been the major focus of much of the research to develop a vaccine against HIV.

Encompassed by the viral envelope is the matrix, made up of the viral protein p17, and the viral core or capsid, made up of the viral protein p24. Inside the viral core are 2 exact copies of viral RNA and viral enzymes which are required for HIV replication- reverse transcriptase, protease and integrase.

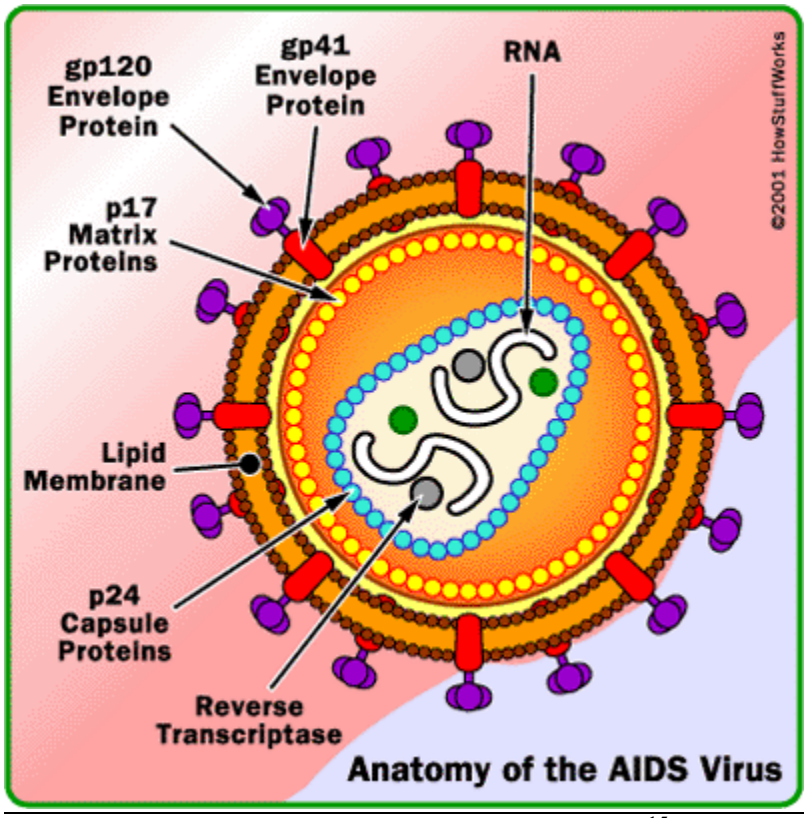

Figure 5: The structure of a HIV virion.[15]

[14] See HIV/AIDS Factssheets Introduction*: How HIV cause AIDS, supra* note 7.

[15] Teen Aids-PeerCorps, http://www.teenaids.org/Portals/0/Images/whatIsAIDS-pic3.gif (last visited April 16, 2008).

2.D. HIV Genes[16]

HIV's RNA genome is 9 kilobases in length which contains 9 genes encoding 15 different proteins and a control sequence called long terminal repeat (LTR) at both ends of each genome, which are involved in the HIV replication (Figure 6). The HIV genes are divided into 3 groups based on their functions–structural, regulatory, and accessory genes. Three of the genes called *gag, pol* and *env* belong to the structural group; the genes called *tat, rev* and *nef* belong to the regulatory group; the *vpr, vif* and *vpu* genes belong to the accessory group. The structural genes encode proteins for making new virus particles, which have been the major target in the HIV vaccine development. The latter two groups of genes are involved in the control of various aspects of HIV life cycle from the ability of HIV to infect a cell, replication inside a cell or causing disease.

Specifically, the *pol* gene encodes several different proteins, reverse transciptase, protease, RNAseH and Integrase. The *gag* encodes viral capsid proteins, p27-capsid, p17-matrix protein, p7-nucleocapsid, and p6, which are the building blocks for the viral core. The *env* encodes envelope protein gp160. The *tat* encodes TAT protein essential for HIV replication of its genome. The *nef* encodes a regulatory protein that directs the host cells when to make RNA copies from the integrated HIV DNA to produce viral RNA. The rev encodes a regulatory protein which promotes the production of viral proteins. The vpr encodes VPR protein which accelerates production of HIV proteins and promotes integration of the viral DNA into the host genome.

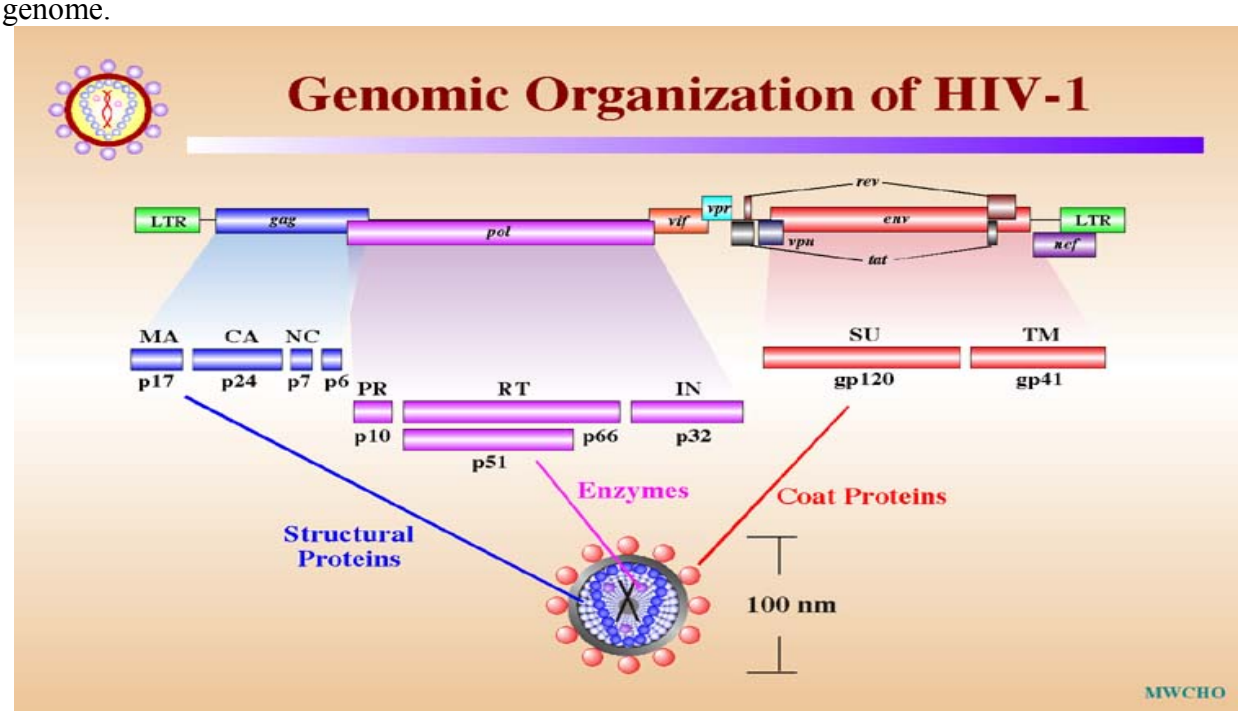

Figure 6: HIV Genes and their Products[17]

[16] See HIV/AIDS Factssheets Introduction*: How HIV cause AIDS, supra* note 7.
[17] Stanford University- Human Virology, http://www.stanford.edu/group/virus/retro/2005gongishmail/HIV-1b.jpg (last visited April 16, 2008).

2.E. Vaccines to HIV[18]

Scientists have been struggling to develop a vaccine against HIV since the first identification of HIV and its etiologic role in AIDS more than two decades ago. Currently, no vaccines have been produced that can produce sterile immunity. The biology of HIV infection poses the unique problems for vaccine development.

First, HIV is highly variable/mutagenic. It has a very high error rate when replicating viral genome coupled with a high replication rate (~10^9 – 10^{10} virions per day) results in many variants of the initial infecting HIV within a host.

Second, HIV infects immune cells central to the immune system, CD4+ cells and macrophages and thus, depletes them.

Third is the latency. HIV infects the CD4+ cells of a host; however, HIV only can replicate when the CD4+ cells become activated to divide to produce more T cell clones. Until then, the HIV is essentially invisible to the immune system and thus, this pool of latently infected CD4+ T cells is never cleared even with antiretroviarl treatment.

Thus, an ideal HIV vaccine would need 1) to induce a sterilizing immunity including neutralizing antiboides and mucosal immunity to prevent infection and cyottoxic T cells to clear virus that has evaded the antibody, 2) to prevent infection of CD4+ cells, 3) to be cross reactive with all groups or clades in a group at a minimum, 4) to have a low cost for production and vaccination; to be safe and tolerable, 5) and to be easy to administer.

3. HIV Vaccines

Several types of vaccines against HIV have been developed during the past three decades including live vector based vaccines, glycoprotein vaccine, peptide vaccines and DNA vaccine. HIV vaccines have been tested in man since late 1980.[19] The earliest approach of HIV vaccine is attenuated live virus vaccine, such as vaccinia virus or poxvirus vaccine.

The vaccinia virus vaccines induced HIV-specific CD4+ T-cell responses. Weak CD8+ CTL responses could also be generated when using a prime-boost combination of vaccinia virus and recombinant gp120 vaccines. However, the viruses caused serious diseases in healthy testers; thereafter, the replication-competent vaccinia vectors have been replaced by replication-deficient vectors because of safety concerns. These replication-deficient vectors have been evaluated in human trials but no positive results have occurred. For example, a research plan for a prime/boost vaccine approach of canarypox vector priming and gp120 boosting was performed by HIV Vaccine Trials Network (HVTN) during year 2001 and 2002. HVTN later decided to abandon its phase III trial and further study because the result showed that this kind of vaccine plan did not generate a high level of CD8+ T cell response.[20]

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[18] See HIV/AIDS Factssheets Introduction*, supra* note 7.
[19] Paul Spearman, *Current Progress in the Development of HIV Vaccines*, 12 CURRENT PHARMACEUTICAL DESIGN 1149 (2006).
[20] *Id*.

More studies on live vector-based vaccines continue. The scientists never give up this approach because live vectors can generate strong and long-lived cellular immune responses. However, we have to consider the balance between virus safety and the capacity to generate immune response. Wildtype viruses are no longer acceptable. Most of these live vector approaches are highly attenuated or are viral vector systems that are competent for only a single round of infection in the host.

There are several types of live vector-based HIV vaccines used in current human trials including adenovirus vaccine, poxvirus vaccine, alphavirus vector vaccine, adeno-associated virus (AAV), vesicular stomatitis virus (VSU)- based HIV vaccine and poliovirus vector vaccine. None of these report good results as yet. The adenovirus vaccine is the leading CTL vaccine candidate. It can produce potent cellular immune response but it won't work for people already immunized from it. Almost one-third of North American volunteers have preexisting immunity for adenovirus.[21] The other live vector vaccines have common problems of high production cost, low stability and limited serotypes.

The current HIV vaccine approaches include DNA, peptide and glycoprotein vaccines. Usually these vaccines are not used in isolation; they instead would be arranged in a prime/boost regime such as DNA prime and protein boost.[22] The primarily goal for these vaccine approaches is to elicit HIV-specific CD8+ CTL responses and to generate a population of supportive HIV-specific CD4+ T cells.

Monomeric gp120-based vaccine was another form HIV vaccine in the early study. This vaccine was safe and could generate neutralizing antibodies to gp120. However, this kind of vaccine behaved differently for laboratory-adapted HIV isolates and naturally occurring HIV isolates. Results of two phase III trials showed that this approach did not produce relevant antibodies in human subjects. Scientists then stopped pursing this approach.

More studies show that the monomeric gp-120-based vaccine would fail because the native structure of HIV envelope glycoprotein is in a trimeric conformation. The new approach of glycoprotein vaccine is to generate neutralizing antibodies against HIV virus by using the glycoprotein which maintains its native conformation of the trimeric complex. See Figure 7.

[21] Id. at 1157.
[22] *Id*. at 1154.

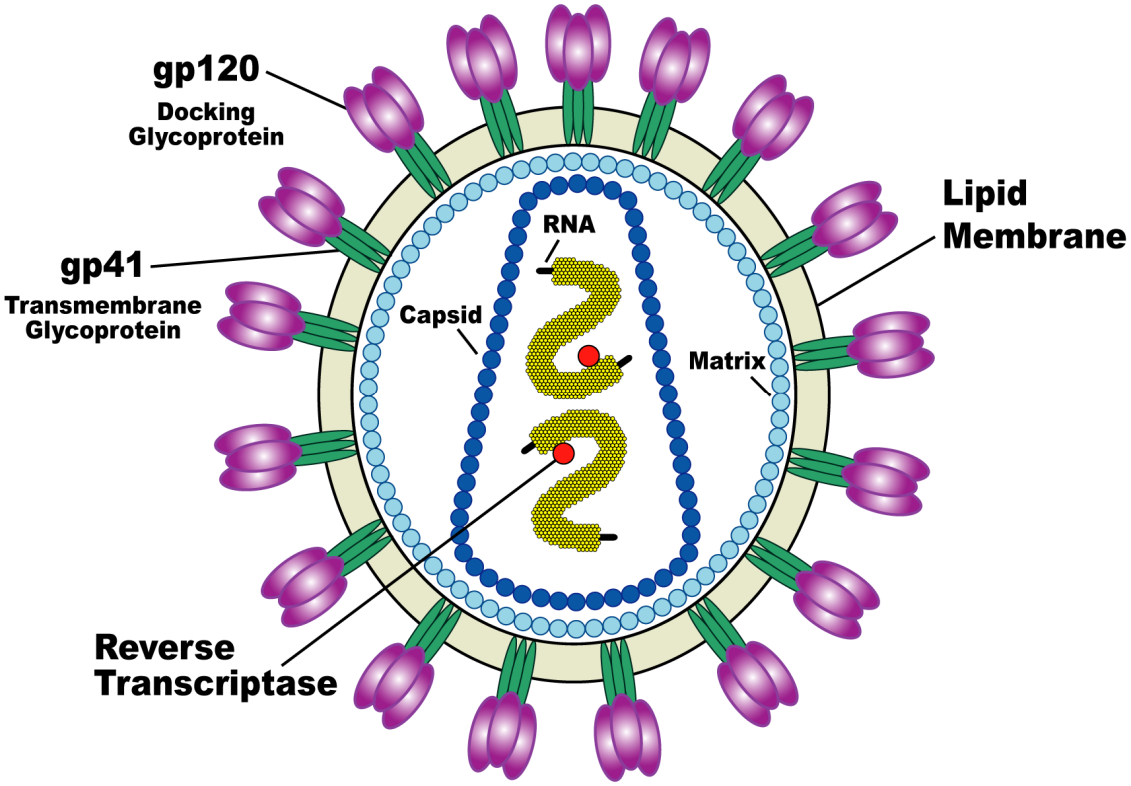

Figure 7: Trimeric Conformation of the HIV gp120 Envelop Glycoprotein[23]

As of yet, no positive results occurred for the trimer glycoprotein approach. One approach using an oligomeric gp140 vaccine is being investigated at Chiron. Progenics Pharmaceuticals and Cornell University are also pursuing a disulfide-stabilized, modified trimeric protein vaccine.

The other two HIV vaccine approaches are DNA vaccine and peptide vaccine. These two approaches share several common characteristics: they all have great potential, they have achieved good results in animal trials and all are safe in human trials. However, studies so far have reported that these approaches only generate weak immune response in humans.

DNA vaccines use a plasmid DNA vector to generate HIV proteins or protein subunits within host cells.[24] The HIV proteins are antigens and induce immunization response against the HIV virus. The first step of DNA vaccine is to allow the plasmid DNA vector being taken up by host cells. This might be procured by simply intramuscular injection. However, there will not be enough antigens if the cellular uptake is inefficient. Ways to improve the cellular uptake include the use of gene guns, formulation into micro-particles and the use of adjuvants that may increase uptake by antigen presenting cells (APCs).[25] Some data shows DNA vaccines for HIV can generate cellular and humoral immune responses. Several reports indicated DNA vaccines

[23] National Institute of Allergy and Infectious Diseases: How HIV causes AIDS, *available at* http://www.niaid.nih.gov/factsheets/howhiv.htm.
[24] See Spearman, *supra* note 18, at 1154.
[25] *Id*.

elicit reasonable levels of HIV-specific immune responses in mice and one report showed that a DNA/MVA vaccination approach provided longstanding protection from SHIV 89.6P.[26] However, there were no convincing conclusions resulting from human trials of DNA vaccines against HIV. Only weak CD8+ CTL responses were reported.

The concept of the peptide vaccine is simple- using the peptides presented on major histocompatibility complex (MHC) class I or class II molecules as the antigens to trigger the immunization responses against HIV virus. See Figure 8.

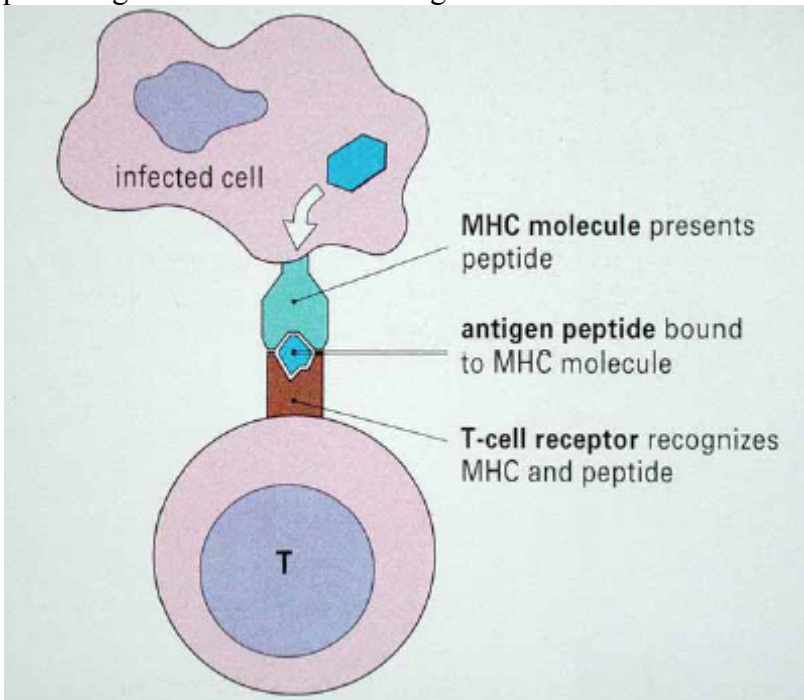

Figure 8: Structure of a MHC Molecule[27]

The peptide vaccine can be designed to produce particular immunogens for a special target which may produce combinations of T-helper and CTL epitopes representing specific conserved regions of HIV.[28] Another advantage of peptide vaccines is that it can direct the immune response toward subdominant epitopes that may not elicit responses of viral infection or other broad immune responses.[29] Positive results were reported in small animals. However, a human trial using a live virus prime/peptide boost vaccine showed only weak and transit cellular immune responses were generated inside these healthy volunteers. How the scientists could improve the peptide-based HIV vaccines is still unclear.

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[26] *Id.* at 1155.

[27] Tao, Mi-Hua,*免疫世界的戰士* at .26, *available at* http://www.sinica.edu.tw/~hispj/program/doc/tao-mi-hua.pdf.

[28] Spearman, Paul, *Current Progress in the Development of HIV Vaccines*, Current Pharmaceutical Design, 2006, 12, at p. 1155

[29] *Id*.

4. DNA Vaccines for HIV

4.A. Vaccine Overview

A vaccine may be defined in basic terms as a preparation which is used to improve immunity to a particular disease. The term is derived from Edward Jenner's use of cowpox ("vacca" means cow in Latin), which, when administered to humans, provided them protection against smallpox, the work which Louis Pasteur and others carried on. Vaccines are based on the concept of variolation originating in China, in which a person is deliberately infected with a weak form of smallpox. Jenner realized that milkmaids who had contact with cowpox did not get smallpox. The process of distributing and administrating vaccines is referred to as vaccination. Since vaccination was much safer, smallpox inoculation fell into disuse and was eventually banned in England in 1848.

Vaccines can be prophylactic (e.g. to prevent or ameliorate the effects of a future infection by any natural or "wild" pathogen), or therapeutic (e.g. vaccines against cancer are also being investigated).

Over the years of research, various types of vaccines have been researched, discovered and used for preventing and curing diseases. Different types of vaccines are discussed below: Traditionally, there are four types of vaccines:

- Vaccines containing killed microorganisms - these are previously virulent micro-organisms that have been killed with chemicals or heat. Examples are vaccines against flu, cholera, bubonic plague, and hepatitis A.
- Vaccines containing live, attenuated virus microorganisms - these are live micro-organisms that have been cultivated under conditions that disable their virulent properties or which use closely-related but less dangerous organisms to produce a broad immune response. They typically provoke more durable immunological responses and are the preferred type for healthy adults. Examples include yellow fever, measles, rubella, and mumps. The live tuberculosis vaccine is not the contagious strain, but a related strain called "BCG".
- Toxoids are inactivated toxic compounds in cases where these (rather than the micro-organism itself) cause illness. Examples of toxoid-based vaccines include tetanus and diptheria. Not all toxoids are for micro-organisms; for example, Crotalis atrox toxoid is used to vaccinate dogs against rattlesnake bites.
- Subunit vaccines, rather than introducing an inactivated or attenuated micro-organism to an immune system (which would constitute a "whole-agent" vaccine), a fragment of it can create an immune response. Characteristic examples include the subunit vaccine against HBV that is composed of only the surface proteins of the virus (produced in yeast) and the virus like particles (VLP) vaccine against human papilloma virus (HPV) that is composed of the viral major capsid protein.[30]

Other than these four traditional vaccines, new and modern vaccines have also been discovered which are in various stages of development but have been put to application as well. These are:

- Conjugate vaccines are those wherein, certain bacteria have polysaccharide outer coats that are poorly immunogenic. By linking these outer coats to proteins (e.g. toxins), the immune system can be led to recognize the polysaccharide as if it were a protein antigen. This approach is used in the *Haemophilus influenzae* type B vaccine.

[30] R.Wolfe et al., *Anti-vaccinationists: Past and Present,* BRITISH MEDICAL J., Aug. 24, 2002, at 430–432.

- In Recombinant Vector vaccines, by combining the physiology of one micro-organism and the DNA of the other, immunity can be created against diseases that have complex infection processes
- DNA Vaccination is a technique which has been developed in recent years and has been created from an infectious agent's naked DNA. It works by insertion (and expression, triggering immune system recognition) into human or animal cells, of viral or bacterial DNA. Some cells of the immune system that recognize the proteins expressed will mount an attack against these proteins and cells expressing them. Because these cells live for a very long time, if the pathogen that normally expresses these proteins is encountered at a later time, they will be attacked instantly by the immune system. One advantage of DNA vaccines is that they are very easy to produce and store. As of 2006, DNA vaccination is still experimental.[31]

This report looks in detail into the third kind of innovative vaccines, i.e. the DNA vaccines.

These DNA vaccines may be defined as preparation of a portion of the pathogen's structure that upon administration stimulates antibody production or cellular immunity against the pathogen but is incapable of causing severe infection, or more specifically as DNA sequences that code for immunogenic proteins located in appropriately constructed plasmids which include strong promoters, which when injected into an animal are taken up by cells and the immunogenic proteins are expressed and elicit an immune response. Simultaneously, Genetic/ DNA immunization may be defined as a novel technique used to efficiently stimulate humoral and cellular immune responses to protein antigens. The direct injection of genetic material into a living host causes a small amount of its cells to produce the introduced gene products. This inappropriate gene expression within the host has important immunological consequences, resulting in the specific immune activation of the host against the gene delivered antigen.[32]

4.B.1. DNA Vaccine Overview

The use of genetic material to deliver genes for therapeutic purposes has been practiced for many years. Experiments outlining the transfer of DNA into cells of living animals were reported as early as 1950. Later experiments using purified genetic material only further confirmed that the direct DNA gene injection in the absence of viral vectors results in the expression of the inoculated genes in the host. There have been additional experiments that extend these findings to recombinant DNA molecules, further illustrating the idea that purified nucleic acids could be directly delivered into a host and proteins would be produced. In 1992, scientists Tang and Johnson reported that the delivery of human growth hormone in a expression cassette *in vivo* resulted in production of detectable levels of the growth hormone in host mice. They also found that these inoculated mice developed antibodies against the human growth hormone; they termed this immunization procedure "genetic immunization", which describes the ability of inoculated genes to be individual immunogens.[33]

Since its early applications in the 1950's, DNA-based immunization has become a novel approach to vaccine development. Direct injection of naked plasmid DNA can induce strong

[31] Wikipedia, http://en.wikipedia.org/wiki/Vaccine.
[32] H. Koprowski et al., *DNA Vaccination/ Genetic Vaccination*, SPRINER-VERLAG HEIDELBERG, 1998, at 198.
[33] *Id.*

immune responses to the antigen encoded by the gene vaccine. They offer a new opportunity to immunize with materials that are entirely gene-based, expressed by the recipient's own cells. This means that there is greater control over the immunization process, because the investigator determines which antigens and co-stimulants to use, where to elicit the response (e.g., skin or muscle), and which cytokines or innate controls (if any) to use. The duration of the response can be controlled by repeated exposure to the genes, which are expressed transiently, by a variety of delivery mechanisms such as: direct injection; electroporation; gene gun; mucosal delivery, etc.[34] Once the plasmid DNA construct is injected the host cells take up the foreign DNA, expressing the viral gene and producing the corresponding viral protein inside the cell. This form of antigen presentation and processing can induce both MHC and class I and class II restricted cellular and humoral immune responses.[35] The ability to make DNA molecules strictly by rational design makes it possible to bypass months of development for the production of efficacious vaccines.

In addition, numerous DNA-based biopharmaceuticals are able to control disease progression by induction and/or inhibition of genes. These potent therapeutics include plasmids containing transgenes, antisense oligonucleotides, aptamers, ribozymes, DNAzymes and short interfering RNAs. DNAzymes, which cleave RNA substrates in a sequence-specific manner, have been studied as potential therapeutics to target pathogenic mRNAs, and may yield drugs that are safer than those currently available.[36]

4.B.2. DNA Vaccine Construction

The construction of viral/bacterial plasmids with vaccine inserts is accomplished using recombinant DNA technology. Once constructed, the vaccine plasmid (see Figure 9) is transformed into virus/bacteria, where viral/bacterial growth produces multiple plasmid copies. The plasmid DNA is then purified from the virus/bacteria, by separating the circular plasmid from the much larger bacterial DNA and other viral/bacterial impurities. This purified DNA acts as the vaccine.[37] The figure given below shows an example of a sample DNA vaccine plasmid construct. DNA vaccines are composed of viral/bacterial plasmids. Expression plasmids used in DNA-based vaccination normally contain two units: the antigen expression unit composed of promoter/enhancer sequences, followed by antigen-encoding and polyadenylation sequences and the production unit composed of viral/bacterial sequences necessary for plasmid amplification and selection.[38]

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[34] Nature Technology Corporation: Biology by Design, http://www.natx.com/DNAVaccines.html.
[35] J. Encke et al., *DNA Vaccines,*42 INTERVIROLOGY 117–24 (1999).
[36] Y. Isaka., *DNAzymes as Potential Therapeutic Molecules*, CURRENT OPINION IN MOLECULAR THERAPEUTICS, April 9, 2007, at 132–36.
[37] American Academy of Microbiology. *The Scientific Future of DNA for Immunization,* 1996, *available at* http://www.asmusa.org/acasrc/Colloquia/dnareprt.pdf.
[38] R. Schirmbeck et al., *Revealing the Potential of DNA-based Vaccination: Lessons Learned from the Hepatitis B Virus Surface Antigen*, 382 BIOL. CHEM. 543–52 (2001).

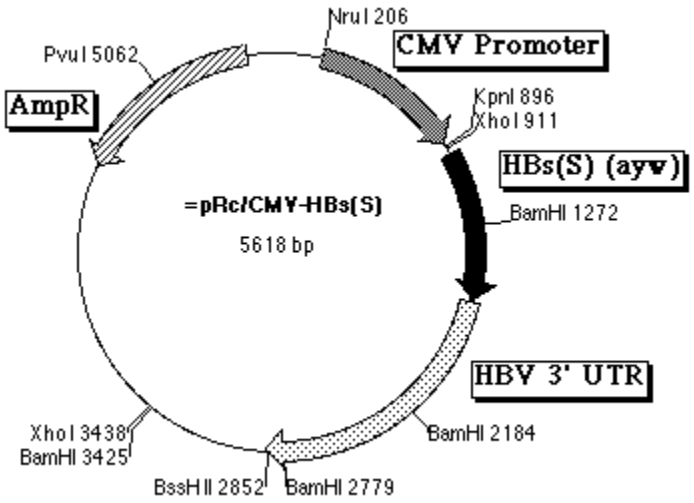

Figure 9[39]

Other factors to be kept in mind while constructing a DNA vaccine might include those mentioned below. To develop a successful protein therapeutic, effective DNA delivery technologies are required that induce high and sustained levels of protein production in appropriate targets sites, whereas robust and long-lasting immune responses need to be induced by a DNA-based vaccine. Vectors for gene therapy and DNA vaccines must be resistant to degradation and attack by the immune system, have a satisfactory safety profile, and be able to express the therapeutic protein for the desired period of time. Effective non-viral vectors, which can express the proteins of interest at high levels, are available. However, since most of the DNA delivered in vivo is degraded before it can enter the nucleus, proper formulation and delivery are critical to the development of effective gene-based therapeutics and vaccines. These systems must be safe for human and veterinary clinical applications and yet ensure that the DNA survives the extra- and intracellular environment and is capable of entering the appropriate cellular compartments. In experiments in several laboratories various potential and proven non-invasive chemical, mechanical, physical and biological DNA delivery systems for therapeutic and vaccine applications have been explored. A few of these approaches have been evaluated and proven to be promising in target species.[40]

4.B.3. DNA Vaccine Mechanism

A plasmid vector that expresses the protein of interest (e.g. viral protein) under the control of an appropriate promoter is injected into the skin or muscle of the host. After uptake of the plasmid, the protein is produced endogenously and intracellularly processed into small antigenic peptides by the host proteases. The peptides then enter the lumen of the endoplasmic reticulum (E.R.) by membrane-associated transporters In the E.R., peptides bind to MHC class I molecules. These peptides are presented on the cell surface in the context of the MHC class I.

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[39] Margaret A. Scuderi, *DNA Vaccines for the Prevention and Treatement of Hepatitis B Vaccine*, *available at* http://images.google.com/imgres?imgurl=http://biology.kenyon.edu/slonc/bio38/scuderi/pcmvs%255B1%255D.gif&imgrefurl=http://biology.kenyon.edu/slonc/bio38/scuderi/partii.html&h=257&w=348&sz=5&hl=en&start=8&tbnid=hw7Ga5Bn_cEtwM:&tbnh=89&tbnw=120&prev=/images%3Fq%3DDNA%2Bvaccines%26gbv%3D2%26hl%3Den%26sa%3DG.

[40] S. VAN DRUNEN. & L.V. DEN HURK, NOVEL METHODS FOR THE NON-INVASIVE ADMINISTRATION OF DNA THERAPEUTICS AND VACCINES 3–15 (Bentham Science Publishers 2006).

Subsequent CD8+ cytotoxic T cells (CTL's) are stimulated and they evoke cell-mediated immunity. CTLs inhibit viruses through both cytolysis of infected cells and noncytolysis mechanisms such as cytokine production[41]. The foreign protein can also be presented by the MHC class II pathway by APCs which elicit helper T cells (CD4+) responses. These CD4+ cells are able to recognize the peptides formed from exogenous proteins that were endocytosed or phagocytosed by APC, then degraded to peptide fragments and loaded onto MHC class II molecules. Depending on the the type of CD4+ cell that binds to the complex, B cells are stimulated and antibody production is stimulated. This is the same manner in which traditional vaccines work.[42] See Figure 10.

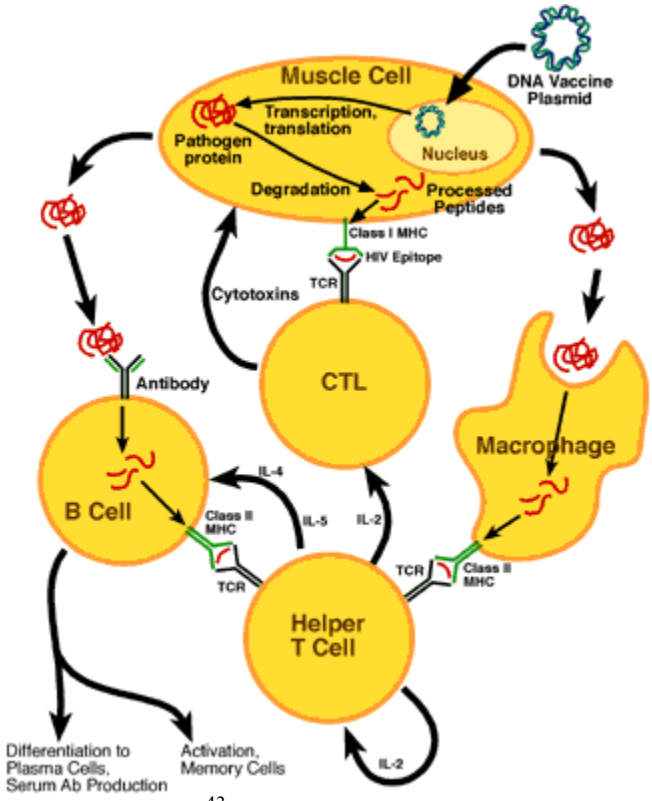

Figure 10[43]

The DNA vaccine, introduced into the person to be immunized, can be via injection or delivery by a "gene gun", with muscle typically the targeted tissue. Transcription and translation occur from the vaccine plasmids that find their way into the nucleus of the muscle cells, to make the pathogen-derived protein. Some of this protein makes it outside of the cell, where it is either bound by antibody molecules on B cells or phagocytosed by macrophages. Either way, the protein gets digested inside these cells into small peptides and placed in the binding groove of a cell surface protein called the class II major histocompatibility complex (MHC II)[44]. (See Figure 10)

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[41] J. Encke, *supra* note 35.
[42] R. Schirmbeck, *supra* note 38.
[43] Brookscole, http://www.brookscole.com/chemistry_d/templates/student_resources/0030223180_garrettgrisham/images/hottopics/VaccineMechanism.gif.
[44] Brookscole: DNA Vaccines and the Gene Gun, http://images.google.com/imgres?imgurl=http://www.brookscole.com/chemistry_d/templates/student_resources/0030973694_garrettgrisham/images/hottopics/VaccineMechanism.gif&imgrefurl=http://www.brookscole.com/chemistry_d/templates/student_resources/0030973694_garrettgrisham/Hot

4.B.4. Helper T-Cell responses

DNA immunization is able to raise a range of T_H responses, including lymphoproliferation and the generation of a variety of cytokine profiles. A major advantage of DNA vaccines is the ease with which they can be manipulated to bias the type of T-cell help towards a TH1 or TH2 response.[45] Each type of response has distinctive patterns of lymphokine and chemokine expression, specific types of immunoglobulins expressed, patterns of lymphocyte trafficking, and types of innate immune responses generated. T cell receptors (TCRs) on the surface of helper T cells can recognize these peptides as being foreign to the body, and therefore from an invading pathogen. The helper T cell, then, releases a variety of interleukin (IL) proteins to stimulate both arms of the immune system (humoral and cellular) to kick into gear. This IL release has a number of effects. The first is to auto-stimulate the helper T cell that detected the foreign protein, so that it can proliferate to fight off the disease. Another secreted IL protein ramps up humoral immunity by causing the B cells whose membrane-bound antibodies were able to bind the foreign protein to differentiate (multiply and change) into antibody-secreting plasma cells for the production of massive quantities of serum antibodies reactive to this pathogen's protein. The last effect of the IL release is to promote the cellular arm of the immune system. The cytotoxic T lymphocytes (CTLs) are activated by the IL proteins released by the helper T lymphocytes, and their job is to search for and destroy any cells that have foreign matter inside them, such as proteins from a replicating virus.

These cells of the immune system that have become activated by introduction of foreign matter from an infection or vaccine, whether B cell, helper T cell, or CTL, also create "memory cells" when they proliferate. It is these memory cells that protect you later in life from infection by the same pathogen you were once exposed to. It is this protection that vaccines seek to offer, with the introduction of innocuous proteins derived from a harmful pathogen, so that they bring forth the cellular and molecular arsenal against the foreign matter and leave behind these memory cell sentries to deal with future invasion.

Different types of T cell helps may be raised. The type of T-cell help raised is influenced by the method of delivery and the type of immunogen expressed, as well as the targeting of different lymphoid compartments.[46] Generally, saline needle injections (either IM or ID) tend to induce TH1 responses, while gene gun delivery raises TH2 responses. This is true for intracellular and plasma membrane-bound antigens, but not for secreted antigens, which seem to generate TH2 responses, regardless of the method of delivery.[47]

Topics/DNAVaccines.html&h=396&w=325&sz=19&hl=en&start=4&tbnid=pu3x2FkBlteZ4M:&tbnh=124&tbnw=102&prev=/images%3Fq%3DDNA%2Bvaccines%26gbv%3D2%26hl%3Den%26sa%3DG.

[45] D.M. Feltquate., *Different T Helper Cell types and Antibody Isotypes Generated by Saline and Gene Gun DNA Immunization*, J. OF IMMUNOLOGY 1997.

[46] S. Boyle et al., *Role of Different Lymphoid Tissues in the Initiation and Maintenance of DNA-Raised Antibody Responses to the Influenza Virus H1 Glycoprotein*, 70(12) J. OF VIROLOGY 9074–78 (1996).

[47] M. Sällberg et al., *Characterization of Humoral and CD4+ Cellular Responses after Genetic Immunization with Retroviral Vectors Expressing Different Forms of the Hepatitis B Virus Core and Antigens*, 71(7) J. OF VIROLOGY 5295–03 (1997).

It is not understood how these different methods of DNA immunization, or the forms of antigen expressed, raise different profiles of T-cell help. It was thought that the relatively large amounts of DNA used in IM injection were responsible for the induction of TH1 responses. However, evidence has shown no differences in TH type due to dose. It has been postulated that the type of T-cell help raised is determined by the differentiated state of antigen presenting cells. Dendritic cells can differentiate to secrete IL-12 (which supports TH1 cell development) or IL-4 (which supports TH2 responses).[48] pDNA injected by needle is endocytosed into the dendritic cell, which is then stimulated to differentiate for TH1 cytokine production[49], while the gene gun bombards the DNA directly into the cell, thus bypassing TH1 stimulation.

One of the greatest advantages of DNA vaccines is that they are able to induce cytotoxic T lymphocytes (CTL) without the inherent risk associated with live vaccines. CTL responses can be raised against immunodominant and immunorecessive CTL epitopes[50], as well as subdominant CTL epitopes, in a manner which appears to mimic natural infection. This may prove to be a useful tool in assessing CTL epitopes of an antigen, and their role in providing immunity.

Cytotoxic T-cells recognise small peptides complexed to MHC class I molecules.[51] These peptides are derived from endogenous cytosolic proteins which are degraded and delivered to the nascent MHC class I molecule within the endoplasmic reticulum (ER). Targeting gene products directly to the ER (by the addition of an amino-terminal insertion sequence) should thus enhance CTL responses. This has been successfully demonstrated using recombinant vaccinia viruses expressing influenza proteins[52], but the principle should be applicable to DNA vaccines too. Targeting antigens for intracellular degradation (and thus entry into the MHC class I pathway) by the addition of ubiquitin signal sequences, or mutation of other signal sequences, has also been shown to be effective at increasing CTL responses.[53]

4.B.5. Humoral (Antibody) Response

The other type of immune response induced by DNA based vaccines is the Humoral response. Antibody responses elicited by DNA vaccinations are influenced by a number of variables, including type of antigen encoded; location of expressed antigen (i.e. intracellular vs. secreted); number, frequency and dose of immunizations; site and method of antigen delivery, to name a few. Humoral responses after a single DNA injection can be much longer-lived than after a single injection with a recombinant protein. Antibody responses against hepatitis B virus

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[48] J. Banchereau, *Dendritic Cells and the Control of Immunity*, 392(6673) NATURE 245–52 (1998).
[49] T. Jakob et al., *Activation of Cutaneous Dendritic Cells by CpG-Containing Oligodeoxynucleotides: A Role for Dendritic Cells in the Augmentation of Th1 Responses by Immunostimulatory DNA 1,* 161 J. OF IMMUNLOGY 3042–49 (1998).
[50] T.M. Fu et al., *Protective Cellular Immunity: Cytotoxic T-lymphocyte Responses Against Dominant and Recessive Epitopes of Influenza Virus Nucleoprotein Induced by DNA Immunization,* J. OF VIROLOGY, April 1997, at 2715–21.
[51] N.P. Restifo, *Antigen Processing in Vivo and the Elicitation of Primary CTL Responses*, J. OF IMMUNOLOGY (1995).
[52] *Id.*
[53] T.W. Tobery, *Targeting of HIV-1 Antigens for Rapid Intracellular Degradation Enhances Cytotoxic T Lymphocyte (CTL) Recognition and the Induction of De Novo CTL Responses In Vivo After Immunization*, J. OF EXPERIMENTAL MEDICINE, Mar. 3, 1997, at 909–20.

(HBV) envelope protein (HBsAg) have been sustained for up to 74 weeks without boost, while life-long maintenance of protective response to influenza haemagglutinin has been demonstrated in mice after gene gun delivery. Antibody-secreting cells migrate to the bone marrow and spleen for long-term antibody production, and are generally localised there after one year.[54]

DNA immunization-induced antibodies show greater affinity to native epitopes than recombinant protein-induced antibodies. In other words, DNA immunization induces a qualitatively superior response. Antibody can be induced after just one vaccination with DNA, whereas recombinant protein vaccinations generally require a boost. As mentioned previously, DNA immunization can be used to bias the TH profile of the immune response, and thus the antibody isotype, which is not possible with either natural infection or recombinant protein immunization. Antibody responses generated by DNA are useful not just in vaccination but as a preparative tool, too. For example, polyclonal and monoclonal antibodies can be generated for use as reagents.[55]

4.B.6. DNA Vaccine Administration

Several possible routes of plasmid delivery have been found. Successful immunization has been demonstrated after delivery of plasmids through intramuscular, intradermal and intravenous injection. The skin and mucous membranes are considered the best site for immunization due to the high concentrations of dendritic cells (DC), macrophages and lymphocytes. Cutaneous gene therapy and DNA vaccination are potential applications of plasmid delivery methods where a gene for an antigen or a therapeutic protein is inserted in the plasmid and applied to the skin. However, the delivery of the DNA plasmid is a major challenge due to the unusual physicochemical properties of the DNA, the tissue and cellular barriers and expression difficulties. Even though the skin is the most accessible organ of the body and it is an ideal target for gene therapy, the delivery of plasmid DNA across the skin is very difficult due to the specific barrier function of the stratum corneum and the inconsistent transfection rate of keratinocytes and other epidermal cells. To date there is no gene delivery system that was shown to be optimal for cutaneous gene therapy. In order to develop an efficient non-viral delivery vehicle there is need for a system that provides the combined properties of effective DNA condensation, cutaneous permeation, cellular transfection and sufficiently sustained expression, for example, the formulation approaches and delivery methods for DNA through the skin in the context of the barriers both at the tissue and cellular levels for both vaccine and gene therapy applications[56].

Intradermal injection of DNA-coated gold particles with a gene gun have been used, it leads to keratinocyte and dendritic cell transduction. A gene gun is used to accelerate the transdermal passage of microscopic gold beads coated with DNA plasmids (about 600 copies per bead) into the epidermis, where some are taken up by resident dendritic (Langerhans') cells. Alternatively, a soluble antigen together with an adjuvant, is applied to the skin (transcutaneous

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[54] D.M. Justewicz, *Long-term Maintenance of B Cell Immunity to Influenza Virus Hemagglutinin in Mice Following DNA-Based Immunization*, 224 VIROLOGY 10–17 (1996).

[55] MARGARET A. SCUDERI, *DNA Vaccines for the Prevention and Treatment of Hepatitis B Vaccine, in* Biology 238: Microbiology (2003).

[56] *M. Flodvari,* DNA Delivery for Vaccination and Therapeutics Through the Skin*, 3(1) CURRENT DRUG DELIVERY 17–28 (2006).*

immunization). Some antigen reaches the epidermis and also undergoes endocytosis by Langerhans' cells. The foreign DNA is expressed, and the antigens are degraded to polypeptides, some of which bind to major-histocompatibility complex antigens. These activated T cells can interact with an activated B cell to induce a humoral response.[57] See Figure 11.

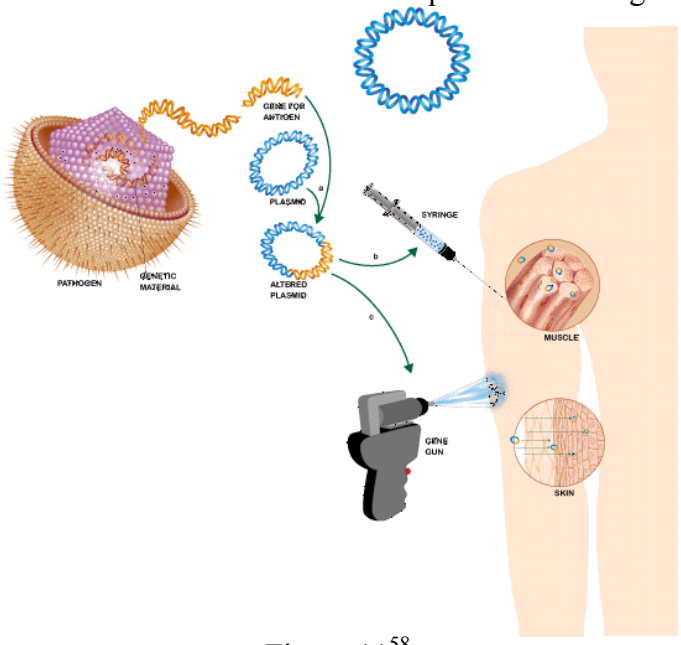

Figure 11[58]

The plasmid DNA can be diluted in distilled water, saline or sucrose. There has also been positive demonstration of proinjection or codelivery with various drugs. Administration of DNA associated with liposomes is less efficient, but allows for delivery of DNA vaccines to gastrointestinal or respiratory mucosal epithelia.

4.B.7. DNA Vaccine Advantages

DNA vaccines may have significant advantages over standard vaccines. They can express antigenic epitopes which more closely resemble native viral epitopes and could therefore be more effective. With live attenuated vaccines and killed vaccines the manufacturing process can alter the secondary and tertiary structure of the proteins and therefore the antigenicity of the vaccine; with naked DNA vaccines the host cell is manufacturing the viral epitope. DNA vaccines would be safer than live virus vaccines, especially in immunocompromised patients, such as those infected with HIV. DNA vaccines may be constructed to include genes against several different pathogens, thus decreasing the number of vaccinations necessary to fully immunize children. Construction and manufacture of DNA vaccines would be simple. Finally DNA vaccines may hold promise in treating those already infected with chronic viral infections (i.e., HCV, HIV or HSV). Rapid and large-scale production are available at costs considerably lower than traditional vaccines, and they are also very temperature stable making storage and

[57] Health Professionals On-Line Resource Centre, http://www.immune.org.nz/?t=919.
[58] Health Professionals On-Line Resource Centre: http://www.immune.org.nz/site_resources/Making_DNA_vaccine.gif.

transport much easier. The continuous expression of the viral antigen caused by gene vaccination in an environment containing many APCs may promote successful therapeutic immune response which cannot be obtained by other traditional vaccines.[59]

4.B.8. DNA Vaccine Limitations

Although DNA can be used to raise immune responses against pathogenic proteins, certain microbes have outer capsids that are made up of polysaccharides. This limits the extent of the usage of DNA vaccines because they cannot substitute for polysaccharide-based subunit vaccines. Difficulties include identifying the antigenic peptides, the potential to develop autoimmune responses and selection of viral vectors.[60]

4.C. DNA Vaccines, HIV and AIDS

Developing a vaccine to protect against HIV in attempt to gain control of the AIDS pandemic is a top priority for researchers throughout the world. Extensive testing has been conducted with live vaccines to determine if immunization would be effective at prevention, but they are not suitable for human use due to the potential that the vaccine viruses could mutate and reacquire the ability to cause disease. The human immunodeficiency virus (HIV) and the acquired immunodeficiency syndrome induce account for over 40 million deaths in the past 20 years. Given that the currently available treatments to prevent HIV transmission and disease are not effective in eradicating the virus, vaccination likely represents the only efficacious adapted response to the global impact of this infection.[61] Faced with the challenges in developing an HIV vaccine, international consortia and new methodologies have been proposed in order to accelerate the development and screening process of new candidate HIV vaccines. Moreover, in the absence of a protective vaccine, the impact of a vaccine that confers partial protection needs to be seriously considered.

4.C.1. Difficulties in HIV development[62]

The development of effective human immunodeficiency virus (HIV) vaccines and immunotherapies has been an elusive goal ever since the virus was first identified. There are several contributing factors that have resulted in the failure to generate a protective or therapeutic HIV vaccine. HIV is highly variable due in part to the two errors made per replication cycle by reverse transcriptase during the replication process. This high mutation rate facilitates the virus in evading the adaptive cellular and humoral immune response. Exposed parts of the envelope can mutate up to 35% of their amino acids without losing their function allowing for a large variety of mutations that can act as decoys for immune responses. Traditional vaccines rely on the generation of neutralizing antibodies to confer protection. On the other hand, viral mutations that allow the virus to escape detection by cytotoxic T lymphocytes (CTLs) correlates with a

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[59] Encke, *supra* note 35.

[60] American Academy of Microbiology. *The Scientific Future of DNA for Immunization,* http://www.asmusa.org/acasrc/Colloquia/dnareprt.pdf (last visited April 27, 2008).

[61] *Z. Coutsinos,* Designing an Effective AIDS Vaccine: Strategies and Current Status, *LA REVUE DE MEDICINE INTERNE, Feb. 5, 2008.*

[62] David A. Hokey et al., *DNA vaccines for HIV: Challenges and Opportunities*, SPRINGER SEMIN. IMMUN., 2006, at 267–79.

decline in health characterized by a decrease in immune function and an increase in viral replication, thereby concluding that antibodies playing only a very limited role in viral control post infection.

CTL responses are able to target internal epitopes that are not accessible to antibodies, resulting in the destruction of infected cells. However, HIV is able to eventually evade these CTL responses through incorporation of new mutations, resulting in the selection of escape variants that are not recognized and survive. The selective pressures of both antibody and CTL responses keep the virus in a continual state of change while the immune system is undermined through the destruction of $CD4^+$ T cells both by direct lysis due to infection and through the destruction of infected cells by CTL.

The infection pattern of HIV is likely to play a role in hindering the development of effective immunotherapies. In order for a vaccine to be effective on a global scale, it must elicit CTL responses directed against conserved regions of HIV. Furthermore, immune responses directed against single epitopes increase the likelihood that the virus will be able to mutate and escape immune recognition. Therefore, the breadth of the immune response will likely be as critical to developing an efficacious vaccine as the type of immune response that is elicited. Traditional vaccines rely on the production of antibodies through the injection of live attenuated virus, killed viral particles, or recombinant viral proteins. Killed viruses and recombinant proteins tend elicit humoral immune responses directed toward variable regions of the virus, rendering them ineffective. Live attenuated viruses are better able to induce both humoral and cell-mediated immunity the than their non live counterparts. One important focus has been the use of recombinant viral vectors. On the other hand, DNA-based immunizations offer conceptual advantages compared to recombinant viral vectors. Unlike viral vectors, they can be boosted in theory infinitely, and there is no issue with preexisting serology. DNA-based vaccines are inherently conceptually safe because of the absence of a live vector and simple quality control issues. However their major drawback is that compared to recombinant adenoviral vectors, the best DNA vaccines are ½ as immune potent.

One of the more popular methods of immunization involves the use of multiple strategies in a heterologous prime-boost regimen. While immunization with DNA vaccines alone has had limited immune potency, priming with 2-3 rounds of DNA immunizations followed by a viral vector boost has been demonstrated to generate enhanced immune responses over that seen with homologous viral vector prime-boost alone.[63] In addition to heterologous prime-boost regimens has also been examined. These vaccines have consisted of a DNA prime, a viral boost, and a second boost consisting of protein mixed with adjuvant (D-V-P). One study demonstrated the ability of D-V-P immunizations to induce the secretion of antibodies at mucosal surfaces, particularly when the protein was conjugated to mannan[64], suggesting this vaccine approach may be particularly effective at preventing infection. Vaccination strategies would be simpler and more effective if we can improve the overall potency of DNA vaccines.

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[63] Santra S. Seaman et al. *Replication-Defective Adenovirus Serotype 5 Vectors Elicit Durable Cellular and Humoral Responses in Nonhuman Primates*, J. OF VIROLOGY, 2005, at 6516–22.

[64] J. Stanbas et al., *Long Lived Multi-Isotype Anti-HIV Antibody Responses Following a Prime-Double Boost Immunization Strategy*, 23 VACCINE 2454–64 (2005).

4.C.2. Preclinical and Clinical Studies[65]

Nonhuman primates (NHP) SIV and SHIV model, while not perfect, remain the best models for the preclinical evaluation of HIV vaccine efficacy due to a disease progression that is similar to that seen in humans. Looking at a few experimental studies reported, in 2005, Su et al.[66] reported five conserved Gag CTL epitopes using a SHIV model in rhesus macaques. The study demonstrated these epitopes are maintained long into viral infection and even appear to be relatively conserved in several strains of SIV. In another clinical study, Baroch et al.[67] demonstrated the ability of DNA immunization to elicit CTL responses against both dominant and subdominant epitopes in an SHIV model, suggesting DNA may be useful for eliciting broad CTL-based immune responses which are desired for control of HIV infection.

DNA vaccines have performed poorly at inducing antibody responses. This is likely due to the lack of soluble antigen access to B cells. In July 2005, Rosati et al.[68] examined the use of a DNA vaccine encoding Gag and Env fused to either MCP3 or β-catenin to target the transcribed antigens to secrtory or degradation pathways, respectively, and these animals developed stronger antibody responses. There has been particular interest in the use of heterologous prime-boost strategies for HIV/SIV. Boyer et al.[69] reported partial control of SIV239 after a DNA/*Listeria* prime-boost regimen. The combination of DNA prime-boost and *Listeria*-boost resulted in enhanced cellular immunity to virus over that seen with either agent alone. There have been many vaccine strategies designed to test elicitation of immune responses to HIV in humans, with more than 30 human trials currently underway. Thus far, the two immunization methods demonstrating the highest level of immunogenicity include the use of recombinant Ad5 adenoviral vectors either alone or in combination with plasmid DNA in a heterologous DNA/Ad5 prime-boost regimen. This is perhaps the most efficient of all the methods tested do far.

In concluding we can say that thus far, no correlates of protection have been found for HIV. However, there is strong evidence that $CD8^{+}$ T cells play an important role in controlling HIV infection. Currently the most important method for assessing vaccine efficacy is the measurement of the number of IFN-γ-secreting T cells by ELISPOT. Adenoviral vectors have performed well in primate models and can be further improved if an animal has been primed using a DNA vaccine. While DNA vaccines alone have proven to be relatively nonimmunogenic, the addition of encoded molecular adjuvants as optimized IL-15 and IL-12, has been almost as effective as viral vectors. It is likely that further exploration of potential molecular adjutants

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[65] See Hokey, *supra note* 62.

[66] J Su et al., *Novel Simian Immunodeficiency Virus CTL Epitopes Restricted by MHC Class I Molecule Mamu-B*01 are Highly Conserved for Long Term in DNA/MVA-vaccinated, SHIV-challenged Rhesus Macaques*, 17 INT. IMMUNOLOGY 637–48 (2005).

[67] DH Baroch et al., *Elicitation of High- Frequency Cytotoxic T-lymphocyte Responses Against both Dominant and Subdominant Simian-Human Immunodeficiency virus Epitopes by DNA Vaccination of Rhesus Monkeys*, 75 J. OF VIROLOGY 2462–67 (2001).

[68] M Rosati et al., *DNA Vaccines Expressing Different Forms of a Simian Immunodeficiency Virus Antigens Decrease Viremia upon SIV mac 251 Challenge*, 70 J. OF VIROLOGY 8480–92 (2005).

[69] JD Boyer et al., *DNA Prime Listeria Boost Induces a Cellular Immune Response to SIV Antigens in the Rhesus Macaque Model that is Capable of Limited Suppression of SIV 239 Viral Replication*, 333 VIROLOGY 88–101 (2005).

may enhance DNA vaccines further, surpassing the immunogenicity of live viral vectors while maintaining a superior level of safety. Thus, further studies are clearly important and will continue to mold and change this evolving field.

5. Patent Search Methodology and Results

5.A. Patent Search Methodology

The Intellectual Property Research Tools course project started on January 17, 2008 with a referral from PIPRA. Cecilia Chiham, Director Biotechnology Resources at The Public Intellectual Property Resources for Agriculture (hereinafter PIPRA) was the contact and coordinator. During several telephone conferences, the scope of this project was defined by Cecilia Chiham, Kerri Clark of PIPRA, Prof. Jon Cavicchi, and Dr. Stanley Kowalski. Initially, after discussions on the topic of the project to be undertaken, the team unanimously decided to conduct an HIV vaccine patent landscape analysis. The team was provided with flow charts indicating the levels of research on the subject, and the option of choosing what level of patents to work on. We chose to work on DNA Vaccines and thereafter launched into the 4 month pursuit of searching and coding. The goal of the team search was to find relevant patents encompassing construction, optimization and delivery methods of DNA vaccines for HIV.

The search methodology was devised to initially generate a broad set of patents and then narrow down the results using the "Iterative Approach" as promoted by Prof. Cavicchi. The search was divided into a preliminary search round and then subsequent 4 rounds. The searches utilized keywords derived from the primary search and the US Classifications and Sub-classes that came forth after this round were used for carrying out further searches. The main concepts used in the primary search were Vaccine$, DNA, recombine$, plasmid, HIV, AIDS, Human immune$ virus, Poxvirus, Deliver$, Prim$, boost, backbone, promoter, peptide$ for the USPTO search, and DNA, plasmid, Vaccine*, HIV, human immune* virus, Prim*, boost*, promoter, adjuvant*, protein, deliver, cytokine, lead*, sequence, electroporation, gene gun while searching in Delphion. This primary search on Delphion also involved searching by classes of US Classifications 424, 435, 536, 514, 530. The search then utilized keywords derived from the Primary Search to obtain relevant United States Patent Classification Codes (herein after USPC) codes in the United States Patent and Trademark Office database (herein after USPTO) as well as broad number of patents in US & EP applications and patents, WIPO PCT publications through the Delphion database. With the results obtained subsequent, four rounds of search were carried out.

For finding patent literature, we searched the following database platforms:

1. USPTO: Using the list of relevant class/sub-classes obtained from the primary search and combining it with the initial list of key words, utilizing the USPTO Seven-Step Strategy (http://www.uspto.gov/go/ptdl/step7.htm), we performed a series of hybrid searches encompassing the keywords and class/sub-classifications. With the results from these searches, we started coding the patent documents and assembling the Master Sheet.
2. GenomeQuest: Using the DNA sequences of Gag, Pol, Nef and Env, provided to us by Kerri Clark at PIPRA, we performed a search using GenomeQuest database. Using this search result, we found patents which included the three key words "HIV, DNA

Vaccines, and Vaccine" and a 65% to 80% homology with the respective sequences. After analyzing the search results, we arranged the most relevant patents in our Master Sheet.

3. Delphion: This was the main database used by us. The relevant patents found on USPTO database were then searched on Delphion, where the searches were narrowed down, each team member created their own work files, extracted pdf's, extracted data on excel sheets, etc., which were then complied into the Master Sheet.

After the Preliminary Search, we moved on to Search Round I. In this round each team member was given fixed US Class/Subclasses to search and the keywords to use with those class numbers as search strings. These were:

1. Lisa

Class 435/320.1 + HIV any field + vaccine in title or abstract
Class 435/320.1 + HIV any field + vaccine in title or abstract

2. Arshdeep

Class 424/188.1 + vaccine in title
Class 424/188.1 + vaccine in abstract
Class 424/188.1 + vaccine in claims
Class 424/188.1 + vaccine in all fields

3. Weonmee

Class 424/208.1 + vaccine in title
Class 424/208.1 + vaccine in abstract
Class 424/208.1 + vaccine in claims
Class 424/208.1 + vaccine in all fields

4. Michelle

a. search the Derwent World Patent Index classes B04, D16, C06 on Delphion and mine for relevant U.S. patent numbers;
b. search U.S. patents for the following assignees and add keywords as indicated for relevant patents on HIV vaccines:
- Merck
- Aventis
- Virogenetics
- Chiron
- University of California
c. search U.S. patents for class 536 and add keywords as indicated for relevant patents on HIV vaccines

Patent searching on these outlines gave us an outcome of nearly 2284 patent documents, out of which only 174 were found relevant. These documents were read by us and we coded and categorized each of these documents under three categories:

1. Construction
2. Optimization; and
3. Delivery Method

Although the emphasis was on the title, the abstract, the specifications and the claims, we searched the claims more thoroughly to look for SIV/HIV, prime boost and adjuvants in the claims. Each stack of patents was initially coded by the student Team members. These were subsequently reviewed by the entire Team and Dr. Kowalski and categorized according to the final categories mentioned above. The documents were coded according to their relevancy and a Master Sheet was prepared simultaneously containing all the information on each of these patent documents. At the end of the Search Round I, the number relevant patent documents on the Master Spread Sheet had been reduced to a more manageable number.

Search round II was carried out to round up the search in Search round I in order to locate any relevant patent which might have been missed in the first round. This search was mainly carried out in the Delphion database using Derwent World Patent Index (DWPI) Patent Database and US & EP applications and patents, WIPO PCT publications by employing the keywords Vaccine, HIV, DNA polynucleotide to locate the top 21 assignees which are listed in Table 1. Further, the keywords HIV, vaccine were used to locate the top 3 classes of patents which came out to be B04, S03 and D16. These classes were then used with the keywords HIV, vaccine, DNA, polynucleotide to search for patent documents. Other searches were carried out using keywords like ELISPOT, DNA Vaccine, HIV, human immune virus, Vaccine, Susan, Chiron, Human Immunodeficiency Virus, DNA Polynucleotide, AIDS, etc. in classes 530 and 536, B04, D16, C06 and 424/188.1. The second round resulted in 463 patent documents out of which 209 were relevant. These 209 were then first coded by us individually and then together with Dr. Kowalski. The final results were inserted in the Master Spread Sheet.

Having completed an exhaustive search utilizing all the possible approaches, we then focused our attention to Genome Quest. Because the GenomeQuest searches were not premised on keywords but on native DNA sequences of Gag, Pol, Env and Nef genes the coding scheme was based on homology. The patent documents were search based on 65% to 80% and above homology of the DNA sequences of the four genes. These searches were further narrowed down by using keywords along with the sequences, such as, HIV, DNA Vaccine and Vaccine, in various different search strings. The patent documents located in this search round again were first coded by each of the team members individually and then together as a team with Dr. Kowalski. In the end of this Search Round III, we were able to add 98 relevant patent documents to the Master Spread Sheet out of the 513 hits.

Round IV, was carried out on IPVision, Inc. the access and password to which were granted by Joseph G. Hadzima, using keywords DNA and vaccine, and then further searches were carried out in Delphion with Researchers listed on National Center for Biotechnology Information (NCBI) website as inventors, HIV, vaccine, while searching for French researchers, Italian researches, UC Davis Researchers, NIH researchers, Harvard researchers, US

researchers, Dutch researchers, etc. This round resulted in 163 patents out of which 23 were relevant. These were coded and then put into the Master Spread Sheet.

Finally all the searching and coding ended on April 24, 2008 with the compilation of a final Master Spread Sheet.

5.B. Patent Search Tables
Search Process:

Preliminary Search

Database	USPTO (US applications and patents)
Keywords	Vaccine$, DNA, recombine$, plasmid HIV, AIDS, Human immune$ virus Poxvirus, Deliver$, Prim$, boost, backbone, promoter, peptide$
US Classification/ Subclassification	Not in use
Search strings	Issued patents: (SPEC/DNA AND ACLM/vaccin$): 2209 (SPEC/DNA AND ACLM/vaccine): 1611 ((SPEC/DNA AND ACLM/vaccin$) AND hiv): 675 ((SPEC/DNA AND ACLM/vaccin$) AND SPEC/HIV): 627 ((SPEC/DNA AND SPEC/(HIV OR aids)) AND ACLM/vaccine$): 541 ((SPEC/DNA AND SPEC/((HIV OR ((human$ AND immun$) AND virus)) OR AIDS)) AND ACLM/vaccin$): 1600 SPEC/poxvirus$: 2479 (SPEC/poxvirus$ AND SPEC/HIV): 1157 (SPEC/poxvirus AND SPEC/HIV): 669 (SPEC/poxvirus$ AND SPEC/(HIV OR ((human$ AND immun$) AND virus))): 2297 ((SPEC/poxvirus$ AND SPEC/(hiv OR ((human$ AND immun$) AND virus))) AND ACLM/vaccin$) (SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$): 1916 ((SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) AND ACLM/dna): 501 ((SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) AND ACLM/poxvirus$): 101 ((SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) AND SPEC/peptide$): 1287 ((SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) AND ACLM/peptide$): 351 (ACLM/(((human AND immun$) AND virus) OR HIV) AND

Search strings (continued)	ACLM/vaccin$): 358 ((ACLM/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) AND ACLM/DNA): 82 ((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)): 866 (((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)) AND SPEC/deliver$): 492 (((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)) AND SPEC/(boost AND prim$)): 174 (((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)) AND SPEC/backbone$): 160 (((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)) AND SPEC/promoter$): 710 (((SPEC/(HIV OR ((human AND immun$) AND virus)) AND ACLM/vaccin$) AND ACLM/((DNA OR recombin$) OR plasmid)) AND ACLM/promoter$): 291 ---------- US patent publish application: (SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$): 4721 (SPEC/(((human AND immun$) AND virus) OR HIV) AND ACLM/vaccin$) and ACLM/DNA: 1539
Result	Briefly reviews patents might relates to HIV vaccines

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	DNA, plasmid, Vaccine*, HIV, human immune* virus, Prim*, boost*, promoter, adjuvant*, protein, deliver, cytokine, lead*, sequence, electroporation, gene gun,
US Classification/ Subclassification	424 435 536

	514 530
Search strings	(only search for US applications and patents) ((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA) <in> DESCRIPTION): 13,152 ((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB): 2,063 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB): 693 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS): 598 (((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA) <in> DESCRIPTION) AND ((DNA or plasmid) <in> AB) AND ((plasmid) <in> CLAIMS)): 717
Search strings (continued)	((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS) AND ((prim*) <in> DESCRIPTION): 544 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS) AND ((prim* and boost*) <in> DESCRIPTION): 424 (((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB))) AND ((prim* and boost*)

Search strings (continued)	<in> DESCRIPTION)): 1,061 ((((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB))) AND ((prim* and boost*) <in> DESCRIPTION)) AND ((prim*) <in> AB)): 93 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS) AND ((promoter) <in> DESCRIPTION): 590 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS) AND ((promoter) <in> CLAIMS): 242 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((DNA* or plasmid) <in> CLAIMS) AND ((promoter) <in> AB): 59 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((adjuvant*) <in> DESCRIPTION): 519 ((vaccin*) <in> TI) AND (vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB) AND ((adjuvant* and protein) <in> DESCRIPTION): 511 ((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((deliver*) <in> DESCRIPTION)): 419 ((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION)

Search strings (continued)	AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((cytokine*) <in> DESCRIPTION)): 297 ((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((lead* and sequence) <in> DESCRIPTION)): 458 ((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((electroporation) <in> DESCRIPTION)): 195 ((((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((gene and gun) <in> DESCRIPTION)): 136 (((((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)) AND ((vaccin*) <in> TI) AND ((gene and gun) <in> DESCRIPTION)): 392 ((polynucleotide or DNA* or plasmid) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((immun*) <in> claims): 23,308 ((vaccin*) <in> CLAIMS) AND ((HIV or (human and immun* and virus)) <in> DESCRIPTION) AND ((DNA*) <in> DESCRIPTION) AND ((DNA* or plasmid) <in> AB)): 2090 ((424???*) <in> NC) AND (HIV)): 3000 (((424* or 435* or 536* or 514* or 530*) <in> NC) AND (HIV) AND (vaccin*)): 2111
Result	By browsing several patents of the search results, we locate: 1. The top 5 classes of patents relate to HIV DNA vaccines- 424, 435, 536, 514 & 530 2. The top 3 classes with subclassification- 424/188.1, 424/208.1 & 435/320.1.

Search Round 1

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine, HIV
US Classification/ Subclassification	424/188.1 424/208.1 435/320.1
Search strings	(only search for US applications and patents) (((424/188.1 OR 424/208.1 OR 435/320.1) <in> NC) AND (HIV) AND (vaccine) <in> AB): 362 (((435/320.1) <in> NC) AND (HIV) AND (vaccine) <in> AB): 175
Result	175 patents from the class of 435/320.1; Locate 45 might-be relevant patents

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine
US Classification/ Subclassification	424/208.1
Search strings	1. Vaccine in the title 2. Vaccine in the abstract 3. Vaccine in the claims 4. Vaccine in all text
Results	Total number of hits/Relevant 1: 121/19 2: 232/19 3: 139/12 4: 404/20

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	DNA, plasmid, Vaccine*, HIV, human immune* virus, Prim*, boost*, promoter, adjuvant*, protein, deliver, cytokine, lead*, sequence, electroporation, gene gun,
US Classification/ Subclassification	536
Search Strings	(only search for US applications and patents) (((536???*) <in> NC) AND (((vaccine and DNA and HIV or Human immunodeficiency virus)) <in> AB)): 185
Results	Only 20 patents considered

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine, HIV
US Classification/ Subclassification	424/188.1
Search strings	(only search for US applications and patents) ((424/188.1) <in> NC) AND (vaccine) <in> TI): 96 results ((424/188.1) <in> NC) AND (vaccine) <in> AB): 174 results ((424/188.1) <in> NC) AND (vaccine) <in> CLAIMS):81results ((424/188.1) <in> NC) and (vaccine) <in> ALL FIELDS):314
Result	665 patents from the class of 424/188.1; Locate 36 might-be relevant patents

Search Round 2

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine, HIV, DNA polynucleotide
US Classification/ Subclassification	Not in use
Search strings	(only search for US issued patents) (((HIV*) <in> CLAIMS) AND (Vaccin*) AND (DNA or polunucle*)): 1615
Result	Locate the top 21 assignees from this search. The result is listed in Table 1.

Table 1

	Assignee
1	INSTITUT PASTEUR
2	THE UNITED STATES OF AMERICA AS REPRESENTED BY THE DEPARTMENT OF HEALTH AND HUMAN SERVICES
3	CHIRON CORPORATION
4	MERCK & CO., INC.
5	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
6	CONNAUGHT LABORATORIES LIMITED
7	THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA
8	PROGENICS PHARMACEUTICALS, INC.
9	THE GENERAL HOSPITAL CORPORATION

10	ABBOTT LABORATORIES
11	EMORY UNIVERSITY
12	UNIVERSITY OF MARYLAND BIOTECHNOLOGY INSTITUTE
13	AGOURON PHARMACEUTICALS, INC.
14	BRISTOL-MYERS SQUIBB COMPANY
15	BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM
16	WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH
17	DUKE UNIVERSITY
18	VERTEX PHARMACEUTICALS INCORPORATED
19	PARKER HUGHES INSTITUTE
20	AVENTIS PASTEUR LIMITED
21	DANA-FARBER CANCER INSTITUTE

Database	Delphion (Derwent World Patent Index (DWPI) Patent Database)
Keywords	HIV, vaccine
Classification of Derwent Database	Not in use
Search strings	((HIV*) <in> TI) AND (vaccine*) <in> TI): 570
Result	Locate the top 3 classes of patents in this search are B04, S03 and D16.

Database	Delphion (Derwent World Patent Index (DWPI) Patent Database)
Keywords	Assignees listed in table 1, HIV, vaccine, DNA, polynucleotide
Classification of Derwent Database	B04 S03 D16
Search strings	((B04 and (S03 or D16)) <in> DERWENTCLASS): 226, 181 (((B04 and (D16 or S03)) <in> DERWENTMAINCLASS) AND ((HIV*) <in> TI): 3591 (((B04 and (D16 or S03)) <in> DERWENTMAINCLASS) AND ((DNA or polynucle*) and vaccin* and hiv*)): 811 ((B04 and (S03 or D16)) <in> DERWENTCLASS) and ((DNA or polynucle*) <in> AB) and ((vaccin* and HIV*) <in> AB): 776

	(((B04 and (S03 or D16)) <in> DERWENTCLASS) and ((DNA or polynucle*) <in> AB) and ((vaccin* and HIV*) <in> AB) and ((INSTITUT PASTEUR) or (HEALTH AND HUMAN SERVICES) or CHIRON or (MERCK & CO) or (UNIVERSITY OF CALIFORNIA) or (CONNAUGHT LABORATORIES) or (UNIVERSITY OF PENNSYLVANIA) or PROGENICS or (GENERAL HOSPITAL CORPORATION) or ABBOTT or (EMORY UNIVERSITY) or (UNIVERSITY OF MARYLAND) or AGOURON or (BRISTOL-MYERS) or (UNIVERSITY OF TEXAS) or (WHITEHEAD INSTITUTE) or (DUKE UNIVERSITY) or VERTEX or (PARKER HUGHES) or (AVENTIS PASTEUR) or (DANA-FARBER)) <in> PA): 84 (((B04 and (S03 or D16)) <in> DERWENTCLASS) and ((DNA or polynucle*) and vaccin* and HIV*) and ((INSTITUT PASTEUR) or (HEALTH AND HUMAN SERVICES) or CHIRON or (MERCK & CO) or (UNIVERSITY OF CALIFORNIA) or (CONNAUGHT LABORATORIES) or (UNIVERSITY OF PENNSYLVANIA) or PROGENICS or (GENERAL HOSPITAL CORPORATION) or ABBOTT or (EMORY UNIVERSITY) or (UNIVERSITY OF MARYLAND) or AGOURON or (BRISTOL-MYERS) or (UNIVERSITY OF TEXAS) or (WHITEHEAD INSTITUTE) or (DUKE UNIVERSITY) or VERTEX or (PARKER HUGHES) or (AVENTIS PASTEUR) or (DANA-FARBER)) <in> PA): 92
Result	92 patents; Locate 26 might be relevant patents

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	ELISPOT
US Classification/ Subclassification	530 and 536
Search strings	((530*, 536*) AND (ELISPOT) AND ((HIV) <in> (TITLE) AND ("DNA vaccine"))
Results	Patents and Published Applications: 32 Relevant: 17

Database	Delphion

	(US & EP applications and patents, WIPO PCT publications)
Keywords	DNA, Vaccine*, HIV, human immune* virus,
Search Strings	(only search for US applications and patents) ((((vaccine and DNA and HIV or Human immunodeficiency virus)) <in> AB) AND (((Merck or Aventis or Virogenetics or Chiron or University of California)) <in> PA)): 34
Results	Locate 34 results might be relevant

Database	Westlaw Internal database: DWPL
Keywords	Vaccine*, HIV, human immune* virus
Classification	B04 D16 C06
Search Strings	DCLA (BO4 D16 C06) & TI (HIV & VACCINE): 401
Results	87 patents considered Locate 78 results might be relevant

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	DNA, Vaccine*, HIV, human immune* virus,
Search Strings	(only search for US applications and patents) ((HIV or Human Immunodeficienty Virus) <in> CLAIMS) AND ((vaccine or immun!) <in> CLAIMS) AND ((DNA): 464
Results	141 patents considered; Locate 22 results might be relevant

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine, HIV. Susan, Chiron
US Classification/ Subclassification	424/188.1
Search strings	(only search for US applications and patents) ((4241881) <in> NC) AND (HIV) AND ((susan) <in> IN): 5 ((4241881) <in> NC) AND (HIV) AND ((chiron) <in> PA): 6
Result	11 patents from the class of 424/188.1; Locate 4 might-be relevant patents

Database	Delphion (US & EP applications and patents, WIPO PCT publications)
Keywords	Vaccine, Human Immunodeficiency Virus, DNA polynucleotide, AIDS
US Classification/ Subclassification	Not in use
Search strings	(only search for US issued patents) ((HIV and vaccine) <in> TI) AND (AIDS) AND (DNA and vaccine): 9 (DNA and vaccin!) AND ((HIV) <in> TI) AND ("human immunodeficiency virus"): 67
Result	Locate 76 patents from this search. The result 28 might be relevant patents.

Search Round 3

Database	GenomeQuest
Keywords	1. DNA sequence of Nef listed below. 2. 80% or greater homology
Results	Patents: 128 Locate 45 might be relevant patents
Note	1. The DNA sequence is provided by Kerri Clark, from PIPRA, who downloaded from National Center for Biotechnology Information (NCBI) website (http://www.ncbi.nlm.nih.gov/). 2. DNA sequence of Nef from NCBI website: ATGGGTGGCAAGTGGTCAAAAAGTAGTGTGATTGGATGGCC TACTGTAAGGGAAAGAATGAGACGAGCTGAGCCAGCAGCAG ATAGGGTGGGAGCAGCATCTCGAGACCTGGAAAAACATGGA GCAATCACAAGTAGCAATACAGCAGCTACCAATGCTGCTTGT GCCTGGCTAGAAGCACAAGAGGAGGAGGAGGTGGGTTTTCC AGTCACACCTCAGGTACCTTTAAGACCAATGACTTACAAGGC AGCTGTAGATCTTAGCCACTTTTTAAAAGAAAAGGGGGGACT GGAAGGGCTAATTCACTCCCAAAGAAGACAAGATATCCTTGA TCTGTGGATCTACCACACACAAGGCTACTTCCCTGATTAGCA GAACTACACACCAGGGCCAGGGGTCAGATATCCACTGACCTT TGGATGGTGCTACAAGCTAGTACCAGTTGAGCCAGATAAGAT AGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACC CTGTGAGCCTGCATGGGATGGATGACCCGGAGAGAGAAGTGT TAGAGTGGAGGTTTGACAGCCGCCTAGCATTTCATCACGTGG CCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCTGA

Database	GenomeQuest/GQPAT version 2008314
Keywords/ result filtering	1. Abstract contains "HIV and Vaccine" 2. and all text contains "DNA vaccine" 3. Alignments with 65% or greater identity
Note	1. The DNA sequence is provided by Kerri Clark, from PIPRA, who downloaded from National Center for Biotechnology Information (NCBI) website (http://www.ncbi.nlm.nih.gov/).

	2. Env DNA sequence of Env from NCBI website: gi|9629357:5771-8341 Human immunodeficiency virus 1, complete genome ATGAGAGTGAAGGAGAAATATCAGCACTTGTGGAGATGGGG GTGGAGATGGGGCACCATGCTCCTTGGGATGTTGATGATCTG TAGTGCTACAGAAAAATTGTGGGTCACAGTCTATTATGGGGT ACCTGTGTGGAAGGAAGCAACCACCACTCTATTTTGTGCATC AGATGCTAAAGCATATGATACAGAGGTACATAATGTTTGGGC CACACATGCCTGTGTACCCACAGACCCCAACCCACAAGAAGT AGTATTGGTAAATGTGACAGAAAATTTTAACATGTGGAAAAA TGACATGGTAGAACAGATGCATGAGGATATAATCAGTTTATG GGATCAAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTG TGTTAGTTTAAAGTGCACTGATTTGAAGAATGATACTAATAC CAATAGTAGTAGCGGGAGAATGATAATGGAGAAAGGAGAGA TAAAAAACTGCTCTTTCAATATCAGCACAAGCATAAGAGGTA AGGTGCAGAAAGAATATGCATTTTTTTATAAACTTGATATAA TACCAATAGATAATGATACTACCAGCTATAAGTTGACAAGTT GTAACACCTCAGTCATTACACAGGCCTGTCCAAAGGTATCCT TTGAGCCAATTCCCATACATTATTGTGCCCCGGCTGGTTTTGC GATTCTAAAATGTAATAATAAGACGTTCAATGGAACAGGACC ATGTACAAATGTCAGCACAGTACAATGTACACATGGAATTAG GCCAGTAGTATCAACTCAACTGCTGTTAAATGGCAGTCTAGC AGAAGAAGAGGTAGTAATTAGATCTGTCAATTTCACGGACAA TGCTAAAACCATAATAGTACAGCTGAACACATCTGTAGAAAT TAATTGTACAAGACCCAACAACAATACAAGAAAAAGAATCC GTATCCAGAGAGGACCAGGGAGAGCATTTGTTACAATAGGA AAAATAGGAAATATGAGACAAGCACATTGTAACATTAGTAG AGCAAAATGGAATAACACTTTAAAACAGATAGCTAGCAAATT AAGAGAACAATTTGGAAATAATAAAACAATAATCTTTAAGCA ATCCTCAGGAGGGGACCCAGAAATTGTAACGCACAGTTTTAA TTGTGGAGGGGAATTTTTCTACTGTAATTCAACACAACTGTTT AATAGTACTTGGTTTAATAGTACTTGGAGTACTGAAGGGTCA AATAACACTGAAGGAAGTGACACAATCACCCTCCCATGCAGA ATAAAACAAATTATAAACATGTGGCAGAAAGTAGGAAAAGC AATGTATGCCCCTCCCATCAGTGGACAAATTAGATGTTCATC AAATATTACAGGGCTGCTATTAACAAGAGATGGTGGTAATAG CAACAATGAGTCCGAGATCTTCAGACCTGGAGGAGGAGATAT GAGGGACAATTGGAGAAGTGAATTATATAAATATAAAGTAGT AAAAATTGAACCATTAGGAGTAGCACCCACCAAGGCAAAGA GAAGAGTGGTGCAGAGAGAAAAAAGAGCAGTGGGAATAGGA GCTTTGTTCCTTGGGTTCTTGGGAGCAGCAGGAAGCACTATG GGCGCAGCCTCAATGACGCTGACGGTACAGGCCAGACAATTA TTGTCTGGTATAGTGCAGCAGCAGAACAATTTGCTGAGGGCT ATTGAGGCGCAACAGCATCTGTTGCAACTCACAGTCTGGGGC ATCAAGCAGCTCCAGGCAAGAATCCTGGCTGTGGAAAGATAC CTAAAGGATCAACAGCTCCTGGGGATTTGGGGTTGCTCTGGA

	AAACTCATTTGCACCACTGCTGTGCCTTGGAATGCTAGTTGGA GTAATAAATCTCTGGACAGATTTGGAATCACACGACCTGGAT GGAGTGGGACAGAGAAATTAACAATTACACAAGCTTAATAC ACTCCTTAATTGAAGAATCGCAAAACCAGCAAGAAAAGAAT GAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTTGTGG AATTGGTTTAACATAACAAATTGGCTGTGGTATATAAAATTA TTCATAATGATAGTAGGAGGCTTGGTAGGTTTAAGAATAGTT TTTGCTGTACTTTCTATAGTGAATAGAGTTAGGCAGGGATATT CACCATTATCGTTTCAGACCCACCTCCCAACCCCGAGGGGAC CCGACAGGCCCGAAGGAATAGAAGAAGAAGGTGGAGAGAGA GACAGAGACAGATCCATTCGATTAGTGAACGGATCCTTGGCA CTTATCTGGGACGATCTGCGGAGCCTGTGCCTCTTCAGCTACC ACCGCTTGAGAGACTTACTCTTGATTGTAACGAGGATTGTGG AACTTCTGGGACGCAGGGGGTGGGAAGCCCTCAAATATTGGT GGAATCTCCTACAGTATTGGAGTCAGGAACTAAAGAATAGTG CTGTTAGCTTGCTCAATGCCACAGCCATAGCAGTAGCTGAGG GGACAGATAGGGTTATAGAAGTAGTACAAGGAGCTTGTAGA GCTATTCGCCACATACCTAGAAGAATAAGACAGGGCTTGGAA AGGATTTTGCTATAA
Results	Patents or Published Applications: 10 Relevant: 8

Database	GenomeQuest
Keywords	3. DNA sequence of Pol listed below. 4. 65% or greater homology
Results	Patents: 282 Locate 10 might be relevant patents
Note	1. The DNA sequence is provided by Kerri Clark, from PIPRA, who downloaded from National Center for Biotechnology Information (NCBI) website (http://www.ncbi.nlm.nih.gov/). 2. DNA sequence of Pol from NCBI website: TTTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCCAGGG AATTTTCTTCAGAGCAGACCAGAGCCAACAGCCCCACCAGAA GAGAGCTTCAGGTCTGGGGTAGAGACAACAACTCCCCCTCAG AAGCAGGAGCCGATAGACAAGGAACTGTATCCTTTAACTTCC CTCAGGTCACTCTTTGGCAACGACCCCTCGTCACAATAAAGA TAGGGGGGCAACTAAAGGAAGCTCTATTAGATACAGGAGCA GATGATACAGTATTAGAAGAAATGAGTTTGCCAGGAAGATGG AAACCAAAAATGATAGGGGGAATTGGAGGTTTTATCAAAGTA AGACAGTATGATCAGATACTCATAGAAATCTGTGGACATAAA GCTATAGGTACAGTATTAGTAGGACCTACACCTGTCAACATA ATTGGAAGAAATCTGTTGACTCAGATTGGTTGCACTTTAAATT TTCCCATTAGCCCTATTGAGACTGTACCAGTAAAATTAAAGC CAGGATGGATGGCCCAAAAGTTAAACAATGGCCATTGACAG AAGAAAAAATAAAAGCATTAGTAGAAATTTGTACAGAGATG GAAAAGGAAGGGAAAATTTCAAAAATTGGGCCTGAAAATCC

	ATACAATACTCCAGTATTTGCCATAAAGAAAAAAGACAGTAC TAAATGGAGAAAATTAGTAGATTTCAGAGAACTTAATAAGAG AACTCAAGACTTCTGGGAAGTTCAATTAGGAATACCACATCC CGCAGGGTTAAAAAAGAAAAAATCAGTAACAGTACTGGATG TGGGTGATGCATATTTTTCAGTTCCCTTAGATGAAGACTTCAG GAAGTATACTGCATTTACCATACCTAGTATAAACAATGAGAC ACCAGGGATTAGATATCAGTACAATGTGCTTCCACAGGGATG GAAAGGATCACCAGCAATATTCCAAAGTAGCATGACAAAAA TCTTAGAGCCTTTTAGAAAACAAAATCCAGACATAGTTATCT ATCAATACATGGATGATTTGTATGTAGGATCTGACTTAGAAA TAGGGCAGCATAGAACAAAAATAGAGGAGCTGAGACAACAT CTGTTGAGGTGGGGACTTACCACACCAGACAAAAAACATCAG AAAGAACCTCCATTCCTTTGGATGGGTTATGAACTCCATCCTG ATAAATGGACAGTACAGCCTATAGTGCTGCCAGAAAAAGAC AGCTGGACTGTCAATGACATACAGAAGTTAGTGGGGAAATTG AATTGGGCAAGTCAGATTTACCCAGGGATTAAAGTAAGGCAA TTATGTAAACTCCTTAGAGGAACCAAAGCACTAACAGAAGTA ATACCACTAACAGAAGAAGCAGAGCTAGAACTGGCAGAAAA CAGAGAGATTCTAAAAGAACCAGTACATGGAGTGTATTATGA CCCATCAAAAGACTTAATAGCAGAAATACAGAAGCAGGGGC AAGGCCAATGGACATATCAAATTTATCAAGAGCCATTTAAAA ATCTGAAAACAGGAAAATATGCAAGAATGAGGGGTGCCCAC ACTAATGATGTAAAACAATTAACAGAGGCAGTGCAAAAAAT AACCACAGAAAGCATAGTAATATGGGGAAAGACTCCTAAATT TAAACTGCCCATACAAAAGGAAACATGGGAAACATGGTGGA CAGAGTATTGGCAAGCCACCTGGATTCCTGAGTGGGAGTTTG TTAATACCCCTCCCTTAGTGAAATTATGGTACCAGTTAGAGA AAGAACCCATAGTAGGAGCAGAAACCTTCTATGTAGATGGGG CAGCTAACAGGGAGACTAAATTAGGAAAAGCAGGATATGTT ACTAATAGAGGAAGACAAAAAGTTGTCACCCTAACTGACACA ACAAATCAGAAGACTGAGTTACAAGCAATTTATCTAGCTTTG CAGGATTCGGGATTAGAAGTAAACATAGTAACAGACTCACAA TATGCATTAGGAATCATTCAAGCACAACCAGATCAAAGTGAA TCAGAGTTAGTCAATCAAATAATAGAGCAGTTAATAAAAAAG GAAAAGGTCTATCTGGCATGGGTACCAGCACACAAAGGAATT GGAGGAAATGAACAAGTAGATAAATTAGTCAGTGCTGGAAT CAGGAAAGTACTATTTTTAGATGGAATAGATAAGGCCCAAGA TGAACATGAGAAATATCACAGTAATTGGAGAGCAATGGCTAG TGATTTTAACCTGCCACCTGTAGTAGCAAAAGAAATAGTAGC CAGCTGTGATAAATGTCAGCTAAAAGGAGAAGCCATGCATGG ACAAGTAGACTGTAGTCCAGGAATATGGCAACTAGATTGTAC ACATTTAGAAGGAAAAGTTATCCTGGTAGCAGTTCATGTAGC CAGTGGATATATAGAAGCAGAAGTTATTCCAGCAGAAACAG GGCAGGAAACAGCATATTTTCTTTTAAAATTAGCAGGAAGAT GGCCAGTAAAAACAATACATACTGACAATGGCAGCAATTTCA CCGGTGCTACGGTTAGGGCCGCCTGTTGGTGGGCGGGAATCA

	AGCAGGAATTTGGAATTCCCTACAATCCCCAAAGTCAAGGAG TAGTAGAATCTATGAATAAAGAATTAAAGAAAATTATAGGAC AGGTAAGAGATCAGGCTGAACATCTTAAGACAGCAGTACAA ATGGCAGTATTCATCCACAATTTTAAAAGAAAAGGGGGGATT GGGGGGTACAGTGCAGGGGAAAGAATAGTAGACATAATAGC AACAGACATACAAACTAAAGAATTACAAAAACAAATTACAA AAATTCAAAATTTTCGGGTTTATTACAGGGACAGCAGAAATC CACTTTGGAAAGGACCAGCAAAGCTCCTCTGGAAAGGTGAAG GGGCAGTAGTAATACAAGATAATAGTGACATAAAAGTAGTG CCAAGAAGAAAAGCAAAGATCATTAGGGATTATGGAAAACA GATGGCAGGTGATGATTGTGTGGCAAGTAGACAGGATGAGG ATTAG
Search String	All text contains “HIV”: 260 All text contains “HIV and DNA”: 181 All text contains “HIV and DNA and vaccine”: 87 Locate 10 might be relevant patents

Database	GenomeQuest
Keywords	5. DNA sequence of Gag listed below. 6. 80% or greater homology
Results	Patents: 770 results, 103 patents Locate 35 might be relevant patents
Note	1. The DNA sequence is provided by Kerri Clark, from PIPRA, who downloaded from National Center for Biotechnology Information (NCBI) website (http://www.ncbi.nlm.nih.gov/). 2. DNA sequence of Gag from NCBI website: ATGGGTGCGAGAGCGTCAGTATTAAGCGGGGGAGAATTAGA TCGATGGGAAAAAATTCGGTTAAGGCCAGGGGGAAAGAAAA AATATAAATTAAAACATATAGTATGGGCAAGCAGGGAGCTA GAACGATTCGCAGTTAATCCTGGCCTGTTAGAAACATCAGAA GGCTGTAGACAAATACTGGGACAGCTACAACCATCCCTTCAG ACAGGATCAGAAGAACTTAGATCATTATATAATACAGTAGCA ACCCTCTATTGTGTGCATCAAAGGATAGAGATAAAAGACACC AAGGAAGCTTTAGACAAGATAGAGGAAGAGCAAAACAAAAG TAAGAAAAAAGCACAGCAAGCAGCAGCTGACACAGGACACA GCAATCAGGTCAGCCAAAATTACCCTATAGTGCAGAACATCC AGGGGCAAATGGTACATCAGGCCATATCACCTAGAACTTTAA ATGCATGGGTAAAAGTAGTAGAAGAGAAGGCTTTCAGCCCA GAAGTGATACCCATGTTTTCAGCATTATCAGAAGGAGCCACC CCACAAGATTTAAACACCATGCTAAACACAGTGGGGGGACAT CAAGCAGCCATGCAAATGTTAAAAGAGACCATCAATGAGGA AGCTGCAGAATGGGATAGAGTGCATCCAGTGCATGCAGGGCC TATTGCACCAGGCCAGATGAGAGAACCAAGGGGAAGTGACA TAGCAGGAACTACTAGTACCCTTCAGGAACAAATAGGATGGA TGACAAATAATCCACCTATCCCAGTAGGAGAAATTTATAAAA GATGGATAATCCTGGGATTAAATAAAATAGTAAGAATGTATA

	GCCCTACCAGCATTCTGGACATAAGACAAGGACCAAAGGAA CCCTTTAGAGACTATGTAGACCGGTTCTATAAAACTCTAAGA GCCGAGCAAGCTTCACAGGAGGTAAAAAATTGGATGACAGA AACCTTGTTGGTCCAAAATGCGAACCCAGATTGTAAGACTAT TTTAAAAGCATTGGGACCAGCGGCTACACTAGAAGAAATGAT GACAGCATGTCAGGGAGTAGGAGGACCCGGCCATAAGGCAA GAGTTTTGGCTGAAGCAATGAGCCAAGTAACAAATTCAGCTA CCATAATGATGCAGAGAGGCAATTTTAGGAACCAAAGAAAG ATTGTTAAGTGTTTCAATTGTGGCAAAGAAGGGCACACAGCC AGAAATTGCAGGGCCCCTAGGAAAAAGGGCTGTTGGAAATG TGGAAAGGAAGGACACCAAATGAAAGATTGTACTGAGAGAC AGGCTAATTTTTTAGGGAAGATCTGGCCTTCCTACAAGGGAA GGCCAGGGAATTTTCTTCAGAGCAGACCAGAGCCAACAGCCC CACCAGAAGAGAGCTTCAGGTCTGGGGTAGAGACAACAACT CCCCCTCAGAAGCAGGAGCCGATAGACAAGGAACTGTATCCT TTAACTTCCCTCAGGTCACTCTTTGGCAACGACCCCTCGTCAA TAA

Search Round 4

Database	IPVision, Inc. (access and password granted by Joseph G. Hadzima (US & EP applications and patents, WIPO PCT publications)
Keywords	DNA, Vaccine*, HIV, human immune* virus,
Search Strings	US 5420030- 9 US 5824310- 7 US 5869624- 1 US 6534312- 3 US 6649409-3
Results	23 patents considered; Locate 0 results might be relevant

Database	Delphion (Derwent World Patent Index (DWPI) Patent Database)
Keywords	Researchers listed on National Center for Biotechnology Information (NCBI) website as inventors, HIV, vaccine
Classification of Derwent Database	Not in use
Search strings	France researchers: ((((verrier b) or (le grand) or (ataman-onal) or (terrat c) or (guillon c) or durand or (hurtrel b) or aubertin or (sutter g) or (erfle v) or (girard m)) <in> IN) and ((hiv*) <in> AB) and ((hiv*) <in> TI)): 13 ((((((belliard g) or (romieu a) or (zagury jf) or (dali h) or (chalion o)

	or (le grand) or (loret e) or briand or (roques b) or (desgranges c) or (muller s) <in> IN) AND ((hiv*) <in> AB) AND ((hiv*) <in> TI))))): 14 ((((riviere y) or (le grand r) or corre or camugli or (michel ml) or (borgne sl)) <in> IN) AND ((hiv*) <in> AB)): 2 Italy researchers ((((cafaro a) or (titti f) or (fracasso c) or maggiorella or (baroncelli s) or (caputo a) or (goletti d) or (brosetti a) or (pace m) or fanales-belasio or (ridolfi b) or negri or (sernicola l) or (belli r) or (corrias f) or (macchia i) or (leone p) or (michelini z) or (ten haaft) or (butto s) or (verani p) or (ensoli b)) <in> IN) AND ((hiv*) <in> AB)): 8 UC Davis researchers ((((busch m) or (lu d) or (fritts l) or (lifson jd) or (miller cj)) <in> IN) AND ((hiv*) <in> AB)): 14 NIH researchers ((((patterson lj) or (malkevitch n) or (venzon d) or (pinczewski j) or (gomeez-roman) or (wang l) or kalyanaraman or markham or (robey FA) or (robert-guroff)) <in> IN) AND ((hiv*) <in> AB) AND ((hiv*) <in> TI)): 27 Harvard researchers: Derwent Results for Query: (((korioth or lord or yu or beddall or gorgone or miura or philippon or manson or markham or parrish or gelman or panicali or barouch or fu or montefiori lewis or shiver or letvin or craiu or santra or egan or schmitz or kuroda or nam or wyatt or lifton or krivulka or nickerson or lord or moss or hirsch or mckay or gorgone) <in> IN) and ((hiv*) <in> TI) AND ((hiv*) <in> AB) AND vaccin*): 62
Results	140 patents; Locate 62 might be relevant patents

Database	Delphion (Derwent World Patent Index (DWPI) Patent Database)
Keywords	Researchers listed on National Center for Biotechnology Information (NCBI) website as inventors, HIV, vaccine
Classification of Derwent Database	Not in use
Search strings	(US & EP applications and patents, WIPO PCT publications) US researchers:

	(((smith jm) or (amara rr) or (robinson hl) or (moss b) or (villinger f) or (derby nr) or (kraft z) or (stamatatos l) or (binley jm)) <in> IN): 0 Netherland Researchers: (((verschoor ej) or (davis d) or (koopman g) or (morein b) or (heeney jl) or barnett or (wagner r) or (mooij p) or (nieuwenhuis ig)) <in> IN): 3, 764 ((HIV) <in> AB) AND (((verschoor ej) or (davis d) or (koopman g) or (morein b) or (heeney jl) or barnett or (wagner r) or (mooij p) or (nieuwenhuis ig)) <in> IN) AND ((HIV) <in> TI): 57 ((HIV and DNA) <in> CLAIMS) AND ((HIV) <in> AB) AND (((verschoor ej) or (davis d) or (koopman g) or (morein b) or (heeney jl) or barnett or (wagner r) or (mooij p) or (nieuwenhuis ig)) <in> IN) AND ((HIV) <in> TI): 21
Results	Duplicate patents assessed

5.C. Patent Search Results Spreadsheet Summary
5.C.1. Categorization Summary

Construction, optimization and delivery mechanism are the major three landscape tiers selected to subcategorize the HIV DNA Vaccine patents/applications found in this project.

Construction relates to working with DNA elements constituting DNA vaccines. Included under this tier are inventions directed to design of DNA backbones, selection elements, HIV genes, leader sequence, secretary signals and promoters.

Under construction, wherever SIV genomes are employed instead of and/or in addition to HIV's, it is indicated on a separate column as Y (Yes) or N (No).

Optimization relates to working with DNA vaccines to optimize their efficacy as a vaccine. Included in this tier are inventions related to codon optimization of genes utilized in the DNA vaccine.

Adjuvants under optimization, relate to substances utilized to potentiate or increase the vaccine efficiency, and may take a form of a gene constituting part of the DNA structure of a DNA vaccine (molecular adjuvant, such as a cytokine gene incorporated into a plasmid) or a form of protein/peptide or other chemical forms which are usually combined later with a DNA vaccine.

Delivery mechanism relates to the administration of DNA vaccines to hosts or vaccination strategy such as prime boost. Included in this tier are inventions specifically related to deliver DNA vaccines to hosts through various methods such as gene gun, electroporation and lipids.

Wherever, DNA vaccines are part of prime boost strategy (DNA vaccination followed by other methods of vaccination, or vice versa), the corresponding claims are indicated.

5.C.2. Master Spreadsheet

(See following pages)

Publication Number	Construction (y/n)	Optimization (y/n)	Delivery (y/n)	SIV (y/n)	Prime Boost (claim#)	Adjuvants (claim#)	Title	Publication Date	Assignee/Applicant Name
EP1279404A1	Y	N	N	N	na	na	Use of HIV-1 tat, fragments or derivatives thereof, to target or to activate antigen-presenting cells, to deliver cargo molecules for vaccination or to treat other diseases	2003/1/29	Istituto Superiore di Sanit
EP1369427A2	Y	N	N	N	na	na	HIV-3 retrovirus strains and their use	2003/12/10	INNOGENETICS N.V.
EP1402019A4	Y	N	N	Y	na	na	MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES	2006/4/19	US GOVERNMENT
EP335635A1	Y	N	N	N	na	na	Mutated HIV envelope protein	1989/10/4	THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY
EP449116B2	Y	N	N	N	na	na	DNA sequences encoding modified retroviral gag polypeptides and vaccines containing them or aggregates thereof	2004/8/25	Geneart GmbH
US4952499	Y	N	Y	N	na	na	Genes and their encoded proteins which regulate gene expression of the interleukin-2 receptor and of human lymphotropic retroviruses	1990/8/28	DANA FARBER CANCER INST INC (DAND:Standard company)
US5100662	N	Y	N	N	na	9	Steroidal liposomes exhibiting enhanced stability	1992/3/31	LIPOSOME CO INC (LIPO:Standard company)

US5130247	Y	N	N	N	na	na	Expression of fusion protein of HIV envelope and HBsAG	1992/7/14	MERCK & CO INC (MERI:Standard company)
US5130248	Y	N	N	N	na	na	Expression of fusion protein of HIV envelope and HBsAg	1992/7/14	MERCK & CO INC (MERI:Standard company)
US5141867	Y	N	N	N	na	na	Nucleotide sequence encoding a human immunodeficiency virus antigen	1992/8/25	DU PONT DE NEMOURS & CO E I (DUPO:Standard company)
US5328835	Y	N	N	N	na	na	Expression of immunologically reactive HIV envelope proteins	1994/7/12	GENETIC SYSTEMS CORP (GENE:Non-standard company)|BIO-RAD LAB INC (BIRA:Standard company)|BRISTOL-MYERS SQUIBB CO (BRIM:Standard company)
US5439809	Y	N	N	N	na	na	Non-infectious HIV particles lacking long terminal repeats	1995/8/8	CONNAUGHT LAB LTD (CONN:Non-standard company)|AVENTIS PASTEUR LTD (AVET:Standard company)
US5571712	Y	N	N	N	na	na	Non-infectious, replication defective, immunogenic HIV retrovirus-like particles produced from a recombinant HIV genome devoid of long terminal repeats	1996/11/5	CONNAUGHT LAB LTD (CONN:Non-standard company)|AVENTIS PASTEUR LTD (AVET:Standard company)

US5654195	Y	N	N	Y	na	na	Vectors expressing hybrid viruses, methods of use and novel assays	1997/8/5	DANA FARBER CANCER INST INC (DAND:Standard company)|HARVARD COLLEGE (HARD:Standard company)
US5665577	Y	N	N	N	na	na	Vectors containing HIV packaging sequences, packaging defective HIV vectors, and uses thereof	1997/9/9	DANA FARBER CANCER INST INC (DAND:Standard company)
US5766625	N	N	Y	N	na	na	Artificial viral envelopes	1998/6/16	UNIV FLORIDA RES FOUND INC (UYFL:Standard company)
US5795577	Y	N	N	N	na	na	Viral vector coding for a glycoprotein of the virus responsible for A.I.D.S.	1998/8/18	KIENY M-P (KIEN:Individual)|INST PASTEUR (INSP:Standard company)|TRANSGENE SA (TRGE:Standard company)
US5824310	N	Y	N	N	na	all claims	Lipopplysaccharide conjugate vaccines	1998/10/20	US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US5866131	Y	N	N	N	na	na	Recombinant vaccine	1999/2/2	RAMSHAW I A (RAMS:Individual)|COMMONWEALTH SCI & IND RES ORG (CSIR:Standard company)|UNIV

									AUSTRALIAN NAT (AUSU:Standard company)
US5869313	Y	N	N	N	na	na	Molecular clones of HIV-1 viral strains MN-ST1 and BA-L, and uses thereof	1999/2/9	US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US5883081	Y	N	N	N	na	na	Isolation of novel HIV-2 proviruses	1999/3/16	UNIV CALIFORNIA (REGC:Standard company)
US5981276	Y	N	N	N	na	na	Vectors containing HIV packaging sequences, packaging defective HIV vectors, and uses thereof	1999/11/9	DANA FARBER CANCER INST INC (DAND:Standard company)
US6086891	Y	N	N	N	na	na	Bi-functional plasmid that can act as both a DNA vaccine and a recombinant virus vector	2000/7/11	ST JUDE CHILDREN'S RES HOSPITAL (SJUD:Non-standard company)
US6168923	N	Y	N	N	na	na	Compositions and methods for use of IL-12 as an adjuvant	2001/1/2	UNIV PENNSYLVANIA (UYPE:Non-standard company)|WISTAR INST ANATOMY & BIOLOGY (WIST:Non-standard company)
US6210663	N	N	Y	N	1,2,3,4,10	10,11	Methods of augmenting mucosal immunity through systemic priming and mucosal boosting	2001/4/3	WISTAR INST ANATOMY & BIOLOGY (WIST:Non-standard company)
US6248721	N	N	Y	N	na	na	Method of using mouse model for evaluation of HIV vaccines	2001/6/19	AMDL INC (AMDL:Non-standard company)|CHANG L (CHAN:Individual)

US6326007	Y	N	N	N	na	10, 13	Attenuated lentivirus vectors expressing interferon	2001/12/4	UNIV CALIFORNIA (REGC:Standard company)
US6348450	N	N	Y	N	na	na	Noninvasive genetic immunization, expression products therefrom and uses thereof	2002/2/19	UAB RES FOUND (UABR:Non-standard company)|CURIEL D T (CURI:Individual)|KAMPEN K R V (KAMP:Individual)|MARKS D H (MARK:Individual)|SHI Z (SHIZ:Individual)|TANG D C (TANG:Individual)|VAN KAMPEN K R (VKAM:Individual)
US6420545	Y	N	N	N	na	na	CD4-independent HIV envelope proteins as vaccines and therapeutics	2002/7/16	UNIV DUKE (UYDU:Non-standard company)|UNIV PENNSYLVANIA (UYPE:Non-standard company)|DOMS R W (DOMS:Individual)|HOFFMAN T L (HOFF:Individual)|HOXIE J A (HOXI:Individual)|LABRANCHE C C (LABR:Individual)

US6534062	N	Y	N	N	na	na	Methods for increasing a cytotoxic T lymphocyte response in vivo	2003/3/18	DEPT VETERANS AFFAIRS (VETE:Non-standard company)|CHO H J (CHOH:Individual)|HORNER A A (HORN:Individual)|RAZE (RAZE:Individual)|RICHMAN D (RICH:Individual)|UNIV CALIFORNIA (REGC:Standard company)|US DEPT VETERANS AFFAIRS (USGO:Standard company)
US6534312	Y	Y	N	N	na	na	Vaccines comprising synthetic genes	2003/3/18	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A (LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US6541003	Y	N	N	N	na	na	Conditionally controlled, attenuated HIV vaccine	2003/4/1	INFECTIOUS DISEASES FOUND (INFE:Non-

									standard company)|SMITH S (SMIT:Individual)|SMITH S M (SMIT:Individual)
US6544518	N	Y	N	N	na	1-7, 13 - 15	Vaccines	2003/4/8	GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAN BIOLOGICALS SA (SMIK:Standard company)
US6586409	Y	N	Y	N	na	1	Adjuvant compositions and methods for enhancing immune responses to polynucleotide-based vaccines	2003/7/1	VICAL INC (VICA:Non-standard company)|WHEELER C J (WHEE:Individual)
US6635624	N	N	Y	N	na	na	Nucleotide vector composition containing such vector and vaccine for immunization against hepatitis	2003/10/21	INST NAT SANTE & RECH MEDICALE (NASA:Non-standard company)|UNIV OTTAWA (UYOT:Non-standard company)|INSERM INST NAT SANTE & RECH MEDICALE (INRM:Standard company)|INST PASTEUR

									(INSP:Standard company)
US6649409	Y	Y	N	N	na	na	Method for producing a nucleotide sequence construct with optimized codons for an HIV genetic vaccine based on a primary, early HIV isolate and synthetic envelope BX08 constructs	2003/11/18	STATENS SERUM INST (STAT:Non-standard company)|STATENS SERUMINSTITUT (STAT:Non-standard company)
US6656706	Y	N	N	N	na	na	Molecular clones with mutated HIV gag/pol, SIV gag and SIV env genes	2003/12/2	US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US6696291	Y	Y	N	N	8	na	Synthetic HIV gag genes	2004/2/24	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A (LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)

US6716823	N	N	Y	N	na	na	Noninvasive genetic immunization, expression products therefrom, and uses thereof	2004/4/6	UAB RES FOUND (UABR:Non-standard company)|CURIEL D T (CURI:Individual)|KAMPEN K R V (KAMP:Individual)|MARKS D H (MARK:Individual)|SHI Z (SHIZ:Individual)|TANG D C (TANG:Individual)|VAN KAMPEN K R (VKAM:Individual)
US6783939	Y	N	N	N	na	na	Alphavirus vectors and virosomes with modified HIV genes for use in vaccines	2004/8/31	ALPHAVAX INC (ALPH:Non-standard company)|MEDICAL RES COUNCIL (MEDI:Non-standard company)|UNIV CAPE TOWN (UYCA:Non-standard company)|UNIV NORTH CAROLINA (UYNC:Non-standard company)|CALEY I (CALE:Individual)|DAVIS N (DAVI:Individual)|DRYGA S (DRYG:Individual)|JOHNSTON R (JOHN:Individual)|KEITH P

									(KEIT:Individual)|MAUGHAN M (MAUG:Individual)|OLMSTED R (OLMS:Individual)|SWANSTROM R (SWAN:Individual)
US6818442	Y	N	N	Y	na	na	AIDS DNA vaccine that prevents SIVmac239 virus infection in monkeys	2004/11/16	GENECCIN CO LTD (GENE:Non-standard company)|GENEXIN CO LTD (GENE:Non-standard company)|GENEXINE CO LTD (GENE:Non-standard company)|GENEXINE INC (GENE:Non-standard company)|POSTECH FOUND (POST:Non-standard company)|UNIV POHANG SCI & TECHNOLOGY (UYPO:Non-standard company)
US6894152	N	Y	N	N	na	na	Cloned DNA sequences related to the genomic RNA of lymphadenopathy-associated-virus (LAV) and proteins	2005/5/17	CENT NAT RECH SCI (CNRS:Standard company)|INST PASTEUR

							encoded by said LAV genomic RNA		(INSP:Standard company)
US6919318	N	N	N	N	na	All claims	Enhancing immune responses to genetic immunization by using a chemokine	2005/7/19	CHIRON CORP (CHIR:Standard company)
US6998252	Y	N	N	N	na	na	Recombinant poxviruses having foreign DNA expressed under the control of poxvirus regulatory sequences	2006/2/14	US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US7008784	Y	N	N	N	na	na	Non-infectious, non-replicating, immunogenic human immunodeficiency virus-like particles	2006/3/7	CONNAUGHT LAB LTD (CONN:Non-standard company)|AVENTIS PASTEUR LTD (AVET:Standard company)
US7094408	N	Y	N	N	all claims	na	Immunogenicity using a combination of DNA and vaccinia virus vector vaccines	2006/8/22	FRANCHINI G (FRAN:Individual)|HEL Z (HELZ:Individual)|PAVLAKIS G (PAVL:Individual)|AVENTIS PASTEUR LTD (AVET:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US7122180	N	Y	N	N	na	na	DNA vectors containing mutated HIV proviruses	2006/10/17	CHILDRENS MEDICAL CENT (CHIL:Non-standard company)|ALDOVINI A

									(ALDO:Individual)
US7205101	Y	N	N	N	na	na	Human immunodeficiency virus (HIV) nucleotide sequences, recombinant polypeptides, and applications thereof	2007/4/17	NOVARTIS VACCINES & DIAGNOSTICS INC (NOVS:Standard company)
US7211659	Y	N	N	N	na	na	Polynucleotides encoding antigenic HIV type C polypeptides, polypeptides and uses thereof	2007/5/1	UNIV STELLENBOSCH (UYST:Non-standard company)|BARNETT S (BARN:Individual)|ENGELBRECHT S (ENGE:Individual)|LIANY (LIAN:Individual)|VANRENSBURG E J (VREN:Individual)|ZURMEGEDE J Z (MEGE:Individual)|CHIRON CORP (CHIR:Standard company)
US7323557	Y	N	N	N	na	na	Genome of the HIV-1 inter-subtype (C/B') and use thereof	2008/1/29	GENEART AG (GENE:Non-standard company)|GENEART GMBH GES ANGEWANDTE BIOTECHNOLOG (GENE:Non-standard company)|GRAF M (GRAF:Individual)|SHAO Y (SHAO:Individual)|WAGNER R (WAGN:Individual)|WOL

									F H (WOLF:Individual)
US2001004531 A1	Y	N	Y	Y	na	na	AIDS DNA vaccine that prevents SIVmac239 virus infection in monkeys	2001/6/21	GENECCIN CO LTD (GENE:Non-standard company)|GENEXIN CO LTD (GENE:Non-standard company)|GENEXINE CO LTD (GENE:Non-standard company)|GENEXINE INC (GENE:Non-standard company)|POSTECH FOUND (POST:Non-standard company)|UNIV POHANG SCI & TECHNOLOGY (UYPO:Non-standard company)
US2002015707 A1	N	N	Y	N	1	na	Postinfection human immunodeficiency virus (HIV) vaccination therapy	2002/2/7	CHIRON CORP (CHIR:Standard company)
US2002022034 A1	N	Y	N	N	na	na	Therapeutic DNA vaccination	2002/2/21	GENETIC IMMUNITY (GENE:Non-standard company)|GENETIC IMMUNITY LLC (GENE:Non-standard company)|HEREDO-

									IMMUNITY CO LTD (HERE:Non-standard company)|LISZIEWICZ J (LISZ:Individual)|LORI F (LORI:Individual)
US2002061517 A1	N	Y	N	N	all	na	Adenovirus carrying gag gene HIV vaccine	2002/5/23	BETT A J (BETT:Individual)|CASI MIRO D R (CASI:Individual)|CAULF IELD M J (CAUL:Individual)|CHAS TAIN M A (CHAS:Individual)|CHEN L (CHEN:Individual)|EMIN I E A (EMIN:Individual)|SHIVE R J W (SHIV:Individual)|MERC K & CO INC (MERI:Standard company)
US2002127238 A1	N	Y	N	N	na	na	HIV-1 vaccines and screening methods therefor	2002/9/12	AARON DIAMOND AIDS RES CENT (AARO:Non-standard company)|BARNETT S W (BARN:Individual)|SRIV ASTAVA I K (SRIV:Individual)|STAM ATATOS L (STAM:Individual)

US2002141975 A1	Y	N	N	N	na	na	Alphavirus vectors and virosomes with modified HIV genes for use in vaccines	2002/10/3	ALPHAVAX INC (ALPH:Non-standard company)|MEDICAL RES COUNCIL (MEDI:Non-standard company)|UNIV CAPE TOWN (UYCA:Non-standard company)|UNIV NORTH CAROLINA (UYNC:Non-standard company)|CALEY I (CALE:Individual)|DAVIS N (DAVI:Individual)|DRYGA S (DRYG:Individual)|JOHNSTON R (JOHN:Individual)|KEITH P (KEIT:Individual)|MAUGHAN M (MAUG:Individual)|OLMSTED R (OLMS:Individual)|SWANSTROM R (SWAN:Individual)

US2002172683 A1	N	N	Y	N	na	na	MHC-I-restricted presentation of HIV-1 virion antigens without viral replication. Application to the stimulation of CTL and vaccination in vivo; analysis of vaccinating composition in vitro	2002/11/21	BUSEYNE F (BUSE:Individual)|HEARD J (HEAR:Individual)|MARSAC D (MARS:Individual)|MICHEL M (MICH:Individual)|RIVIERE Y (RIVI:Individual)|SCHWARTZ O (SCHW:Individual)|CENT NAT RECH SCI (CNRS:Standard company)|CNRS CENT NAT RECH SCI (CNRS:Standard company)|INSERM INST NAT SANTE & RECH MEDICALE (INRM:Standard company)|INST PASTEUR (INSP:Standard company)
US2002193330 A1	Y	N	N	N	na	Y	Genetically engineered co-expression DNA vaccines, construction methods and uses thereof	2002/12/19	UNIV MARYLAND BIOTECHNOLOGY INST (UYMA:Non-standard company)|AGWALE S (AGWA:Individual)|BAGLEY K (BAGL:Individual)|BOYS

									ON M (BOYS:Individual)|FOUT S T (FOUT:Individual)|HONE D (HONE:Individual)|LEWI S G (LEWI:Individual)|OBRIE CHT C (OBRI:Individual)|SHAT A M T (SHAT:Individual)
US2003021800 A1	Y	N	N	N	na	na	Vaccine against infectious agents having an intracellular phase, composition for the treatment and prevention of HIV infections, antibodies and method of diagnosis	2003/1/30	NAT INST HEALTH SCI (NAHE:Non-standard company)|CHERMANN J (CHER:Individual)|GALE A P (GALE:Individual)|LE CONTEL C (LCON:Individual)|INSERM INST NAT SANTE & RECH MEDICALE (INRM:Standard company)|INST NAT SANTE & RECH MEDICALE (INRM:Standard company)
US2003050468 A1	Y	Y	N	N	7	7,9,11	Synthetic HIV gag genes	2003/3/13	DAVIES M E (DAVI:Individual)|FREE D D C (FREE:Individual)|LIU M A

									(LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US2003082521A1	Y	N	Y	N	na	na	Polypeptide inducing antibodies neutralizing HIV	2003/5/1	BRASSEUR R (BRAS:Individual)|CHARLOTEAUX B (CHAR:Individual)|CHEVALIER M (CHEV:Individual)|EL HABIB R (HABI:Individual)|KRELL T (KREL:Individual)|SODOYER R (SODO:Individual)|AVENTIS PASTEUR (AVET:Standard company)|AVENTIS PASTEUR SA (AVET:Standard company)|SANOFI PASTEUR (SNFI:Standard company)

US2003087225 A1	Y	Y	N	N	na	na	Synthetic HIV genes	2003/5/8	DAVIES M E (DAVI:Individual)|FREE D D C (FREE:Individual)|LIU M A (LIUM:Individual)|PERR Y H C (PERR:Individual)|SHIVE R J W (SHIV:Individual)|MERC K & CO INC (MERI:Standard company)
US2003091594 A1	Y	N	N	N	na	na	CD4-independent HIV envelope proteins as vaccines and therapeutics	2003/5/15	UNIV DUKE (UYDU:Non-standard company)|UNIV PENNSYLVANIA (UYPE:Non-standard company)|DOMS R W (DOMS:Individual)|HOFF MAN T L (HOFF:Individual)|HOXI E J A (HOXI:Individual)|LABR ANCHE C C (LABR:Individual)
US2003096778 A1	Y	Y	N	N	na	20,21	Polynucleotide vaccines expressing codon optimized hiv-1 nef and modified hiv-1 nef	2003/5/22	FU T (FUTT:Individual)|LIAN G X (LIAN:Individual)|SHIVE R J W (SHIV:Individual)|MERC

									K & CO INC (MERI:Standard company)
US2003099934 A1	N	Y	N	N	na	12	Chemically modified hiv envelope glycoprotein	2003/5/29	BOUDET F (BOUD:Individual)|CHEVALIER M (CHEV:Individual)|DUBAYLE J (DUBA:Individual)|EL HABIB R (HABI:Individual)|AVENTIS PASTEUR (AVET:Standard company)|AVENTIS PASTEUR SA (AVET:Standard company)
US2003129169 A1	Y	N	N	N	na	na	Novel expression vectors and uses thereof	2003/7/10	FIT BIOTECH OYJ PLC (FITB:Non-standard company)|BLAZEVIC V (BLAZ:Individual)|KROHN K (KROH:Individual)|MANNIK A (MANN:Individual)|MANNJK A (MANN:Individual)|RANKI A (RANK:Individual)|TAHTINEN M (TAHT:Individual)|TOOTS U

									(TOOT:Individual)|USTA V E (USTA:Individual)|USTA V M (USTA:Individual)
US2003158131 A1	Y	N	N	N	na	na	DNA vectors containing mutated HIV proviruses	2003/8/21	CHILDRENS MEDICAL CENT (CHIL:Non-standard company)|ALDOVINI A (ALDO:Individual)
US2003158134 A1	N	Y	Y	N	na	9,10	Vaccine for the prophylactic or therapeutic immunization against hiv	2003/8/21	VOSS G (VOSS:Individual)|GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS SA (SMIK:Standard company)
US2003161834 A1	N	Y	N	N	na	1-8, 26-29	Vaccines	2003/8/28	GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|SMITHKLINE BEECHAM

									BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAN BIOLOGICALS SA (SMIK:Standard company)
US2003175292 A1	Y	N	N	N	na	na	Compositions and methods for generating an immune response	2003/9/18	UNIV EMORY (UYEM:Non-standard company)|AMARA R R (AMAR:Individual)|BRIGHT R A (BRIG:Individual)|BUTERA S T (BUTE:Individual)|EARL P L (EARL:Individual)|ELLENBERGER D (ELLE:Individual)|ELLENBERGER D L (ELLE:Individual)|FOLKS T M (FOLK:Individual)|HILDEBRAND D G (HILD:Individual)|HUA J (HUAJ:Individual)|MOSS B (MOSS:Individual)|ROBINSON H L (ROBI:Individual)|ROSS T M (ROSS:Individual)|SMIT

									H J (SMIT:Individual)|SMITH J M (SMIT:Individual)|WYAT T L S (WYAT:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US2003190308 A1	N	N	N	N	na	Y	Adjuvant	2003/10/ 9	POWDERJECT RES LTD (POWD:Non-standard company)|POWDERMED LTD (POWD:Non-standard company)|BRAUN R P (BRAU:Individual)|ERTL P (ERTL:Individual)|THOM SEN L (THOM:Individual)|VAN-WELY C (VANW:Individual)|GLA XO GROUP LTD (GLAX:Standard company)
US2003220276 A1	Y	N	N	Y	na	na	HIV vaccine and method of use	2003/11/ 27	NARAYAN O (NARA:Individual)

US2003228327 A1	Y	Y	N	N	na	na	DNA-based plasmid formulations and vaccines and prophylactics containing the same	2003/12/11	PICOSCRIPT LTD LLP (PICO:Non-standard company)|KITTLE J D (KITT:Individual)|LASHER A W (LASH:Individual)|WIDEN S G (WIDE:Individual)
US2004033237 A1	N	N	N	N	Y	na	Immunogenicity using a combination of dna and vaccinia virus vector vaccines	2004/2/19	FRANCHINI G (FRAN:Individual)|HEL Z (HELZ:Individual)|PAVLAKIS G (PAVL:Individual)|AVENTIS PASTEUR LTD (AVET:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US2004033487 A1	Y	Y	N	N	na	na	Modifications of HIV Env, Gag, and Pol enhance immunogenicity for genetic immunization	2004/2/19	CHADRABARTI B K (CHAD:Individual)|CHAKRABARTI B K (CHAK:Individual)|HUANG Y (HUAN:Individual)|NABEL G J (NABE:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)

US2004034209 A1	N	Y	N	N	na	na	Vaccination of hiv infected persons following highly active antiretrovial therapy	2004/2/19	AARON DIAMOND AIDS RES CENT (AARO:Non-standard company)|HABIB R E (HABI:Individual)|HO D (HODD:Individual)|KLEIN M (KLEI:Individual)|MARKOWITZ M (MARK:Individual)|AVENTIS PASTEUR SA (AVET:Standard company)
US2004063653 A1	Y	Y	N	N	na	na	Polynucleotide vaccines expressing codon optimized hiv-1 pol and modified hiv-1 pol	2004/4/1	CASIMIRO D R (CASI:Individual)|FU T (FUTT:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US2004076636 A1	N	N	Y	N	na	na	HIV immunogenic complexes	2004/4/22	ADVANCED BIOSCIENCES LAB INC (ADBI:Non-standard company)|KALYANARAMAN V S (KALY:Individual)|KEENT (KEEN:Individual)|MARKHAM P

									(MARK:Individual)|PALR (PALR:Individual)|WHITNEY S (WHIT:Individual)
US2004077577A1	Y	N	Y	Y	12	na	Molecular clones with mutated HIV gag/pol, SIV gag and SIV env genes	2004/4/22	PAVLAKIS G N (PAVL:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US2004106100A1	N	Y	Y	N	na	na	Dna vaccines encoding hiv accessory proteins	2004/6/3	UNIV (UYPE:Non-standard company)|UNIV PENNSYLVAN (UYPE:Non-standard company)|UNIV PENNSYLVANIA (UYPE:Non-standard company)|AYVAVOO V (AYVA:Individual)|WEINER D B (WEIN:Individual)
US2004106105A1	Y	N	N	N	na	na	Vaccine	2004/6/3	MARTINEZ ALONSO C (ALON:Individual)|TORAN GARCIA J L (GARC:Individual)|CONSEJO SUPERIOR INVESTIGACIONES CIENTIF (CNSJ:Standard company)|PHARMACIA SPAIN (PHAA:Standard

									company)|PHARMACIA SPAIN SA (PHAA:Standard company)
US2004116660 A1	Y	N	N	N	na	na	Process for the selection of hiv-1 subtype c Isolates, selected hiv-1 subtype c isolates, their genes and modifications and derivatives thereof	2004/6/17	ALPHAVAX INC (ALPH:Non-standard company)|MEDICAL RES COUNCIL (MEDI:Non-standard company)|UNIV CAPE TOWN (UYCA:Non-standard company)|UNIV NORTH CAROLINA (UYNC:Non-standard company)|JOHNSTON R E (JOHN:Individual)|KARI M S A (KARI:Individual)|MORRIS L (MORR:Individual)|SWANSTROM R I (SWAN:Individual)|WILLIAMSON C (WILL:Individual)
US2004180329 A1	Y	Y	N	N	na	9,11	Synthetic HIV gag genes	2004/9/16	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A

									(LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US2004191269A1	Y	N	N	N	54	na	Polyvalent, primary HIV-1 glycoprotein DNA vaccines and vaccination methods	2004/9/30	ADVANCED BIOSCIENCE LAB INC (ADBI:Non-standard company)|UNIV MASSACHUSETTS (UYMA:Non-standard company)|KALYANARAMAN V (KALY:Individual)|KEENT (KEEN:Individual)|LUS (LUSS:Individual)|MARKHAM P (MARK:Individual)|NAIR B (NAIR:Individual)|PALR (PALR:Individual)|WANG S (WANG:Individual)|WHITNEY S C (WHIT:Individual)
US2004224308A1	Y	N	N	N	na	na	Stabilized viral envelope proteins and uses thereof	2004/11/11	AARON DIAMOND AIDS RES CENT (AARO:Non-standard

									company)|PROGENICS PHARM INC (PROG:Non-standard company)
US2004236093 A1	Y	Y	N	N	na	na	Mhc-i-restricted presentation of hiv-1 virion antigens without viral replication. application to the stimulation of ctl and vaccination in vivo; analysis of vaccinating composition in vitro	2004/11/25	BUSEYNE F (BUSE:Individual)|HEARD J (HEAR:Individual)|MARSAC D (MARS:Individual)|MICHEL M (MICH:Individual)|RIVIERE Y (RIVI:Individual)|SCHWARTZ O (SCHW:Individual)|CENT NAT RECH SCI (CNRS:Standard company)|CNRS CENT NAT RECH SCI (CNRS:Standard company)|INSERM INST NAT SANTE & RECH MEDICALE (INRM:Standard company)|INST PASTEUR (INSP:Standard company)

US2005058657 A1	N	N	Y	N	1	na	Vaccine comprising gp120 and nef and/or tat for the immunisation against hiv	2005/3/17	ERTL P F (ERTL:Individual)|TITE J P (TITE:Individual)|VAN WELY C A (VWEL:Individual)|VOSS G (VOSS:Individual)|GLAXO GROUP LTD (GLAX:Standard company)|GLAXOSMITH KLINE BIOLOGICALS SA (GLAX:Standard company)
US2005112102 A1	Y	N	N	Y	na	na	DNA vaccine compositions and methods of use	2005/5/26	LIU Z (LIUZ:Individual)|NARAYAN O (NARA:Individual)|UNIV KANSAS MEDICAL CENT (UNIV:Standard company)
US2005158336 A1	Y	N	N	N	na	Y/all	Synthetic conjugate of CpG single-stranded DNA and T-help/CTL fusion peptide	2005/7/21	CITY OF HOPE (CITY:Standard company)
US2005175627 A1	Y	N	N	N	51	na	HIV pharmaccines	2005/8/11	OXXON PHARMACCINES LTD (OXXO:Non-standard company)|OXXON THERAPEUTICS LTD (OXXO:Non-standard company)
US2005208072 A1	Y	N	N	Y	na	Y/17	Preventive and therapeutic aids vaccines	2005/9/22	CHEN Q (CHEN:Individual)

US2005215508 A1	Y	N	N	N	na	na	Polynucleotide vaccines expressing codon optimized HIV-1 Nef and modified HIV-1 Nef	2005/9/29	FU T (FUTT:Individual)|LIAN G X (LIAN:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US2005220816 A1	Y	N	N	Y	14,16,18, 20,22 24	na	Mutant viral nucleic acids and vaccine containing same	2005/10/6	ADVANCED BIOSCIENCE LAB INC (ADBI:Non-standard company)
US2005220883 A1	Y	N	N	N	na	na	Microparticles with adsorbed polypeptide-containing molecules	2005/10/6	KAZZAZ J (KAZZ:Individual)|OHAGAN D (OHAG:Individual)|SINGH M (SING:Individual)|CHIRON CORP (CHIR:Standard company)
US2005256070 A1	N	N	N	N	na	Y	Adjuvant	2005/11/17	POWDERJECT RES LTD (POWD:Non-standard company)|POWDERMED LTD (POWD:Non-standard company)|BRAUN R P (BRAU:Individual)|ERTL P (ERTL:Individual)|THOMSEN L (THOM:Individual)|VAN-

									WELY C (VANW:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2005266024A1	N	Y	N	N	na	1, 3- 24	Adjuvant	2005/12/1	POWDERJECT RES LTD (POWD:Non-standard company)|POWDERMED LTD (POWD:Non-standard company)|BRAUN R P (BRAU:Individual)|ERTL P (ERTL:Individual)|THOMSEN L (THOM:Individual)|VAN-WELY C (VANW:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2005266025A1	Y	N	N	N	35	28-33	Novel use	2005/12/1	VOSS G (VOSS:Individual)|GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|SMITHKLINE BEECHAM

									BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS SA (SMIK:Standard company)|SMITHKLINE BEECHAM BIOLOGICS SA (SMIK:Standard company)
US2005271676 A1	Y	N	N	N	na	na	Inducing cellular immune responses to human immunodeficiency virus-1 using peptide and nucleic acid compositions	2005/12/8	EPIMMUNE INC (EPIM:Non-standard company)
US2005287167 A1	Y	N	N	N	na	na	Polycistronic HIV vector constructs	2005/12/29	CHIRON CORP (CHIR:Standard company)

US2006051839 A1	Y	N	N	N	na	na	DNA expression vectors and methods of use	2006/3/9	UNIV EMORY (UYEM:Non-standard company)|AMARA R R (AMAR:Individual)|BRIGHT R A (BRIG:Individual)|BUTERA S T (BUTE:Individual)|EARL P L (EARL:Individual)|ELLENBERGER D (ELLE:Individual)|ELLENBERGER D L (ELLE:Individual)|FOLK S T M (FOLK:Individual)|HILDEBRAND D G (HILD:Individual)|HUA J (HUAJ:Individual)|MOSS B (MOSS:Individual)|ROBINSON H L (ROBI:Individual)|ROSS T M (ROSS:Individual)|SMITH J (SMIT:Individual)|SMITH J M (SMIT:Individual)|WYATT L S (WYAT:Individual)|US DEPT HEALTH &

									HUMAN SERVICES (USSH:Standard company)
US2006094049 A1	N	N	N	N	87-107	na	Stabilized viral envelope proteins and uses thereof	2006/5/4	AARON DIAMOND AIDS RES CENT (AARO:Non-standard company)|PROGENICS PHARM INC (PROG:Non-standard company)
US2006142221 A1	Y	N	N	N	na	na	Vaccine	2006/6/29	ERTL P F (ERTL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2006148750 A1	Y	Y	N	N	na	na	Polynucleotide vaccines expressing codon optimized HIV-1 Pol and modified HIV-1 Pol	2006/7/6	CASIMIRO D R (CASI:Individual)|FU T (FUTT:Individual)|PERRY H C (PERR:Individual)|SHIVER J W

									(SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
US2006216305 A1	Y	N	N	N	na	na	Immunogenic hiv-1 multi-clade, multivalent constructs and methods of their use	2006/9/28	LAL R B (LALR:Individual)|OWEN S M (OWEN:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
US2006222665 A1	Y	N	N	N	na	na	Virus vaccine	2006/10/5	STRATHMANN & CO AG (STRA:Non-standard company)
US2006240042 A1	N	Y	N	N	all claims	na	IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES	2006/10/26	FRANCHINI G (FRAN:Individual)|HEL Z (HELZ:Individual)|PAVLAKIS G (PAVL:Individual)|AVENTIS PASTEUR LTD (AVET:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)

US2006275897 A1	Y	Y	N	N	na	na	HIV vaccines based on Env of multiple clades of HIV	2006/12/7	CHAKRABARTI B (CHAK:Individual)|HUANG Y (HUAN:Individual)|KONG W (KONG:Individual)|NABEL G J (NABE:Individual)|WANG Z (WANG:Individual)|YANG Z (YANG:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US DEPT OF HEALTH (USSH:Standard company)|US SEC OF NAVY (USNA:Standard company)
US2007010471 A1	Y	N	N	Y	na	na	HIV DNA vaccine	2007/1/11	LIU Z (LIUZ:Individual)|NARAYAN O (NARA:Individual)|UNIV KANSAS MEDICAL CENT (UNIV:Standard company)

US2007015721 A1	Y	N	N	N	na	na	Hiv-gag codon-optimised dna vaccines	2007/1/18	BEATON A (BEAT:Individual)|ERTL P F (ERTL:Individual)|GOUG H G W (GOUG:Individual)|LEAR A (LEAR:Individual)|TITE J P (TITE:Individual)|VAN WELY C A (VWEL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2007042977 A1	Y	N	N	N	na	na	Vaccine	2007/2/22	ERTL P F (ERTL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2007053923 A1	N	Y	N	N	na	1,6,7	Dna vaccine composition with enhanced immunogenicity	2007/3/8	GENEXINE CO LTD (GENE:Non-standard company)|GENEXINE INC (GENE:Non-standard company)|POSTECH FOUND (POST:Non-standard company)|UNIV POHANG SCI & TECHNOLOGY (UYPO:Non-standard company)|CHOI S (CHOI:Individual)|KIM Y (KIMY:Individual)|LEE C

									(LEEC:Individual)|PARK K (PARK:Individual)|PARK S (PARK:Individual)|RYU S (RYUS:Individual)|YANG S (YANG:Individual)
US2007166784 A1	Y	Y	N	N	na	na	Combination approaches for generating immune responses	2007/7/19	NAT INST HEALTH NAT CANCER INST (NAHE:Non-standard company)|BARNETT S W (BARN:Individual)|GOMEZ-ROMAN V R (GOME:Individual)|LIAN Y (LIAN:Individual)|PENG B (PENG:Individual)|ROBERT-GUROFF M (ROBE:Individual)|SRIVASTAVA I K (SRIV:Individual)|CHIRON CORP (CHIR:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US NAT INST OF HEALTH (USSH:Standard

									company)
US2007190031 A1	Y	N	N	N	na	na	Plasmid having three complete transcriptional units and immunogenic compositions for inducing an immune response to hiv	2007/8/16	EGAN M (EGAN:Individual)|ELDRIDGE J H (ELDR:Individual)|ISRAEL Z (ISRA:Individual)|SIDHUM K (SIDH:Individual)|WYETH (AMHP:Standard company)|WYETH CORP (AMHP:Standard company)

US2007248613 A1	Y	N	Y	N	na	na	Human Antibodies Interacting with Hiv Gp41	2007/10/25	CAMBRIDGE ANTIBODY TECHNOLOGY (CAMB:Non-standard company)|IST RICERCHE BIOL MOLECOLARE ANGELETTI (RICE:Non-standard company)|BIANCHI E (BIAN:Individual)|ECKERT D M (ECKE:Individual)|GELEZIUNAS R (GELE:Individual)|HAZUDA D J (HAZU:Individual)|KIM P S (KIMP:Individual)|LENNARD S N (LENN:Individual)|MILLER M D (MILL:Individual)|ROOT M J (ROOT:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)|WHITEHEAD INST BIOMEDICAL RES (WHED:Standard

									company)
US2007248679 A1	Y	N	N	N	na	na	VACCINE	2007/10/25	ERTL P F (ERTL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
US2007269456 A1	Y	Y	N	N	na	na	DNA-based plasmid formulations and vaccines and prophylactics containing the same	2007/11/22	KITTLE J D (KITT:Individual)|LASHER A W (LASH:Individual)|WIDEN S G (WIDE:Individual)
US2007292390 A1	N	N	Y	N	na	na	Broadly Cross-Reactive Hiv-1 Neutralizing Human Monoclonal Antibodies	2007/12/20	DIMITROV D S (DIMI:Individual)|ZHANG M (ZHAN:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US SEC OF NAVY (USNA:Standard company)

US2007292454A1	Y	N	N	Y	na	62	Therapeutic calcium phosphate particles and methods of manufacture and use	2007/12/20	BIOSANTE PHARM INC (BIOS:Non-standard company)|BELL S J D (BELL:Individual)|HE Q (HEQQ:Individual)|MORCO T (MORC:Individual)|MORCOL T (MORC:Individual)
US2008026071A1	Y	N	N	N	1	na	Microparticles for delivery of heterologous nucleic acids	2008/1/31	BARNETT S (BARN:Individual)|DONNELLY J (DONN:Individual)|DUBENSKY T (DUBE:Individual)|O'HAGAN D (OHAG:Individual)|OHAGAN D (OHAG:Individual)|OTTEN G (OTTE:Individual)|POLO J (POLO:Individual)|SINGH M (SING:Individual)|ULMER J (ULME:Individual)|CHIRON CORP (CHIR:Standard company)
WO0002591A1	Y	Y	N	N	na	all claims	POLYNUCLEOTIDE VACCINE FORMULATIONS	2000/1/20	MERCK & CO INC (MERI:Standard company)

WO0029561A2	Y	N	N	N	na	na	METHOD FOR PRODUCING A NUCLEOTIDE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE BX08 CONSTRUCTS	2000/5/25	STATENS SERUM INST (STAT:Non-standard company)|STATENS SERUMINSTITUT (STAT:Non-standard company)
WO0034494A1	Y	N	N	N	na	1	A RECOMBINANT VECTOR EXPRESSING MULTIPLE COSTIMULATORY MOLECULES AND USES THEREOF	2000/6/15	THERION BIOLOGICS CORP (THER:Non-standard company)|US DEPT HEALTH & HUMAN SERIVCES (USHE:Non-standard company)|HODGE J (HODG:Individual)|PANICALI D (PANI:Individual)|SCHOLM J (SCHO:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US SEC OF NAVY (USNA:Standard company)
WO0039303A2	Y	N	N	N	46	na	MODIFIED HIV ENV POLYPEPTIDES	2000/7/6	BARNETT S (BARN:Individual)|HARTOG K (HART:Individual)|MARTIN E

									(MART:Individual)|CHIRON CORP (CHIR:Standard company)|NOVARTIS VACCINES & DIAGNOSTICS INC (NOVS:Standard company)
WO0039304A2	Y	N	N	N	na	na	POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF	2000/7/6	CHIRON CORP (CHIR:Standard company)
WO0047223A2	Y	N	N	N	na	na	VIRAL VACCINE	2000/8/17	STRATHMANN & CO AG (STRA:Non-standard company)
WO0071561A1	Y	N	N	N	na	na	CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS	2000/11/30	UNIV DUKE (UYDU:Non-standard company)|UNIV PENNSYLVANIA (UYPE:Non-standard company)|DOMS R W (DOMS:Individual)|HOFFMAN T L (HOFF:Individual)|HOXIE J A (HOXI:Individual)|LABRANCHE C C (LABR:Individual)
WO0100648A1	Y	N	N	N	na	na	STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF	2001/1/4	AARON DIAMOND AIDS RES CENT (AARO:Non-standard

									company)|PROGENICS PHARM INC (PROG:Non-standard company)
WO0102607A1	Y	Y	N	N	18	na	ADENOVIRUS CARRYING GAG GENE HIV VACCINE	2001/1/11	BETT A J (BETT:Individual)|CASIMIRO D R (CASI:Individual)|CAULFIELD M J (CAUL:Individual)|CHASTAIN M A (CHAS:Individual)|CHEN L (CHEN:Individual)|EMINI E A (EMIN:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
WO0119958A2	Y	N	N	N	na	na	STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS	2001/3/22	DANA FARBER CANCER INST INC (DAND:Standard company)|UNIV COLUMBIA NEW YORK (UYCO:Standard company)
WO0126608A2	Y	N	N	N	na	na	DNA VACCINES ENCODING ANTIGEN LINKED TO A DOMAIN THAT BINDS CD40	2001/4/19	TRUBION PHARM (TRUB:Non-standard company)|TRUBION PHARM INC

									(TRUB:Non-standard company)|HAYDEN-LEDBETTER M S (HAYD:Individual)|LEDBETTER J A (LEDB:Individual)
WO0143693A2	N	Y	N	N	na	na	POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF	2001/6/21	FU T (FUTT:Individual)|LIAN G X (LIAN:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
WO0145748A1	N	Y	N	N	na	na	POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL	2001/6/28	CASIMIRO D R (CASI:Individual)|FU T (FUTT:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
WO0146408A2	N	Y	N	Y	na	na	MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES	2001/6/28	PAVLAKIS G N (PAVL:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)

WO0154719A2	Y	N	N	N	35	28-33	NOVEL USE	2001/8/2	VOSS G (VOSS:Individual)|GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS (SMIK:Standard company)|SMITHKLINE BEECHAM BIOLOGICALS SA (SMIK:Standard company)
WO0182962A2	Y	Y	N	N	1	na	IMMUNIZING AGAINST HIV INFECTION	2001/11/8	CAO S (CAOS:Individual)|KLEIN M H (KLEI:Individual)|PERSSON R (PERS:Individual)|ROVINSKI B (ROVI:Individual)|TARTAGLIA J (TART:Individual)|AVENTIS PASTEUR LTD (AVET:Standard company)|SANOFI PASTEUR LTD (SNFI:Standard company)

WO0182964A1	N	N	N	N	1	na	IMPROVED IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES	2001/11/8	FRANCHINI G (FRAN:Individual)|HEL Z (HELZ:Individual)|PAVLAKIS G (PAVL:Individual)|AVENTIS PASTEUR LTD (AVET:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
WO0204493A2	Y	N	N	N	na	na	POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF	2002/1/17	UNIV STELLENBOSCH (UYST:Non-standard company)|CHIRON CORP (CHIR:Standard company)
WO02099101A1	Y	N	N	N	na	na	MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES	2002/12/12	
WO03004657A1	Y	N	Y	N	na	na	POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE B AND/OR TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF	2003/1/16	BARNETT S (BARN:Individual)|LIAN Y (LIAN:Individual)|MEGEDE J Z (MEGE:Individual)|CHIRON CORP (CHIR:Standard company)|NOVARTIS VACCINES & DIAGNOSTICS INC (NOVS:Standard

									company)
WO03011334A1	Y	Y	Y	N	1	na	VACCINE COMPRISING GP120 AND NEF AND/OR TAT FOR THE IMMUNISATION AGAINST HIV	2003/2/13	ERTL P F (ERTL:Individual)|TITE J P (TITE:Individual)|VAN WELY C A (VWEL:Individual)|VOSS G (VOSS:Individual)|GLAXO GROUP LTD (GLAX:Standard company)|GLAXOSMITHKLINE BIOLOGICALS SA (GLAX:Standard company)
WO03025003A2	Y	Y	Y	N	na	14	VACCINES	2003/3/27	BEATON A (BEAT:Individual)|ERTL P F (ERTL:Individual)|GOUGH G W (GOUG:Individual)|LEAR A (LEAR:Individual)|TITE J P (TITE:Individual)|VAN WELY C A (VWEL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)

WO03037919A2	Y	N	N	N	na	na	HIV-1 SUBTYPE ISOLATE REGULATORY/ACCESSORY GENES, AND MODIFICATIONS AND DERIVATIVES THEREOF	2003/5/8	SOUTH AFRICAN MEDICAL RES COUNCIL (SAME:Non-standard company)|UNIV CAPE TOWN (UYCA:Non-standard company)|BOURN W (BOUR:Individual)|GRAY C M (GRAY:Individual)|KARIM S A (KARI:Individual)|VAN HARMELEN J H (VHAR:Individual)|WILLIAMSON C (WILL:Individual)
WO03045304A2	Y	N	N	N	na	na	MUTABLE VACCINES	2003/6/5	MAYO FOUND MEDICAL EDUCATION & RES (MAYO:Non-standard company)|CASCALHO M I (CASC:Individual)|PLATT J L (PLAT:Individual)
WO03076591A2	Y	N	N	N	na	na	COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE	2003/9/18	UNIV EMORY (UYEM:Non-standard company)|HUA J (HUAJ:Individual)|ROBINSON H L (ROBI:Individual)|SMITH J M (SMIT:Individual)|US DEPT HEALTH &

									HUMAN SERVICES (USSH:Standard company)
WO03080112A2	N	N	N	N	11	1, 25 and 26	ADJUVANT	2003/10/2	POWDERJECT RES LTD (POWD:Non-standard company)|POWDERMED LTD (POWD:Non-standard company)|BRAUN R P (BRAU:Individual)|ERTL P (ERTL:Individual)|THOMSEN L (THOM:Individual)|VAN-WELY C (VANW:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
WO04032860A2	Y	N	Y	N	na	na	HIV VACCINE FORMULATIONS	2004/4/22	BARNETT S (BARN:Individual)|DONNELLY J (DONN:Individual)|OHAGAN D (OHAG:Individual)|CHIRON CORP (CHIR:Standard company)
WO04035006A2	Y	N	N	N	na	na	METHODS AND COMPOSITIONS FOR IMMUNIZATION AGAINST HIV	2004/4/29	AARON DIAMOND AIDS RES CENT (AARO:Non-standard company)

WO04037847A2	Y	Y	N	N	70	na	HIV ENVELOPE-CD4 COMPLEXES AND HYBRIDS	2004/5/6	BARNETT S (BARN:Individual)|SRIVASTAVA I (SRIV:Individual)|CHIRON CORP (CHIR:Standard company)
WO04041851A2	Y	N	N	N	na	na	VACCINE	2004/5/21	ERTL P F (ERTL:Individual)|GLAXO GROUP LTD (GLAX:Standard company)
WO04050856A2	Y	Y	Y	N	na	34	POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS	2004/6/17	ADVANCED BIOSCIENCE LAB INC (ADBI:Non-standard company)|UNIV MASSACHUSETTS (UYMA:Non-standard company)|KALYANARAMAN V (KALY:Individual)|KEENT (KEEN:Individual)|LUS (LUSS:Individual)|MARKHAM P (MARK:Individual)|NAIR B (NAIR:Individual)|PALR (PALR:Individual)|WANG S (WANG:Individual)|WHITNEY S C (WHIT:Individual)

WO04067020A1	N	N	N	N	na	1	DNA VACCINE COMPOSITION WITH ENHANCED IMMUNOGENICITY	2004/8/12	GENEXINE CO LTD (GENE:Non-standard company)|GENEXINE INC (GENE:Non-standard company)|POSTECH FOUND (POST:Non-standard company)|UNIV POHANG SCI & TECHNOLOGY (UYPO:Non-standard company)|CHOI S (CHOI:Individual)|KIM Y (KIMY:Individual)|LEE C (LEEC:Individual)|PARK K (PARK:Individual)|PARK S (PARK:Individual)|RYU S (RYUS:Individual)|YANG S (YANG:Individual)
WO05016378A1	Y	Y	N	N	na	na	AN IMMUNODEFICIENCY VIRUS (HIV) DNA VACCINE AND TO THE PROCESS OF PREPARATION THEREOF	2005/2/24	ALL INDIA INST MEDICAL SCI (ALLI:Non-standard company)
WO05026316A2	Y	N	N	N	na	na	ALPHAVIRUS VACCINES	2005/3/24	BIOPTION AB (BIOP:Non-standard company)

WO05027840A2	N	N	N	N	Y	na	COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES	2005/3/31	NAT INST HEALTH NAT CANCER INST (NAHE:Non-standard company)|BARNETT S W (BARN:Individual)|GOMEZ-ROMAN V R (GOME:Individual)|LIAN Y (LIAN:Individual)|PENG B (PENG:Individual)|ROBERT-GUROFF M (ROBE:Individual)|SRIVASTAVA I K (SRIV:Individual)|CHIRON CORP (CHIR:Standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US NAT INST OF HEALTH (USSH:Standard company)
WO05027844A2	Y	N	N	Y	na	na	DNA VACCINE COMPOSITIONS AND METHODS OF USE	2005/3/31	LIU Z (LIUZ:Individual)|NARAYAN O (NARA:Individual)|UNIV KANSAS MEDICAL CENT (UNIV:Standard company)

WO05034992A2	Y	N	N	N	na	na	MECHANISMS FOR IMPROVING THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV	2005/4/21	CHAKRABARTI B (CHAK:Individual)|HUANG Y (HUAN:Individual)|KONG W (KONG:Individual)|NABEL G J (NABE:Individual)|WANG Z (WANG:Individual)|YANG Z (YANG:Individual)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US DEPT OF HEALTH (USSH:Standard company)|US SEC OF NAVY (USNA:Standard company)
WO06009746A2	Y	Y	N	N	na	na	PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV	2006/1/26	EGAN M (EGAN:Individual)|ELDRIDGE J H (ELDR:Individual)|ISRAEL Z (ISRA:Individual)|SIDHU M K (SIDH:Individual)|WYETH (AMHP:Standard company)|WYETH CORP (AMHP:Standard

									company)
WO06020071A2	Y	N	N	N	na	na	VACCINE CONSTRUCTS AND COMBINATIONS OF VACCINES DESIGNED TO IMPROVE THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV	2006/2/23	GENVEC INC (GENV:Non-standard company)|US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)|US SEC OF NAVY (USNA:Standard company)
WO06050394A2	Y	N	N	N	na	29	COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES	2006/5/11	CHIRON CORP (CHIR:Standard company)|NOVARTIS VACCINES & DIAGNOSTICS INC (NOVS:Standard company)|US SEC OF NAVY (USNA:Standard company)
WO06085959A2	Y	Y	N	N	53	na	FUSION PROTEINS COMPRISING CD4 MINIMAL MODULES AND METHODS OF USE THEREOF	2006/8/17	CHIRON CORP (CHIR:Standard company)|NOVARTIS VACCINES & DIAGNOSTICS INC (NOVS:Standard company)
WO06110344A1	Y	N	N	N	1	19	NOVEL METHODS FOR INDUCING AN IMMUNE	2006/10/19	WYETH (AMHP:Standard

							RESPONSE AGAINST HUMAN IMMUNODEFIENCY VIRUS		company)
WO07004231A1	Y	N	N	N	na	na	MULTIPLE-GENE MUTANTS OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) FOR VACCINE USE	1994/8/18	UNIV CALIFORNIA (REGC:Standard company)
WO07024976A2	Y	N	N	Y	na	na	HIV-1 VACCINES, ANTIBODY COMPOSITIONS RELATED THERETO, AND THERAPEUTIC AND PROPHYLACTIC USES THEREOF	1994/10/13	PROGENICS PHARM INC (PROG:Non-standard company)
WO07066236A2	Y	N	N	N	na	na	IMMUNIZATION BY INOCULATION OF DNA TRANSCRIPTION UNIT	1995/8/3	SAINT JUDE CHILDRENS RES HOSPITAL (SJUD:Non-standard company)|ST JUDE CHILDREN'S RES HOSPITAL (SJUD:Non-standard company)|UNIV MASSACHUSETTS (UYMA:Non-standard company)|UNIV MASSACHUSETTS MEDICAL CENT (UYMA:Non-standard company)
WO07126788A2	Y	N	N	N	na	na	SYNTHETIC HIV GENES	1997/8/28	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A

									(LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
WO07126959A2	Y	N	N	N	na	na	VACCINES COMPRISING SYNTHETIC GENES	1997/12/24	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A (LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC (MERI:Standard company)
WO9417825A1	Y	N	N	N	na	na	SYNTHETIC HIV GAG GENES	1998/8/13	DAVIES M E (DAVI:Individual)|FREED D C (FREE:Individual)|LIU M A (LIUM:Individual)|PERRY H C (PERR:Individual)|SHIVER J W (SHIV:Individual)|MERCK & CO INC

									(MERI:Standard company)
WO9422477A1	Y	N	N	N	na	na	POLYNUCLEOTIDE VACCINE FORMULATIONS	1998/8/20	CAULFIELD M J (CAUL:Individual)|EVANS R K (EVAN:Individual)|ULMER J B (ULME:Individual)|VOLKIN D B (VOLK:Individual)|MERCK & CO INC (MERI:Standard company)
WO9520660A2	Y	N	N	N	na	na	HIV.ndash.1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION	1999/6/10	INST SUPERIORE DI SANITA (SUPE:Non-standard company)|ENSOLI B (ENSO:Individual)
WO9731115A2	Y	Y	N	N	6	8	HIV-1 VACCINOGENS WITH IMMUNOMODULATORS	2007/1/11	SETH P (SETH:Individual)
WO9748370A2	Y	Y	N	N	na	na	VIRUS COAT PROTEIN/RECEPTOR CHIMERAS AND METHODS OF USE	2007/3/1	UNIV MARYLAND BIOTECHNOLOGY INST (UYMA:Non-standard company)
WO9834640A2	Y	Y	N	N	na	Y	CHIMERIC HIV-1 GLYCOPROTEINS AND THEIR BIOLOGICAL APPLICATIONS	2007/6/14	IMMUNOCLIN LTD (IMMU:Non-standard company)|IRD INST RECH DEV (IRDR:Non-standard

									company)|COMMISSARIAT ENERGIE ATOMIQUE (COMS:Standard company)
WO9835562A1	N	N	N	N	na	2-6, 27	METHODS AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF VIRAL INFECTION	2007/11/8	US DEPT HEALTH & HUMAN SERVICES (USSH:Standard company)
WO9927958A2	Y	N	N	N	na	15	METHODS AND COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV AND MODELS FOR TESTING	2007/11/8	DANA FARBER CANCER INST (DAND:Standard company)

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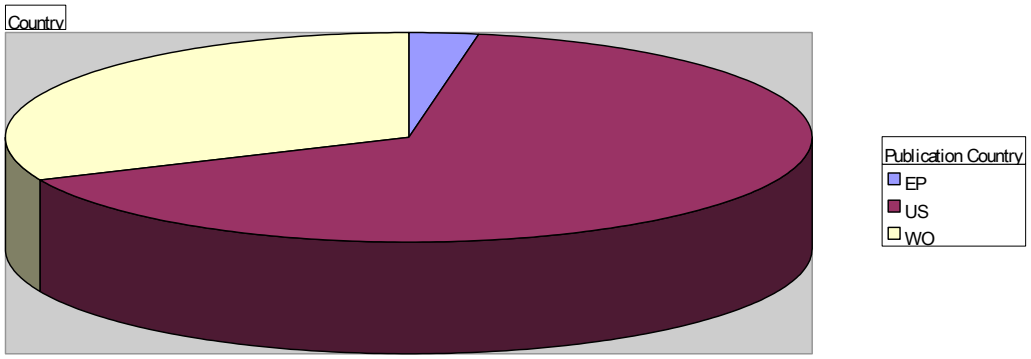
5.D. Patent Search Analytics

Patent Count vs. Country

(A)



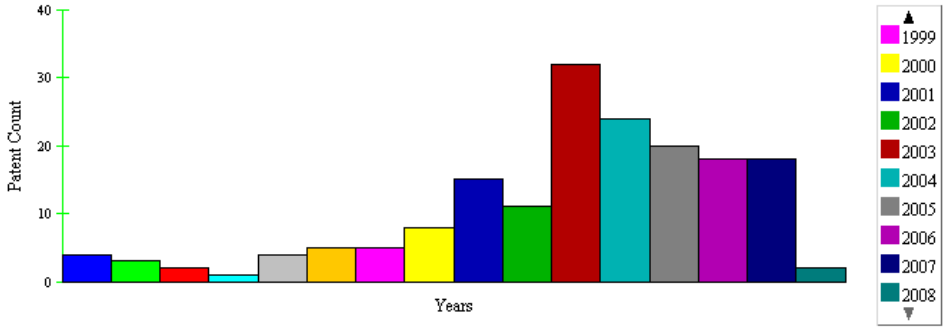
(B)

Country	Count
EP	5
US	114
WO	55
Total	174

Figure 1. Patent counts according to publication country. Shown in a pie chart (A) and a table (B).

Patent Count vs. Publication Date

(A)

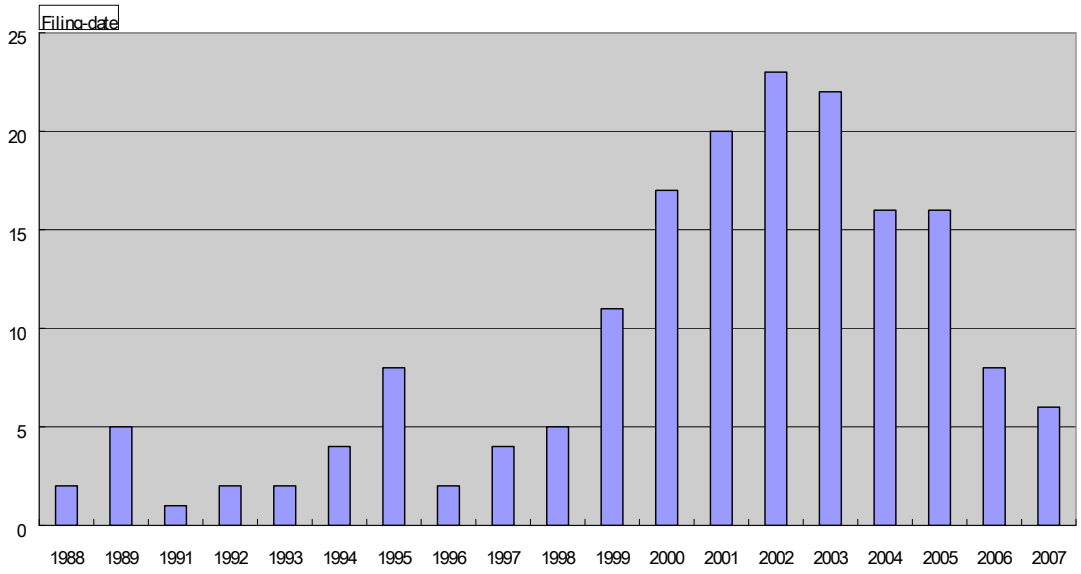


(B)

Publication Year	Count	Publication Year	Count
2008	2	1999	5
2007	18	1998	5
2006	18	1997	4
2005	20	1996	1
2004	24	1995	2
2003	32	1994	3
2002	11	1992	4
2001	15	1990	1
2000	8	1989	1

Figure 2. Patent counts according to publication date. DNA vaccine patents within the scope of present search reached maximum in 2003 and decreased thereafter. Shown in a bar graph (A) and a table (B).

Patent Count vs. Filing Date
(A)



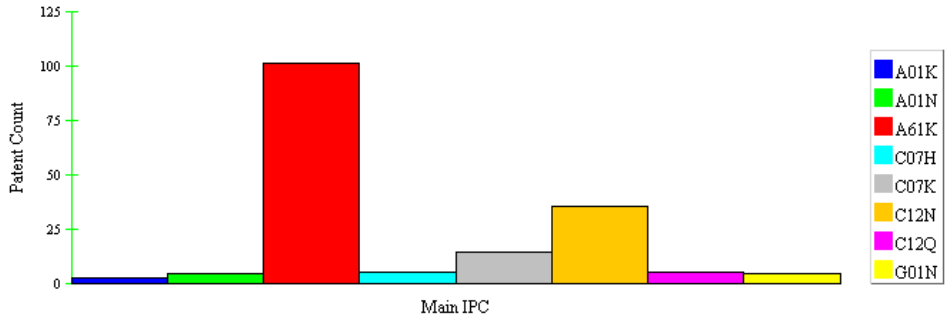
(B)

Filed Year	Count	Filed Year	Count
2007	6	1997	5
2006	8	1996	4
2005	16	1995	2
2004	16	1994	8
2003	22	1993	4
2002	23	1992	2
2001	20	1991	2
2000	17	1989	1
1999	11	1988	5

Figure 3: Patent counts according to filing date. DNA vaccine patents within the scope of present search reached maximum in 2002 and decreased thereafter. Shown in a bar graph (A) and a table (B).

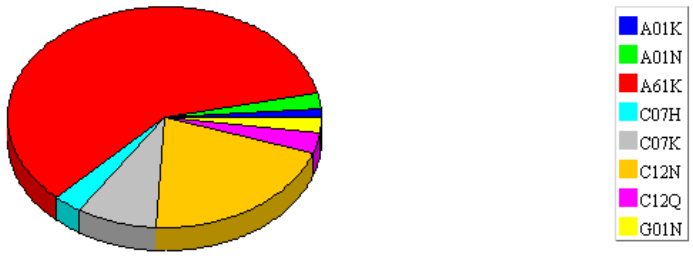
Patent Count vs. Main IPC Class

(A)



* All other IPCs are represented by the "Other" bar when present. The height of the bar represents the greatest number of patents for any one of the IPCs.

(B)



* All other IPCs are represented by the "Other" segment when present. The size of the segment represents the greatest number of patents for any one of the IPCs.

(C)

IPC-R Code- 4 digit	Items
A61K A — Human Necessities; Medical or Veterinary Science	151
C07K C — Chemistry; Metallurgy; Organic Chemistry	119
C12N C — Chemistry; Metallurgy; Biochemistry	96
A61P A — Human Necessities; Medical or Veterinary Science	49
C07H C — Chemistry; Metallurgy; Organic Chemistry	29
C12Q C — Chemistry; Metallurgy; Biochemistry	24
C12P C — Chemistry; Metallurgy; Biochemistry	21
G01N G — Physics; Measuring (counting G06M	8
C12R C — Chemistry; Metallurgy; Biochemistry	6
A01N A — Human Necessities; Agriculture; Forestry	4
A01K A — Human Necessities; Agriculture; Forestry	3
C07D C — Chemistry; Metallurgy; Organic Chemistry	2

Figure 4. Patent counts according to IPC classification. More than 60% of DNA vaccine patents within the scope of the present search fall under A61K followed by C12N and C07K. Shown in a bar graph (A), a pie chart (B) and a table (C).

Patent Count vs. Derwent Class

Class	**Count**
B04 Natural products and polymers.	171
D16 Fermentation industry.	167
C06 Biotechnology - including plant genetics and veterinary vaccines.	13
S03 Scientific Instrumentation.	10
A96 Medical, dental, veterinary, cosmetic.	6
P14 Animal care (A01K, L, M).	4
B07 General.	3
C03 Other organic compounds, inorganic compounds and multi-component mixtures. Polymers and proteins.	1
C07 Apparatus, formulation, general.	1

Figure 5. Patent counts according to Derwent classification. DNA vaccine patents within the scope of the present search are evenly divided between B04 and D16 under followed by C06 and D16.

Patent Count vs. Assignee

Name	Count
NOT ASSIGNED YET	52
THE UNITED STATES OF AMERICA AS REPRESENTED BY THE DEPARTMENT OF HEALTH AND HUMAN SERVICES	14
CHIRON CORPORATION	13
MERCK & CO., INC.	12
GLAXO GROUP LIMITED	6
DANA-FARBER CANCER INSTITUTE	5
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	4
AARON DIAMOND AIDS RESEARCH CENTRE	3
INSTITUT PASTEUR	3
PROGENICS PHARMACEUTICALS, INC.	3
SMITHKLINE BEECHAM BIOLOGICALS S.A.	3
THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA	3

Figure 6. Patent counts according to assignee.

Patent Count vs. Inventor

Name	Count
SHIVER, JOHN	17
BARNETT, SUSAN	14
ERTL, PETER	12
PERRY, HELEN C.	11
DAVIES, MARY ELLEN	8
FREED, DANIEL C.	8
PAVLAKIS, GEORGE	8
VAN WELY, CATHERINE ANN	8
LIU, MARGARET A.	6
CASIMIRO, DANILO R.	5

Figure 7. Patent counts according to inventor

APPENDIX A: Scientific Papers

FRANCE RESEARCHERS

1. Vaccine. 2001 Mar 21;19(17-19):2485-95.

Expansion of HBV-specific memory CTL primed by dual HIV/HBV genetic immunization during SHIV primary infection in rhesus macaques.

Borgne SL, Michel ML, Camugli S, Corre B, Le Grand R, Rivière Y.

We have previously shown the induction of humoral and cytotoxic responses specific for human immunodeficiency virus (HIV) and hepatitis B virus (HBV) antigens, following genetic immunization of rhesus macaques with a plasmid encoding both the third variable domain of the HIV-1 external envelope glycoprotein and the pseudo-viral particle of hepatitis B surface antigen (HBsAg) as presenting molecules. The DNA-immunized primates and two control animals were then challenged with a chimeric simian/human immunodeficiency virus (SHIV). They were all infected. Significant frequencies of SHIV specific cytotoxic T lymphocyte precursors (CTLp) were detected early in peripheral blood. But, in all DNA-immunized macaques, HBV envelope specific CTLp were detected during the primary infection, and they were correlated with the peak of SHIV viremia. Furthermore, HBV or SHIV specific cytotoxicity corresponded in part to CD8(+) T cells presenting a memory phenotype. Several mechanisms could account for this cellular response. But our results suggest that an expansion of memory cytotoxic CD8(+) cells, not restricted to SHIV specific effectors, could occur in peripheral blood during SHIV primary infection.

http://www.ncbi.nlm.nih.gov/pubmed/11257382?dopt=abstract

2. DNA Cell Biol. 2002 Sep;21(9):653-8.

Evaluation in rhesus macaques of Tat and rev-targeted immunization as a preventive vaccine against mucosal challenge with SHIV-BX08.

Verrier B, Le Grand R, Ataman-Onal Y, Terrat C, Guillon C, Durand PY, Hurtrel B, Aubertin AM, Sutter G, Erfle V, Girard M.

Recent evidence suggests that a CD8-mediated cytotoxic T-cell response against the regulatory proteins of human immunodeficiency virus (HIV) or simian immunodeficiency virus (SIV) may control infection after pathogenic virus challenge. Here, we evaluated whether vaccination with Tat or Tat and Rev could significantly reduce viral load in nonhuman primates. Rhesus macaques were primed with Semliki forest Virus (SFV) expressing HIV-1 tat (SFV-tat) and HIV-1 rev (SFV-rev) and boosted with modified vaccinia virus Ankara (MVA) expressing tat and rev. A second group of monkey was primed with SFV-tat only and boosted with MVA-tat. A third group received a tat and rev DNA/MVA prime-boost vaccine regimen. Monitoring of anti-Tat and anti-Rev antibody responses or antigen-specific IFN-gamma production, as measured by enzyme-linked immunospot assays revealed no clear differences between the three groups. These

results suggest that priming with either DNA or SFV seemed to be equivalent, but the additive or synergistic effect of a rev vaccine could not be clearly established. The animals were challenged by the rectal route 9 weeks after the last booster immunization, using 10 MID(50) of a SHIV-BX08 stock. Postchallenge follow-up of the monkeys included testing seroconversion to Gag and Env antigens, measuring virus infectivity in PBMC by cocultivation with noninfected human cells, and monitoring of plasma viral load. None of the animals was protected from infection as assessed by PCR, but peak viremia was reduced more than 200-fold compared to sham controls in one third (6/18) of vaccinated macaques, whatever the vaccine regimen they received. Interestingly, among these six protected animals four did not seroconvert. Altogether, these results clearly indicated that the addition of early HIV proteins like Tat and Rev in a multicomponent preventive vaccine including structural proteins like Env or Gag may be beneficial in preventive vaccinal strategies.

http://www.ncbi.nlm.nih.gov/pubmed/12396607?dopt=abstract

3. Vaccine. 2003 Jul 4;21(23):3186-99.

Specificity and effect on apoptosis of Tat antibodies from vaccinated and SHIV-infected rhesus macaques and HIV-infected individuals.

Belliard G, Romieu A, Zagury JF, Dali H, Chaloin O, Le Grand R, Loret E, Briand JP, Roques B, Desgranges C, Muller S.

Recent contributions have demonstrated that actively secreted Tat protein plays an important functional role in human immunodeficiency virus-1 (HIV-1) infection and that Tat antibodies might interfere with disease progression by blocking the protein extracellularly. In this context we have studied the recognition of several Tat mutants as well as various synthetic Tat fragments by anti-Tat monoclonal antibodies and by IgG antibodies from a large collection of slow and fast-progressor infected individuals. We have also tested the sera from simian/human immunodeficiency virus (SHIV)-infected macaques with these Tat peptides. Important differences were found between long-term non-progressors and fast-progressors, and between human and monkey sera in terms of antibody specificity. Rabbits and macaques were immunised with several Tat peptides and we found that certain antibody subsets from immunised animals recognised the cognate protein Tat and had the capacity to inhibit Tat-induced apoptosis of T cells. Such antibodies might be important for controlling Tat-induced death in cells uninfected by HIV-1.

http://www.ncbi.nlm.nih.gov/pubmed/12804847?dopt=abstract

ITALY RESEARCHERS

4. Vaccine. 2004 Sep 3;22(25-26):3258-69.

Long-term protection against SHIV89.6P replication in HIV-1 Tat vaccinated cynomolgus monkeys.

Maggiorella MT, Baroncelli S, Michelini Z, Fanales-Belasio E, Moretti S, Sernicola L, Cara A, Negri DR, Buttò S, Fiorelli V, Tripiciano A, Scoglio A, Caputo A, Borsetti A, Ridolfi B, Bona R, ten Haaft P, Macchia I, Leone P, Pavone-Cossut MR, Nappi F, Ciccozzi M, Heeney J, Titti F, Cafaro A, Ensoli B.

Vaccination with a biologically active Tat protein or tat DNA contained infection with the highly pathogenic SHIV89.6P virus, preventing CD4 T-cell decline and disease onset. Here we show that protection was prolonged, since neither CD4 T-cell decline nor active virus replication was observed in all vaccinated animals that controlled virus replication up to week 104 after the challenge. In contrast, virus persisted and replicated in peripheral blood mononuclear cells and lymph nodes of infected animals, two of which died. Tat-specific antibody, CD4 and CD8 T-cell responses were high and stable only in the animals controlling the infection. In contrast, Gag-specific antibody production and CD4 and CD8 T-cell responses were consistently and persistently positive only in the monkeys that did not control primary virus replication. These results indicate that vaccination with Tat protein or DNA induced long-term memory Tat-specific immune responses and controlled primary infection at its early stages allowing a long-term containment of virus replication and spread in blood and tissues.

http://www.ncbi.nlm.nih.gov/pubmed/15308348?dopt=abstract

UC DAVIS RESEARCHERS

5. J Med Primatol. 2003 Aug;32(4-5):240-6.

Comparison of virology and immunology in SHIV 89.6 proviral DNA and virus-inoculated rhesus macaques.

Busch M, Lu D, Fritts L, Lifson JD, Miller CJ.

Inoculation of cats, goats and monkeys with plasmids encoding full-length proviral genomes results in persistent lentiviral infections. This system could be used as a method for administration of an attenuated human immunodeficiency virus (HIV) vaccine. Here, we compare the virology and immunology in rhesus macaques inoculated with either simian/human immunodeficiency virus 89.6 (SHIV 89.6) virus or a plasmid containing the SHIV 89.6 proviral genome. There was a delay in appearance of systemic infection in DNA-inoculated animals compared with virus-inoculated animals, but otherwise the pattern of infection was similar. The serum immunoglobulin G anti-simian immunodeficiency virus (SIV) binding antibody response in DNA-inoculated animals was also delayed compared with virus-inoculated animals, but ultimately there was no difference between live virus and DNA-inoculation in the ability to induce the anti-SIV immune responses that were measured. Thus, the data support the concept that plasmid DNA encoding an attenuated virus could be used instead live virus for vaccination.

http://www.ncbi.nlm.nih.gov/pubmed/14498984?dopt=abstract

NIH RESEARCHERS

6. J Virol. 2004 Mar;78(5):2212-21.

Protection against mucosal simian immunodeficiency virus SIV(mac251) challenge by using replicating adenovirus-SIV multigene vaccine priming and subunit boosting.

Patterson LJ, Malkevitch N, Venzon D, Pinczewski J, Gómez-Román VR, Wang L, Kalyanaraman VS, Markham PD, Robey FA, Robert-Guroff M.

Whereas several recent AIDS vaccine strategies have protected rhesus macaques against a pathogenic simian/human immunodeficiency virus (SHIV)(89.6P) challenge, similar approaches have provided only modest, transient reductions in viral burden after challenge with virulent, pathogenic SIV, which is more representative of HIV infection of people. We show here that priming with replicating adenovirus recombinants encoding SIV env/rev, gag, and/or nef genes, followed by boosting with SIV gp120 or an SIV polypeptide mimicking the CD4 binding region of the envelope, protects rhesus macaques from intrarectal infection with the highly pathogenic SIV(mac251). Using trend analysis, significant reductions in acute-phase and set point viremia were correlated with anti-gp120 antibody and cellular immune responses, respectively. Within immunization groups exhibiting significant protection, a subset (39%) of macaques have exhibited either no viremia, cleared viremia, or controlled viremia at the threshold of detection, now more than 40 weeks postchallenge. This combination prime-boost strategy, utilizing replication competent adenovirus, is a promising alternative for HIV vaccine development.

http://www.ncbi.nlm.nih.gov/pubmed/14963117?dopt=abstract

HARVARD RESEARCHERS

7. Proc Natl Acad Sci U S A. 2004 Jul 27;101(30):11088-93. Epub 2004 Jul 16.

Recombinant poxvirus boosting of DNA-primed rhesus monkeys augments peak but not memory T lymphocyte responses.

Santra S, Barouch DH, Korioth-Schmitz B, Lord CI, Krivulka GR, Yu F, Beddall MH, Gorgone DA, Lifton MA, Miura A, Philippon V, Manson K, Markham PD, Parrish J, Kuroda MJ, Schmitz JE, Gelman RS, Shiver JW, Montefiori DC, Panicali D, Letvin NL.

Although a consensus has emerged that an HIV vaccine should elicit a cytotoxic T lymphocyte (CTL) response, the characteristics of an effective vaccine-induced T lymphocyte response remain unclear. We explored this issue in the simian human immunodeficiency virus/rhesus monkey model in the course of assessing the relative immunogenicity of vaccine regimens that included a cytokine-augmented plasmid DNA prime and a boost with DNA or recombinant pox vectors. Recombinant vaccinia virus, recombinant modified vaccinia Ankara (MVA), and recombinant fowlpox were comparable in their immunogenicity. Moreover, whereas the

magnitude of the peak vaccine-elicited T lymphocyte responses in the recombinant pox virus-boosted monkeys was substantially greater than that seen in the monkeys immunized with plasmid DNA alone, the magnitudes of recombinant pox boosted CTL responses decayed rapidly and were comparable to those of the DNA-alone-vaccinated monkeys by the time of viral challenge. Consistent with these comparable memory T cell responses, the clinical protection seen in all groups of experimentally vaccinated monkeys was similar. This study, therefore, indicates that the steady-state memory, rather than the peak effector vaccine-elicited T lymphocyte responses, may be the critical immune correlate of protection for a CTL-based HIV vaccine.

http://www.ncbi.nlm.nih.gov/pubmed/15258286?dopt=abstract

8. Immunol Lett. 2001 Nov 1;79(1-2):57-61.

Vaccine-elicited immune responses prevent clinical AIDS in SHIV(89.6P)-infected rhesus monkeys.

Barouch DH, Fu TM, Montefiori DC, Lewis MG, Shiver JW, Letvin NL.

Accumulating evidence has demonstrated the importance of cytotoxic T lymphocytes (CTLs) and helper T lymphocytes in controlling HIV-1 replication. We have elicited immune responses in rhesus monkeys utilizing DNA vaccines augmented by the administration of IL-2/Ig, a fusion protein consisting of interleukin-2 and the Fc portion of IgG2. These vaccine-elicited immune responses did not prevent infection following a high-dose intravenous challenge with SHIV(89.6P) but did control viremia to nearly undetectable levels and prevented immunodeficiency and clinical disease. In contrast, control monkeys developed high levels of viremia and exhibited a rapid loss of CD4(+) T cells, significant clinical disease progression, and death in half of the animals by day 140 following challenge. Vaccine approaches that elicit immune responses capable of reducing plasma viral loads, but not capable of inducing sterilizing immunity, may still provide substantial clinical benefits.

http://www.ncbi.nlm.nih.gov/pubmed/11595290?dopt=abstract

9. J Virol. 2001 Mar;75(5):2462-7.

Elicitation of high-frequency cytotoxic T-lymphocyte responses against both dominant and subdominant simian-human immunodeficiency virus epitopes by DNA vaccination of rhesus monkeys.

Barouch DH, Craiu A, Santra S, Egan MA, Schmitz JE, Kuroda MJ, Fu TM, Nam JH, Wyatt LS, Lifton MA, Krivulka GR, Nickerson CE, Lord CI, Moss B, Lewis MG, Hirsch VM, Shiver JW, Letvin NL.

Increasing evidence suggests that the generation of cytotoxic T-lymphocyte (CTL) responses specific for a diversity of viral epitopes will be needed for an effective human immunodeficiency virus type 1 (HIV-1) vaccine. Here, we determine the frequencies of CTL responses specific for

the simian immunodeficiency virus Gag p11C and HIV-1 Env p41A epitopes in simian-human immunodeficiency virus (SHIV)-infected and vaccinated rhesus monkeys. The p11C-specific CTL response was high frequency and dominant and the p41A-specific CTL response was low frequency and subdominant in both SHIV-infected monkeys and in monkeys vaccinated with recombinant modified vaccinia virus Ankara vectors expressing these viral antigens. Interestingly, we found that plasmid DNA vaccination led to high-frequency CTL responses specific for both of these epitopes. These data demonstrate that plasmid DNA may be useful in eliciting a broad CTL response against multiple epitopes.

http://www.ncbi.nlm.nih.gov/pubmed/11160750?dopt=abstract

10. J Immunol. 2002 Jan 1;168(1):332-7.

Vaccine protection against functional CTL abnormalities in simian human immunodeficiency virus-infected rhesus monkeys.

McKay PF, Schmitz JE, Barouch DH, Kuroda MJ, Lifton MA, Nickerson CE, Gorgone DA, Letvin NL.

Accumulating evidence suggests that HIV-specific CD8(+) CTL are dysfunctional in HIV-infected individuals with progressive clinical disease. In the present studies, cytokine production by virus-specific CTL was assessed in the rhesus monkey model for AIDS to determine its contribution to the functional impairment of CTL. CTL from monkeys infected with nonpathogenic isolates of simian and simian-human immunodeficiency virus expressed high levels of IFN-gamma, TNF-alpha, and IL-2 after in vitro exposure to a nonspecific mitogen or the optimal peptide representing a dominant virus-specific CTL epitope. However, similarly performed studies assessing these capabilities in CTL from monkeys infected with pathogenic immunodeficiency virus isolates demonstrated a significant dysfunction in the ability of the CTL to produce IL-2 and TNF-alpha. Importantly, CTL from vaccinated monkeys that effectively controlled the replication of a highly pathogenic simian-human immunodeficiency virus isolate following challenge demonstrated a preserved capacity to produce these cytokines. These experiments suggest that defects in cytokine production may contribute to CTL dysfunction in chronic HIV or SIV infection. Moreover, an AIDS vaccine that confers protection against clinical disease evolution in this experimental model also preserves the functional capacity of these CTL to produce both IL-2 and TNF-alpha.

http://www.ncbi.nlm.nih.gov/pubmed/11751978?dopt=abstract

EMORY RESEARCHERS

11. AIDS Res Hum Retroviruses. 2005 Feb;21(2):140-4.

Studies in macaques on cross-clade T cell responses elicited by a DNA/MVA AIDS vaccine, better conservation of CD8 than CD4 T cell responses.

Smith JM, Amara RR, Wyatt LS, Ellenberger DL, Li B, Herndon JG, Patel M, Sharma S, Chennareddi L, Butera S, McNicholl J, McClure HM, Moss B, Robinson HL.

One of the unknowns faced by an HIV/AIDS vaccine is the ability of a single clade vaccine to protect against the multiple genetic subtypes and recombinant forms of HIV-1 present in the current pandemic. Here, we use a macaque model to investigate the ability of our clade B vaccine that consists of DNA priming and modified vaccinia Ankara (MVA) virus boosting to elicit T cell responses that recognize an A/G recombinant of HIV-1. To test for cross-reactive T cells, intracellular cytokine staining was conducted using five pools of Gag and six pools of Env peptides representing B or A/G sequences. Studies using the peptide pools revealed essentially complete conservation of the CD8 response but only approximately 50% conservation of the CD4 response. Thus, the ability of an HIV vaccine for one clade to protect against other clades may be more limited by the ability to provide CD4 T cell help than the ability to elicit CD8 effector functions.

http://www.ncbi.nlm.nih.gov/pubmed/15725752?dopt=abstract

12. J Virol. 2002 Aug;76(15):7625-31.

Different patterns of immune responses but similar control of a simian-human immunodeficiency virus 89.6P mucosal challenge by modified vaccinia virus Ankara (MVA) and DNA/MVA vaccines.

Amara RR, Villinger F, Staprans SI, Altman JD, Montefiori DC, Kozyr NL, Xu Y, Wyatt LS, Earl PL, Herndon JG, McClure HM, Moss B, Robinson HL.

Recently we demonstrated the control of a mucosal challenge with a pathogenic chimera of simian and human immunodeficiency virus (SHIV-89.6P) by priming with a Gag-Pol-Env-expressing DNA and boosting with a Gag-Pol-Env-expressing recombinant modified vaccinia virus Ankara (DNA/MVA) vaccine. Here we evaluate the ability of the MVA component of this vaccine to serve as both a prime and a boost for an AIDS vaccine. The same immunization schedule, MVA dose, and challenge conditions were used as in the prior DNA/MVA vaccine trial. Compared to the DNA/MVA vaccine, the MVA-only vaccine raised less than 1/10 the number of vaccine-specific T cells but 10-fold-higher titers of binding antibody for Env. Postchallenge, the animals vaccinated with MVA alone increased their CD8 cell numbers to levels that were similar to those seen in DNA/MVA-vaccinated animals. However, they underwent a slower emergence and contraction of antiviral CD8 T cells and were slower to generate neutralizing antibodies than the DNA/MVA-vaccinated animals. Despite this, by 5 weeks postchallenge, the MVA-only-vaccinated animals had achieved as good control of the viral infection as the DNA/MVA group, a situation that has held up to the present time in the trial (48 weeks postchallenge). Thus, MVA vaccines, as well as DNA/MVA vaccines, merit further evaluation for their ability to control the current AIDS pandemic.

http://www.ncbi.nlm.nih.gov/pubmed/12097576?dopt=abstract

13. AIDS Res Hum Retroviruses. 2004 Jun;20(6):654-65.

Multiprotein HIV type 1 clade B DNA/MVA vaccine: construction, safety, and immunogenicity in Macaques.

Smith JM, Amara RR, McClure HM, Patel M, Sharma S, Yi H, Chennareddi L, Herndon JG, Butera ST, Heneine W, Ellenberger DL, Parekh B, Earl PL, Wyatt LS, Moss B, Robinson HL.

Recently, a simian/human immunodeficiency virus (SHIV) vaccine consisting of priming with a Gag-Pol-Env-expressing DNA and boosting with a Gag-Pol-Env-expressing recombinant modified vaccinia Ankara (rMVA) has successfully controlled a virulent SHIV challenge in a macaque model. In this, and the accompanying paper, we report on the construction and testing of a Gag-Pol-Env DNA/MVA vaccine for HIV-1/AIDS. The DNA vaccine, pGA2/JS2, expresses aggregates of Gag proteins and includes safety mutations that render it integration, reverse transcription, and packaging defective. The rMVA vaccine, MVA/HIV 48, is integration and reverse transcription defective and has a truncated Env to enhance expression on the plasma membrane. In a study in rhesus macaques, priming with pGA2/JS2 and boosting with MVA/HIV 48 raised high frequencies of T cells for Gag and Env and lower frequencies of T cells for PR, RT, and Tat. Stimulations with five peptide pools for Gag and seven peptide pools for Env revealed epitopes for cellular immune responses throughout Gag and Env. On average, CD4 T cells from the vaccinated animals recognized 7.1 peptide pools and CD8 T cells, 3.2 peptide pools. Both the height and the breadth of the elicited cellular response provide hope that this multiprotein DNA/MVA vaccine will successfully control clade B isolates of HIV-1, as well as contribute to the control of other clades and recombinant forms of HIV-1/AIDS.

http://www.ncbi.nlm.nih.gov/pubmed/15242543?dopt=abstract

14. AIDS Res Hum Retroviruses. 2004 Dec;20(12):1335-47.

DNA/MVA vaccine for HIV type 1: effects of codon-optimization and the expression of aggregates or virus-like particles on the immunogenicity of the DNA prime.

Smith JM, Amara RR, Campbell D, Xu Y, Patel M, Sharma S, Butera ST, Ellenberger DL, Yi H, Chennareddi L, Herndon JG, Wyatt LS, Montefiori D, Moss B, McClure HM, Robinson HL.

Recently, a vaccine consisting of DNA priming followed by boosting with modified vaccinia Ankara (MVA) has provided long-term protection of rhesus macaques against a virulent challenge with a chimera of simian and human immunodeficiency viruses. Here, we report studies on the development of the DNA component for a DNA/MVA HIV vaccine for humans. Specifically, we assess the ability of a codon-optimized Gag-expressing DNA and two noncodon-optimized Gag-Pol-Env-expressing DNAs to prime the MVA booster dose. The codon-optimized DNA expressed virus-like particles (VLPs), whereas one of the noncodon-optimized DNAs expressed VLPs and the other expressed aggregates of HIV proteins. The MVA boost expressed Gag-Pol and Env and produced VLPs. Immunogenicity studies in macaques used one intramuscular prime with 600 microg of DNA and two intramuscular boosts with 1 x 10(8) pfu of MVA at weeks 8 and 30. The codon-optimized and noncodon-optimized DNAs

proved similar in their ability to prime anti-Gag T cell responses. The aggregate and VLP-expressing Gag-Pol-Env DNAs also showed no significant differences in their ability to prime anti-Env Ab responses. The second MVA booster dose did not increase the peak CD4 and CD8 T cell responses, but increased anti-Env Ab titers by 40- to 90-fold. MVA-only immunizations elicited 10-100 times lower frequencies of T cells and 2-4 lower titers of anti-Env Ab than the Gag-Pol-Env DNA/MVA immunizations. Based on the breadth of the T cell response and a trend toward higher titers of anti-Env Ab, we are moving forward with human trials of the noncodon-optimized VLP-expressing DNA.

http://www.ncbi.nlm.nih.gov/pubmed/15650426?dopt=abstract

SEATTLE RESEARCHERS

15. J Virol. 2006 Sep;80(17):8745-62.

Antibody responses elicited in macaques immunized with human immunodeficiency virus type 1 (HIV-1) SF162-derived gp140 envelope immunogens: comparison with those elicited during homologous simian/human immunodeficiency virus SHIVSF162P4 and heterologous HIV-1 infection.

Derby NR, Kraft Z, Kan E, Crooks ET, Barnett SW, Srivastava IK, Binley JM, Stamatatos L.

The antibody responses elicited in rhesus macaques immunized with soluble human immunodeficiency virus (HIV) Env gp140 proteins derived from the R5-tropic HIV-1 SF162 virus were analyzed and compared to the broadly reactive neutralizing antibody responses elicited during chronic infection of a macaque with a simian/human immunodeficiency virus (SHIV) expressing the HIV-1 SF162 Env, SHIV(SF162P4), and humans infected with heterologous HIV-1 isolates. Four gp140 immunogens were evaluated: SF162gp140, DeltaV2gp140 (lacking the crown of the V2 loop), DeltaV3gp140 (lacking the crown of the V3 loop), and DeltaV2DeltaV3gp140 (lacking both the V2 and V3 loop crowns). SF162gp140 and DeltaV2gp140 have been previously evaluated by our group in a pilot study, but here, a more comprehensive analysis of their immunogenic properties was performed. All four gp140 immunogens elicited stronger anti-gp120 than anti-gp41 antibodies and potent homologous neutralizing antibodies (NAbs) that primarily targeted the first hypervariable region (V1 loop) of gp120, although SF162gp140 also elicited anti-V3 NAbs. Heterologous NAbs were elicited by SF162gp140 and DeltaV2gp140 but were weak in potency and narrow in specificity. No heterologous NAbs were elicited by DeltaV3gp140 or DeltaV2DeltaV3gp140. In contrast, the SHIV(SF162P4)-infected macaque and HIV-infected humans generated similar titers of anti-gp120 and anti-gp41 antibodies and NAbs of significant breadth against primary HIV-1 isolates, which did not target the V1 loop. The difference in V1 loop immunogenicity between soluble gp140 and virion-associated gp160 Env proteins derived from SF162 may be the basis for the observed difference in the breadth of neutralization in sera from the immunized and infected animals studied here.

http://www.ncbi.nlm.nih.gov/pubmed/16912322?dopt=abstract

16. Virology. 2006 Nov 25;355(2):138-51. Epub 2006 Aug 22.

Viral evolution in macaques coinfected with CCR5- and CXCR4-tropic SHIVs in the presence or absence of vaccine-elicited anti-CCR5 SHIV neutralizing antibodies.

Burke B, Derby NR, Kraft Z, Saunders CJ, Dai C, Llewellyn N, Zharkikh I, Vojtech L, Zhu T, Srivastava IK, Barnett SW, Stamatatos L.

Macaques were immunized with SF162 Env-based gp140 immunogens and challenged simultaneously with the CCR5-tropic homologous SHIV(SF162P4) and the CXCR4-tropic heterologous SHIV(SF33A) viruses. Both mock-immunized and immunized animals became dually infected. Prior immunization preferentially reduced the viral replication of the homologous virus during primary infection but the relative replication of the two coinfecting viruses during chronic infection was unaffected by prior immunization, despite the fact that five of six immunized animals maintained a significantly lower overall viral replication that the control animals. Neutralizing antibodies participated in controlling the replication of SHIV(SF162P4), but not that of SHIV(SF33A). Dual infection resulted in the emergence and predominance within the circulating CCR5 virus pool, of a variant with a distinct neutralization phenotype. The signature of this variant was the presence of three amino acid changes in gp120, two of which were located in the receptor and coreceptor binding sites. Also, a significant fraction of the viruses circulating in the blood, as early as two weeks post-infection, was recombinants and prior immunization did not prevent their emergence. These findings provide new insights into the dynamic interaction of CCR5- and CXCR4-tropic HIV isolates that are potentially relevant in better understanding HIV-mediated pathogenesis.

http://www.ncbi.nlm.nih.gov/pubmed/16920175?dopt=abstract

NETHERLAND RESEARCHERS

17. J Virol. 1999 Apr;73(4):3292-300.

Comparison of immunity generated by nucleic acid-, MF59-, and ISCOM-formulated human immunodeficiency virus type 1 vaccines in Rhesus macaques: evidence for viral clearance.

Verschoor EJ, Mooij P, Oostermeijer H, van der Kolk M, ten Haaft P, Verstrepen B, Sun Y, Morein B, Akerblom L, Fuller DH, Barnett SW, Heeney JL.

The kinetics of T-helper immune responses generated in 16 mature outbred rhesus monkeys (Macaca mulatta) within a 10-month period by three different human immunodeficiency virus type 1 (HIV-1) vaccine strategies were compared. Immune responses to monomeric recombinant gp120SF2 (rgp120) when the protein was expressed in vivo by DNA immunization or when it was delivered as a subunit protein vaccine formulated either with the MF59 adjuvant or by incorporation into immune-stimulating complexes (ISCOMs) were compared. Virus-neutralizing antibodies (NA) against HIV-1SF2 reached similar titers in the two rgp120SF2 protein-

immunized groups, but the responses showed different kinetics, while NA were delayed and their levels were low in the DNA-immunized animals. Antigen-specific gamma interferon (IFN-gamma) T-helper (type 1-like) responses were detected in the DNA-immunized group, but only after the fourth immunization, and the rgp120/MF59 group generated both IFN-gamma and interleukin-4 (IL-4) (type 2-like) responses that appeared after the third immunization. In contrast, rgp120/ISCOM-immunized animals rapidly developed marked IL-2, IFN-gamma (type 1-like), and IL-4 responses that peaked after the second immunization. To determine which type of immune responses correlated with protection from infection, all animals were challenged intravenously with 50 50% infective doses of a rhesus cell-propagated, in vivo-titrated stock of a chimeric simian immunodeficiency virus-HIVSF13 construct. Protection was observed in the two groups receiving the rgp120 subunit vaccines. Half of the animals in the ISCOM group were completely protected from infection. In other subunit vaccinees there was evidence by multiple assays that virus detected at 2 weeks postchallenge was effectively cleared. Early induction of potent type 1- as well as type 2-like T-helper responses induced the most-effective immunity.

http://www.ncbi.nlm.nih.gov/pubmed/10074183?dopt=abstract

18. J Med Primatol. 1999 Aug-Oct;28(4-5):224-32.

Efforts to broaden HIV-1-specific immunity by boosting with heterologous peptides or envelope protein and the influence of prior exposure to virus.

Verschoor EJ, Davis D, van Gils M, Koopman G, Mooij P, Oostermeijer H, Haaft PT, Verstrepen B, Rosenwirth B, Morein B, Barnett SW, Heeney JL.

In two previous studies, we have demonstrated the successful protection of human immunodeficiency virus type 1 (HIV-1)-vaccinated rhesus macaques from challenge with SHIV(SF13) with envelop immunogens derived from the closely related HIV-1(SF2) strain. Here we report on two follow-up studies in which we aimed to broaden immunity in order to elicit protection from a more diverse heterologous challenge with SHIV(SF33). In the first study, animals were boosted once with HIV-1(SF33) V2 and V3 peptides that were cross-linked to influenza immune-stimulating complexes (ISCOMs). In the second study, monkeys were boosted twice at 12-week intervals, using a heterologous recombinant gp120 derived from HIV-1(SF33) that was either incorporated into ISCOMs or mixed with the MF59 adjuvant. In both studies, the animals were challenged with 50 monkey infectious doses of SHIV(SF33) 4 weeks after the final boost. All controls became readily infected with the heterologous challenge virus SHIV(SF33). Neither boosting with heterologous SF33 peptides or gp120 afforded protection from infection to SF2-vaccinated animals that had previously resisted SHIV(SF13) challenge. These results demonstrate the importance of developing vaccine strategies that are capable of generating broad immune responses early in the immunization protocol. Furthermore, these findings may illustrate the potential pitfalls of early antigenic sin.

http://www.ncbi.nlm.nih.gov/pubmed/10593489?dopt=abstract

19. J Virol. 2004 Apr;78(7):3333-42.

Qualitative T-helper responses to multiple viral antigens correlate with vaccine-induced immunity to simian/human immunodeficiency virus infection.

Mooij P, Nieuwenhuis IG, Knoop CJ, Doms RW, Bogers WM, Ten Haaft PJ, Niphuis H, Koornstra W, Bieler K, Köstler J, Morein B, Cafaro A, Ensoli B, Wagner R, Heeney JL.

Evidence is accumulating that CD4(+) T-helper (Th) responses play a critical role in facilitating effector responses which are capable of controlling and even preventing human immunodeficiency virus (HIV) infection. The present work was undertaken to determine whether immunization with multiple antigens influenced individual Th responses and increased protection relative to a single antigen. Rhesus macaques were primed with DNA and boosted (immune-stimulating complex-formulated protein) with a combination of regulatory and structural antigens (Tat-Env-Gag) or with Tat alone. Immunization with combined antigens reduced the magnitude of the responses to Tat compared to the single-antigen immunization. Interestingly, the Th immune responses to the individual antigens were noticeably different. To determine whether the qualitative differences in vaccine-induced Th responses correlated with vaccine efficacy, animals were challenged intravenously with simian/human immunodeficiency virus (strain SHIV(89.6p)) 2 months following the final immunization. Animals that developed combined Th1- and Th2-like responses to Gag and Th2 dominant Env-specific responses were protected from disease progression. Interestingly, one animal that was completely protected from infection had the strongest IFN-gamma and interleukin-2 (IL-2) responses prior to challenge, in addition to very strong IL-4 responses to Gag and Env. In contrast, animals with only a marked vaccine-induced Tat-specific Th2 response (no IFN-gamma) were not protected from infection or disease. These data support the rationale that effective HIV vaccine-induced immunity requires a combination of potent Th1- and Th2-like responses best directed to multiple antigens.

http://www.ncbi.nlm.nih.gov/pubmed/15016855?dopt=abstract

APPENDIX B: Description of Patent Databases Used in this Report[70]

Database Name	General Information
USPTO	• Patents issued from 1790 through 1975 are searchable only by patent number, issue date, and current U.S. classifications. • US Patent Classification data in the Full-Text Database (*Current US Classification [**CCL**]*) is frequently updated to reflect the most current PTO Master Classification File (MCF), and will not necessarily match the classification data which appears on the patent full-page images (i.e., the printed patent) or on the Patent Classification pages. • The Issued Patents Full-Text Database is a database of patent full-text *as it was printed on the patent on the day of issue*. Changes to patent documents contained in Certificates of Correction and Re-examinations Certificates are not included in the searchable full-text of the patent databases, but are available as additional full page images at the end of each patent's linked full-page images. • Neither assignment changes nor address changes recorded at the USPTO are reflected in the patent full-text or the patent full-page images. • These databases have limited resources, both bandwidth and computer systems. Therefore, to assure availability to the general public, searches are limited in terms of both the length of the query and the amount of computer time available for any single search. In particular, if the fully-expanded parsed query, which can be estimated by looking at a resulting hit-list link using your browser's Right-click-Properties capability, exceeds 256 characters in length, the query may be rejected by the parser, may time out before completion, or may produce invalid results even though it appears to have worked correctly. • The fact that an invention cannot be found by searching in the Patent Full-Text Database does not mean that the invention is patentable. The USPTO's text searchable patent database begins with patents granted since 1976. A complete patentability search must consider all prior art, including earlier patents, foreign patents and non-patent literature.

www.uspto.gov

Database Name	General Information
GenomeQuest	• GenomeQuest is a web based sequence searching system designed for scientists and intellectual property (IP) bio-analysts. GenomeQuest allows investigators to quickly identify and investigate relevant records, create reports on select records of interest, and maintain continuous sequence surveillance. • Sources for GenomeQuest:

[70] See also Bumrae Cho et al., Educational Report: Patent Landscape of Several Bacillus Thuringiensis Cry Protein Genes in Sweetpotato 152–61(Franklin Pierce Law Center) (Jan. 2008).

	1. USPTO: Data fetched daily; complete coverage starting from 1980 onward. 2. EPO feeds/INPADOC: Data fetched weekly. Patent sequences from 1979 onward 3. WIPO & PCT: Data fetched weekly. Electronic and paper submissions. Patent sequences from 1980 onwards. 4. GenBank, DDJB, EMBL: Weekly updates patent divisions. Patent 153 sequences from 1969 onwards. • GenomeQuest GQ-PAT repository has 137 million total sequences, among which 67 million are unique patent number-sequence pairs spanning 179, 083 patent documents. GenBank patent division contains 3.7 million sequences, about 5% of the sequences contained in GQ-PAT. • GenomeQuest GQ-PAT database is processed using GenomeQuest's proprietary pipeline which include manual curation to make all the sequences and annotations searchable and browseable. • GenomeQuest offers a single repository for search result analysis with powerful filtering, grouping, and sorting capabilities giving the ability to generate reports quickly and easily with only the relevant information. • GenomeQuest allows the searching of other databases within the application.

www.genomequestlive.com

Database Name	General Information
Derwent World Patent Index	• Most comprehensive database of international patent information • Approximately 19,000 patent documents from over 40 patent-issuing authorities are reviewed and value enhanced by experts • Documents are read in their native language. Titles and abstracts are then rewritten in English to create a DWPI record • Included in the record is the drawing from the patent that is most representative of its claims and special indexing to help search for key patent information. • Can be accessed via Delphion

www.delphion.com

Database Name	General Information
Westlaw	• Westlaw, which is owned by the Thompson Company, and can be accessed at is a premium access database that is useful for patent law practitioners. It provides access to the Derwent World Patent Index as well as relevant sources, including cases and statutes, patents and patent treatises, and post issuance information, such as KeyCite for patents. • The value added services from Westlaw can be accessed off the "Patent Practitioner" tab of the user's account after login. This tab includes links to facilitate research in patent literature, cases, statutes, and regulations,

	court records and litigation tracking. It also provides information on recent developments, litigation practice guides, prosecution practice guides, and forms. • Includes a link to Delphion that includes access to the full text of US, European, and PCT patents and patent applications, and the patent abstracts from Japan • Includes the ability to search full-text patents and a link to display the full original patent, including drawings in PDF • The Westlaw database contains full-text information of patents before 1972, whereas other services just have bibliographic information • Links to Derwent databases, including the World Patent Index • Citing references provide relevant previous patent literature • Flexible pricing plans (i.e., large company or single attorney) • A link to "KeyCites" that covers all patents granted by the USPTO beginning with 1976 utility, design, and plant patents 1. This link also includes access to reissued patents, defensive publications, and statutory invention registrations 2. Can click on the flag on the document or result list or click "Full History" or "Citing References" links on the "Links" tab to retrieve KeyCite information for the patent **Disadvantages**: • Using certain truncations and connectors is difficult when using the Westlaw database • Hybrid searches often generate a large number of irrelevant results • Citing references are U.S. only 157 • Data manipulation is less user-friendly in Westlaw than Dialog or Questel/Orbit • No patent landscaping tools are available

www.westlaw.com

Database Name	General Information
LexisNexis	• Is a premium and user-friendly website that offers point and click access to prior art (or "patent searching") information: both patent and non-patent literature. Patent prior art information includes primary legal materials, analytical legal materials, indices to foreign patents, European patents (and classifications), and treatises. Furthermore, Lexis gives the patent researcher access to INPADOC patent families. Non-patent prior art information includes industry and news sources. • User-friendly website design with point and click retrieval of patent and non-patent prior art literature • FOCUS feature that allows the patent informatics specialist to restrict his search parameters for specific terms…the results are a subset of the original search results, but they are more relevant to your research needs • Alert feature: can elect to have Lexis alert you for events including post

	issuance court decisions affecting patent status • Database is international in scope • Shepard's, like KeyCite in Westlaw, provides post-issuance patent information, including status changes, litigation notices, re-exam requests, and patent expirations • 24 hour reference staff is available • A history trail of searches is available **Disadvantages of Database:** • Shepard's does not provide updated information on patents, it only reports court decisions • No mapping and analysis tools on Lexis-Nexis • Premium database: will add to the client's bill. (Client bill can be mitigated through use of history trail and knowledge of efficient search techniques, including effective use of Boolean operators, truncations, and FOCUS)

www.lexisnexis.com

Database Name	General Information
Derwent World Patent Index	Delphion gives patent collections & searching options inside the world's important patent databases. Sources: • United States Patents — Applications (US) • United States Patents — Granted (US) • Derwent World Patents Index (DWPI) • European Patents — Applications (EP-A) • European Patents — Granted (EP-B) • German Patents — Applications • German Patents — Granted • INPADOC Family and Legal Status • Patent Abstracts of Japan (JP) • Switzerland (CH) • WIPO PCT Publications (WO) Delphion analytical tools give different insights into data: • Citation Link creates graphical maps of forward and backward references • Snapshot allows quick online analysis of your results using bar charts • PatentLab-II supports offline analysis of results with 3D graphs and charts • Clustering performs keyword-based linguistic analysis • Corporate Tree facilitates targeted Assignee name searching

	The productivity tools help make the most of research efforts: • Data Extract exports key bibliographic fields in common formats • Work Files save, organize, annotate and share personalized lists of patents • Saved Searches saves queries for frequently-used searches • Alerts automatically notifies you of updates • PDF Express bulk downloads of up to 500 PDFs • Patent viewing options include the Delphion Integrated View, both high resolution and low-resolution image options, and a variety of download and delivery options.

www.delphion.com

Database Name	General Information
IPVision	IPVision, Inc. enables you to build and extract maximum value from your innovations and patents. Systems, services and tools solutions: • Analyze patent portfolios, technologies and innovations • Provide new competitive intelligence insights • Enable companies to align intellectual property management with strategic objectives

www.ipvisioninc.com

APPENDIX C: Definitions of U.S. Classifications[71]

United States Patent Classification System

- A Patent Classification is a code which provides a method for categorizing the invention.
- Classifications are typically expressed as "482/1".
- The first number, 482, represents the class of invention.
- The number following the slash is the subclass of invention within the class.
    - A Subclass definition is a complete description of the subclass.
    - The Subclass Definition can incorporate an explanation of the class, a glossary, search notes, references to subclasses within the class, and references to other classes and subclasses.
- There are about 450 Classes of invention and about 150,000 subclasses of invention in the USPC.
- Classes and subclasses have titles which provide a short description of the class or subclass.
- Classes and subclasses also have definitions which provide a more detailed explanation.
- Many Classes and subclasses have explicitly defined relationships to one another. Subclasses contain patents.
- In a sense, classes also contain patents but for classification purposes patents are always classified at the subclass level.
- That one or more classifications (i.e., class/subclass designations) are assigned to each granted patent and each published application.
- A patent classification also represents a searchable collection of patents grouped together according to similarly claimed subject matter.
- A classification is used both as a tool for finding patents (patentability searches), and for assisting in the assignment of patent applications to examiners for examination purposes.

Classification Codes applicable for this report

- Class 424: Drug, Bio-Affecting and Body Treating Compositions
    - Class 424/188.1: Immunodeficiency Virus (e.g. HIV, etc)
    - Class 424/208.1: Immunodeficiency Virus (e.g. HIV, etc)
- Class 435: Chemistry- Molecular Biology and Microbiology
    - Class 435/320.1: Vector, Per Se (e.g., Plasmid, Hybrid Plasmid, Cosmid, Viral Vector, Bacteriophage Vector, Bacteriophage Vector, etc.)
- Class 536: Organic Compounds- Part of the Class 532-570 Series
- Class 530: Chemistry: Natural Resins or Derivatives; Peptides or Proteins; Lignins or Reaction Products Thereof

[71] USPTO, http://www.uspto.gov/go/classification/.

APPENDIX D: Derwent Classifications[72]

Description of Derwent Patent Classifications

- Categorizes patent documents using a simple classification system for all technologies; consistently applied to all patents by Thomson Scientific subject experts, enabling effective and precise searching in a particular area of technology
- International Patent Classification (IPC) is an internationally recognized classification system, which is controlled by the World Intellectual Property Organization (WIPO) and assigned to patent documents by Patent Offices.
- Where possible we indicated next to the Class the equivalent IPC in an abbreviated form (e.g. A47, F23-5).
    - However, this should only be taken as a guide, since there are areas where the DWPI
    - Classes are assigned intellectually by our subject experts, and no strict correspondence is claimed.

Classification Codes applicable for this report

- Class B04: Natural products and polymers. Including testing of body fluids (other than blood typing or cell counting), pharmaceuticals or veterinary compounds of unknown structure, testing of microorganisms for pathogenicity, testing of chemicals for mutagenicity or human toxicity and fermentative production of DNA or RNA. General compositions.
- Class D16: Fermentation industry - including fermentation equipment, brewing, yeast production, production of pharmaceuticals and other chemicals by fermentation, microbiology, production of vaccines and antibodies, cell and tissue culture and genetic engineering.
- Class S03: Scientific Instrumentation (G01J, K, N, T-W) Photometry, calorimetry. Thermometers. Meteorology, geophysics, measurement of nuclear or X-radiation. Investigating chemical or physical properties.
- Class C06: Biotechnology - including plant genetics and veterinary vaccines.
- Class A96: Medical, dental, veterinary, cosmetic
- Class P14: Animal care (A01K, L, M)
- Class B07: General - tablets, dispensers, catheters (excluding drainage and angioplasty), encapsulation etc, but not systems for administration of blood or saline or IV feeding etc.
- Class C03: Other organic compounds, inorganic compounds and multi-component mixtures. Polymers and proteins
- Class C07: Apparatus, formulation, general. including veterinary syringes, general formulations where the active compound is not central to the invention (eg wettable powders) and analysis.

[72] Thomas Reuters, http://scientific.thomson.com/support/patents/dwpiref/reftools/classification/.

APPENDIX E: Author's *Curriculum Vitae*

WEONMEE PARK
99 Clinton St. C-4, Concord, NH
E-mail: wpark@piercelaw.edu, molbio@hanafos.com,

CAREER SUMMARY

Associate with YOUME Patent & Law Firm as a member of the chemical, pharmaceutical and biotechnology group. Represent national and multinational corporate clients and technology start-ups in patent prosecution and related counseling work.

PROFESSIONAL EXPERIENCE

YOUME PATNET & LAW FIRM, Seoul, Korea 2005 – 2007
One of the biggest Patent firms in Korea, has been ranked No.1 in the number of flings with the Korean Intellectual Property Office representing since 2002.

Patent Attorney, Associate, the chemical, pharmaceutical and biotech group
Represent domestic and foreign clients, responsible for legal affairs related to patent prosecution and litigations, including patent validity, patent infringement, as well as patent prosecution before the Korean Intellectual Property Office. Specifically, concentrates on the areas of biochemistry, molecular biology and pharmacology ranging from drafting original patent applications and advising international filing affairs and intellectual property aspects of company acquisitions or mergers.

KOREANA PATNT & LAW FIRM, Seoul, Korea 2004 – 2005
One of the top 3 patent firms in Korea specializing in representation of foreign clients.

Patent Attorney, Associate
Successfully represented around 70 foreign corporate clients filing in Korea, involved in a broad spectrum of patent issues including patent validity, patent infringement, as well as patent prosecution before the Korean Intellectual Property Office.

APPLIED BIOSYSTEMS, Seoul, Korea 1997 – 2002
Korean branch of the multinational biotech company, providing over 95% of the world supply of DNA sequencing and PCR machines, which helped the completion of Human Genome Project possible.

Genetic Analysis Specialist, Genetic Analysis Group
Responsible for technical affairs relating to the genetic and protein analysis systems provided by the company; managed a ten person genetic analysis group.

- Anticipated problems and developed practical solutions with bottom-line sensitivity.
- Successfully completed the installation and technical support of genetic analysis systems in more than 100 universities and research institutions.

- Successfully conducted technical seminars at more than 50 major universities and research institutions**.**

SAMSUNG BIOMEDICAL RESEARCH INSTITUITE, Seoul, Korea 1994 – 1997

Research institution affiliated with Samsung Medical Center

Research Scientist

- Conducted government as well as company funded research projects: Gene therapy of ovarian cancer, and the interaction between genes involved in the regulation of expression of other genes and cell division, which resulted in the publication of 3 papers in major scientific journals.
- Conducted a collaboration research project with Seoul National University, Genetic Engineering Center for the development of a viral vector suitable for gene therapy of cancer.
- Advising and Counseling start up biotech companies.

EDUCATION

Seoul National University, Biology, B.A., 1987

Graduated with cum laude.

University of Southern California, Molecular Biology, Ph.D., 1994

Activities: Teaching and Research Assistant.

Pierce Law Center, Master of Intellectual Property, expected to graduate in May, 2008

BAR ADMISSIONS/PROFESSIONAL ACTIVITIES

- Member, Patent and Trademark Attorneys Association
- Admitted to practice before Korean Intellectual Property Office, 2003.

LIST OF SCIENTIFIC PUBLICATIONS

- Park, W., Mosteller, R.D., and Broek, D. "Identification of a dominant negative mutant in CDC25 protein interacting with ras. *Oncogene* 14:pp831-836, 1997.
- Park, W., Choi, J-J. and Lee, J.-H. "Identification of a variant estrogen receptor lacking exon 4 and its coexpression with wild-type estrogen receptor in ovarian carcinomas. *Clinical Cancer Research vol 2:pp2029-2035, 1996.*
- Park, W., Mosteller, R.D., and Broek, D. "Amino acid residues in the CDC25 guanine nucleotide exchange factor critical for interaction with Ras." *Molecular and Cellular Biology*, 14: pp.8117-8122, 1994.
- Mosteller, R.D., Park, W., and Broek, D. "Analysis of the interaction between Ras and CDC25 guanine-nucleotide exchange factor using the yeast GAL4-two hybrid system. *Methods in Enzymology*, Vol. 255, pp.135-148, Academic Press, 1995.
- Seo, J., Park,W., Kim, J.S., Hwang, E.S., Lee, J.-H., and Hong, S.H." Endogenous gene expression of p53 and regulatory subunits of cyclic AMP-dependent protein kinase in ovarian cancer cells. *Korean Journal of Zoology*, 38: pp.204-211, 1995.
- Wei, W., Das, B., Park, W., and Broek, D. "Cloning and analysis of human cDNAs encoding a 140kDa brain guanine nucleotide-exchange factor, $Cdc25^{GEF}$, which regulates the function of Ras." *Gene*, 151: pp.279-284, 1994.
- Quilliam, A.L., Huff, S.Y., Rabun, K.M., Wei, W., Park, W., Broek, D., and Der, C.J. " Membrane-targeting potentiates guanine nucleotide exchange factor CDC25 and SOS1

activation of Ras transforming activity." *Proceedings of National Academy of Science*, 91: pp.8512- 8516, 1994.

SELECTED PATENTS AND PATENT APPLICATIONS AT YOUME

- 4,4-difluoro-1,2,3,4-tetrahydro-5H-1-benzazepine derivatives or salts thereof, KR Patent No.632882.
- Porphorymonas Gingivalis Polypeptide and Nucleotides, KR Patent No. 603552.
- Oily Cosmetics and Method for Preparing The Same,. KR Patent No. 583021.
- Condensed Axepines as Vasopressin Agonists, KR Patent No. 605466.
- A Composition of the Treatment of Metabolic Syndrome comprising Beta-Glucan and Folium Mori Extracts as Effective Ingredients, KR Patent 623210
- A Novel use of Rani as an apoptosis regulator, pending application 10-2005-0110192.
- A Method for Surface Display of Target Proteins Using Cell Surface Proteins of the Yeast Yarrowia, pending application 10-2005-0082706.
- Biomembrane Devices with Elastic Energy Barriers, pending application 10-2006-0073667
- Polynucleotides Responsible for Innate Immune Response in Drosophila and Use thereof, pending application 10-2006-0084687.

Arshdeep Kaur Sidhu
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Concord, NH 03301
603.219.7029
ASidhu@piercelaw.edu

EDUCATION

DEGREES:
Franklin Pierce Law Center, Concord, NH
Candidate for Master of Intellectual Property (MIP), May 2008
Coursework: Patent Practice & Procedure I & II, Patent Law, Legal Writing & Research, Intellectual Property Management, Intellectual Property Research Tools, Trademark Law, Technology Licensing.
Governor Student Bar Association, *Member* International Intellectual Property Organization.

Panjab University, Department of Biotechnology, Chandigarh, India
Master of Science (Hons.) in Biotechnology, April 2007
Thesis: "Cloning of *DapA* gene of *E. coli* DH5α in a vector pQE 30,"
Coursework: Animal Cell Culture, Plant Cell Culture, Bioprocess Engineering, Adv. Molecular Biology, Adv. Recombinant DNA Technology, Intellectual Property Rights, Bioethics & Biotechnology.

Panjab University, Department of Biotechnology, Chandigarh, India
Bachelor of Science (Hons.) in Biotechnology, April 2005

DIPLOMA & ADVANCED CERTIFICATES:
NALSAR University of Law, Hyderabad, India
P.G. Diploma in Patents Law, April 2007
Coursework: Patenting in India, American & European Patent Regimes, International Treaties/ Conventions on IPR.

World Intellectual Property Organization, Geneva, Switzerland**:**
"General Course on Intellectual Property" (DL-101e), March 1 to April 15, 2006.
"WIPO Summer School on Intellectual Property" held at the WIPO Worldwide Academy, Geneve, from July 3 to July 14, 2006.
"Advanced Course on Biotechnology and IP" (DL-204e) from June 1 to August 14, 2006.

EXPERIENCE

Franklin Pierce Law Center, Concord, NH
Research Assistant, Worked under the guidance of Prof. Jon Russell Cavicchi and Prof. Stanley Kowalski on "Primary Landscape Analysis of Patents Related to HIV Vaccine Development", to populate publicly available web based database in collaboration with the Public Intellectual Property Resource for Agriculture.

Department of Biotechnology, Panjab University, Chandigarh, India
Research Assistant, Worked on under Prof. Rupinder Tewari, on "Cloning of *DapA* gene of *E. coli* DH5α in a vector pQE 30," applying principles of advanced microbiology and recombinant DNA technology. 2006-2007

Tanya Biotech, Mohali, Punjab
Trainee, Training Program on "Laboratory Techniques in Immunochemistry." June 2006-July 2006

Wockhardt Life Sciences Ltd., Lalru, Punjab
Trainee, Trained for complete functioning of plant, with specialization in Quality Control. June 2004-July 2004

LANGUAGES: English, French, Hindi, Punjabi

INTERESTS: Participating in debates and declamation contests, Travelling, Reading, Painting, Cooking, Listening to Music.

Yu Hui (Lisa) Sung

38 Merrimack St.
Concord NH, 03301
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Ysung@piercelaw.edu
Lisalssung@gmail.com

Education

Aug. 2006-Present	Franklin Pierce Law Center, Concord NH
	Master in IP (MIP) (one semester); Transferred to MIP-JD joint program (will graduate in year 2009)
1995-1998	National Chiao Tung University, HsinChu, Taiwan ROC
	M.S. Applied Chemistry (major in Biochemistry; Protein Expression)
1991-1995	National Chiao Tung University, HsinChu, Taiwan ROC
	B.S. Applied Chemistry

Work Experience

June 2007 to Aug. 2007	Paul, Hastings, Janofsky & Walker LLP (Los Angeles office) - Summer Law Clerk
	(a) Reviewing patents and file wrappers. (b) Searching prior arts by US/JP classifications and preparing memo for the results. (c) Drafting discovery requests.
April 2004 To Aug. 2006	AU Optronics Corp. -- Assistant Manager, Technology Office
	Handled all aspects of US litigation support including: (a) Preparing, collecting and responding to discovery for all patent infringement lawsuits in the US, including one International Trade Commission case and two Federal District Court cases. (b) Interviewed witnesses and prepared summaries. (c) Assisted in preparing expert reports, claim construction briefs, summary judgment motions and trial briefs. (d) Serve as company's designated F.R.C.P. 30(b)(6) witness for numerous subjects.
April 2002 To April 2004	BenQ Corp. -- Patent Engineer
	(i) Negotiation: (a) Attended negotiation meetings with patentees. (b) Responded to warning letters. (c) Assisted in preparing legal opinions. (ii) Patent prosecution: (a) Interviewed RD engineers and assisted in prior art searches. (b) Revised patent applications drafted by law firms.
Sep. 1999 To April 2002	Acer Display Technology Inc. -- Patent Engineer
	(a) Built up Patent system in the company. (b) Drafted invention disclosures. (c) Revised patent application drafts prepared by outside law firms for filing in 4 different countries (US, Taiwan, China, and Japan).
July 1998	Deep & Far Attorney-at-law-- Patent Engineer

To Sep. 1999	(a) Interviewed clients. (b) Drafted US patent applications. (c) Prepared Office Action responses.

Language Skills

Chinese - Mandarin (Fluent)	English (Fluent)

Publication

Purification, Characterization and Mechanistic Study of β-Glucosidase from Flavobacterium meningosepticum (ATCC 13253) Yaw-Kuen Li, Shi-Her Chu and Yu-Hui Sung, **Journal of the Chinese Chemical Society, Volume 45, No. 5, October 1998**

MICHELLE WINDOM
mwindom@piercelaw.edu
Current Address: 72 Washington Street Apt. #2· Concord, NH 03301· 504.231.6790
Permanent Address: 1412 8th Street· New Orleans, LA 70115

EDUCATION

Franklin Pierce Law Center, Concord, NH
Candidate for Juris Doctor, 2009
Member, Pierce Law Review
Member, Student Bar Association Finance Committee 1L Representative
Member, Student Intellectual Property Organization

Franklin Pierce Law Center, Concord, NH
Masters of Intellectual Property, 2006
Member, Student Bar Association Finance Committee MIP Representative
Member, Student Intellectual Property Organization

Tulane University, New Orleans, LA
Masters of Engineering, Biomedical Engineering, 2004

Louisiana State University, Baton Rouge, LA
Bachelor of Science, Biological Engineering, 2002
Member, Biological Engineering Society
Member, Zeta Tau Alpha Sorority

EXPERIENCE

Summer 2008 — **Oliff & Berridge, PLC**

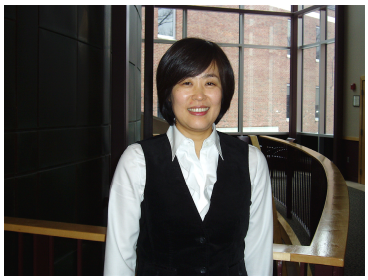
Summer *2007* — **Duane Morris LLP** (Philadelphia, PA)
Summer Associate
- Drafting legal memos and briefs
- Preparing responses to PTO office actions
- Legal research
- Training classes i.e. effective speaking, legal writing

Summer 2006 — **Tulane University Office of Technology Transfer**
Intern
- Patent searching
- Inventor interviews to determine patentability

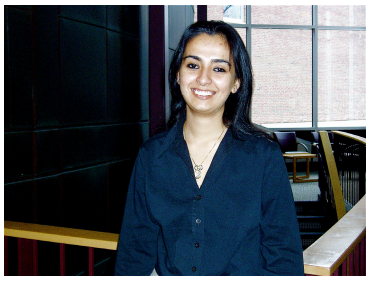
Summer 2004 — **New Orleans Depot**
Data Entry Clerk

1994- 2004 — **Model Cleaners**
Clerk

AUTHOR BIOGRAPHIES



WEONMEE PARK, from Korea, is a MIP candidate, class of 2008. She practices patent law in Korea, specializing in biotechnology. Her interest in biology and IP law made her cross the Pacific Ocean twice: first, to get a PhD. in molecular biology from the University of Southern California and second, for the MIP. She has previously worked as a researcher and application specialist in a biotechnology firm.



ARSHDEEP KAUR SIDHU, from India, is a MIP candidate, class of 2008. Ms. Sidhu is a post-graduate from the Department of Biotechnology, Panjab University, Chandigarh, India, with MS and BS degrees, with honors, in Biotechnology. She wishes to utilize her biotechnology background to work in the field of intellectual property management and licensing.

YU-HUI SUNG, from Taiwan, is a JD candidate, class of 2009. Before going to Pierce Law, she worked for a top one hundred company in Taiwan for eight years as an in-house patent engineer. She helped to prosecute patents in Taiwan, US, and China. She supported discovery procedures for IP litigation in the US. Last summer, she searched and reviewed over 1000 US and Japanese patents for a US law firm.

MICHELLE WINDOM, from New Orleans, Louisiana, is a JD candidate, class of 2009. Ms. Windom graduated from Louisiana State University in 2002 with a BS degree in Biological Engineering, in 2004 from Tulane University with a MEng in Biomedical Engineering, and in 2006 from Pierce Law Center with a MIP. She is interested in utilizing her science background to pursue a career in patent litigation and prosecution.

PROFESSORS:

JON R. CAVICCHI, J.D., LL.M. (Intellectual Property)
STANLEY P. KOWALSKI, Ph.D, J.D.

TEACHING ASSISTANT:
BUMRAE CHO

MicroPatent Summary Report for Relevant Patents

MicroPatent Report

Report Summary:

Name of Session/Report: Patent Summary (HIV DNA vaccine)
Report Created: 2008-04-26 - 16:26 GMT
Number of records selected: 218

Table of Contents

1. **US7323557B2** C12N GENEART AG
   GENOME OF THE HIV-1 INTER-SUBTYPE (C/B') AND USE THEREOF
2. **US7205101B1** C12N NOVARTIS VACCINES DIAGNOSTIC
   HUMAN IMMUNODEFICIENCY VIRUS (HIV) NUCLEOTIDE SEQUENCES, RECOMBINANT POLYPEPTIDES, AND APPLICATIONS THEREOF
3. **US7211659B2** C07K CHIRON CORP
   POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF
4. **US7122180B2** C12N CHILDRENS MEDICAL CENTER
   DNA VECTORS CONTAINING MUTATED HIV PROVIRUSES
5. **US7094408B2** A61K US GOVERNMENT
   IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES
6. **US7008784B1** C07K AVENTIS PASTEUR
   NON-INFECTIOUS, NON-REPLICATING, IMMUNOGENIC HUMAN IMMUNODEFICIENCY VIRUS-LIKE PARTICLES
7. **US6998252B1** C12N US HEALTH
   RECOMBINANT POXVIRUSES HAVING FOREIGN DNA EXPRESSED UNDER THE CONTROL OF POXVIRUS REGULATORY SEQUENCES
8. **US6894152B1** C12Q CENTRE NAT RECH SCIENT
   CLONED DNA SEQUENCES RELATED TO THE GENOMIC RNA OF LYMPHADENOPATHY-ASSOCIATED-VIRUS (LAV) AND PROTEINS ENCODED BY SAID LAV GENOMIC RNA
9. **US6919318B1** A61K CHIRON CORP
   ENHANCING IMMUNE RESPONSES TO GENETIC IMMUNIZATION BY USING A CHEMOKINE
10. **US6818442B2** C07K GENEXINE CO LTD
    AIDS DNA VACCINE THAT PREVENTS SIVMAC239 VIRUS INFECTION IN MONKEYS
11. **US6783939B2** C07K ALPHAVAX INC
    ALPHAVIRUS VECTORS AND VIROSOMES WITH MODIFIED HIV GENES FOR USE IN VACCINES

12. US6716823B1 A61K UAB RESEARCH FOUNDATION
NONINVASIVE GENETIC IMMUNIZATION, EXPRESSION PRODUCTS THEREFROM, AND USES THEREOF
13. US6696291B2 C07K MERCK CO INC
SYNTHETIC HIV GAG GENES
14. US6656706B2 C12N US HEALTH
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES
15. US6649409B1 C12N STATENS SERUMINSTITUT
METHOD FOR PRODUCING A NUCLEOTIDE SEQUENCE CONSTRUCT WITH OPTIMIZED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE BX08 CONSTRUCTS
16. US6635624B1 C07K PASTEUR INSTITUT
NUCLEOTIDE VECTOR COMPOSITION CONTAINING SUCH VECTOR AND VACCINE FOR IMMUNIZATION AGAINST HEPATITIS
17. US6586409B1 A61K VICAL INC
ADJUVANT COMPOSITIONS AND METHODS FOR ENHANCING IMMUNE RESPONSES TO POLYNUCLEOTIDE-BASED VACCINES
18. US6544518B1 A61K SMITHKLINE BEECHAM BIOLOG
VACCINES
19. US6541003B1 C12N INFECTIOUS DISEASES FOUNDATION
CONDITIONALLY CONTROLLED, ATTENUATED HIV VACCINE
20. US6534312B1 C12N MERCK CO INC
VACCINES COMPRISING SYNTHETIC GENES
21. US6534062B2 A61K UNIV CALIFORNIA
METHODS FOR INCREASING A CYTOTOXIC T LYMPHOCYTE RESPONSE IN VIVO
22. US6420545B1 C07H TRUSTEES OF THE UNIVERSITY OF
CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS
23. US6348450B1 A61K UAB RESEARCH FOUNDATION
NONINVASIVE GENETIC IMMUNIZATION, EXPRESSION PRODUCTS THEREFROM AND USES THEREOF
24. US6326007B1 A61P UNIV CALIFORNIA
ATTENUATED LENTIVIRUS VECTORS EXPRESSING INTERFERON
25. US6248721B1 C07K CHANG LUNG-JI
METHOD OF USING MOUSE MODEL FOR EVALUATION OF HIV VACCINES
26. US6210663B1 A61K WISTAR INST
METHODS OF AUGMENTING MUCOSAL IMMUNITY THROUGH SYSTEMIC PRIMING AND MUCOSAL BOOSTING

27. US6168923B1 A61K WISTAR INST
COMPOSITIONS AND METHODS FOR USE OF IL-12 AS AN ADJUVANT

28. US6086891A A61K ST JUDE CHILDRENS RES HOSPITAL
BI-FUNCTIONAL PLASMID THAT CAN ACT AS BOTH A DNA VACCINE AND A RECOMBINANT VIRUS VECTOR

29. US5981276A C07K DANA FARBER CANCER INST INC
VECTORS CONTAINING HIV PACKAGING SEQUENCES, PACKAGING DEFECTIVE HIV VECTORS, AND USES THEREOF

30. US5883081A C12N UNIV CALIFORNIA
ISOLATION OF NOVEL HIV-2 PROVIRUSES

31. US5869313A C07K US HEALTH
MOLECULAR CLONES OF HIV-1 VIRAL STRAINS MN-ST1 AND BA-L, AND USES THEREOF

32. US5866131A C07K COMMW SCIENT IND RES ORG
RECOMBINANT VACCINE

33. US5795577A C07K TRANSGENE SA
VIRAL VECTOR CODING FOR A GLYCOPROTEIN OF THE VIRUS RESPONSIBLE FOR A. I.D. S.

34. US5824310A A61K US HEALTH
LIPOPPLYSACCHARIDE CONJUGATE VACCINES

35. US5766625A A61K UNIV FLORIDA
ARTIFICIAL VIRAL ENVELOPES

36. US5665577A C07K DANA FARBER CANCER INST INC
VECTORS CONTAINING HIV PACKAGING SEQUENCES, PACKAGING DEFECTIVE HIV VECTORS, AND USES THEREOF

37. US5654195A C12N DANA FARBER CANCER INST INC
VECTORS EXPRESSING HYBRID VIRUSES, METHODS OF USE AND NOVEL ASSAYS

38. US5571712A C07K CONNAUGHT LAB
NON-INFECTIOUS, REPLICATION DEFECTIVE, IMMUNOGENIC HIV RETROVIRUS-LIKE PARTICLES PRODUCED FROM A RECOMBINANT HIV GENOME DEVOID OF LONG TERMINAL REPEATS

39. US5439809A C12Q CONNAUGHT LAB
NON-INFECTIOUS HIV PARTICLES LACKING LONG TERMINAL REPEATS

40. US5328835A C07K SQUIBB BRISTOL MYERS CO
EXPRESSION OF IMMUNOLOGICALLY REACTIVE HIV ENVELOPE PROTEINS

41. US5141867A C12N DU PONT
NUCLEOTIDE SEQUENCE ENCODING A HUMAN IMMUNODEFICIENCY VIRUS ANTIGEN

42. **US5130248A** C07K MERCK CO INC
EXPRESSION OF FUSION PROTEIN OF HIV ENVELOPE AND HBSAG

43. **US5130247A** C07K MERCK CO INC
EXPRESSION OF FUSION PROTEIN OF HIV ENVELOPE AND HBSAG

44. **US5100662A** A61K LIPOSOME CO INC
STEROIDAL LIPOSOMES EXHIBITING ENHANCED STABILITY

45. **US4952499A** C12N DANA FARBER CANCER INST INC
GENES AND THEIR ENCODED PROTEINS WHICH REGULATE GENE EXPRESSION OF THE INTERLEUKIN-2 RECEPTOR AND OF HUMAN LYMPHOTROPIC RETROVIRUSES

46. **US20080026071A1** A61K
MICROPARTICLES FOR DELIVERY OF HETEROLOGOUS NUCLEIC ACIDS

47. **US20070292454A1** A61K
THERAPEUTIC CALCIUM PHOSPHATE PARTICLES AND METHODS OF MANUFACTURE AND USE

48. **US20070292390A1** C12N
BROADLY CROSS-REACTIVE HIV-1 NEUTRALIZING HUMAN MONOCLONAL ANTIBODIES

49. **US20070248613A1** G01N
HUMAN ANTIBODIES INTERACTING WITH HIV GP41

50. **US20070269456A1** A61K
DNA-BASED PLASMID FORMULATIONS AND VACCINES AND PROPHYLACTICS CONTAINING THE SAME

51. **US20070248679A1** C12N GLAXO GROUP LTD
VACCINE

52. **US20070190031A1** C12N
PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

53. **US20070166784A1** C12P
COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

54. **US20070053923A1** A61K
DNA VACCINE COMPOSITION WITH ENHANCED IMMUNOGENICITY

55. **US20070015721A1** C12N
HIV-GAG CODON-OPTIMISED DNA VACCINES

56. **US20070010471A1** A61K
HIV DNA VACCINE

57. **US20070042977A1** C07H
VACCINE

58. **US20060275897A1** C07K
HIV VACCINES BASED ON ENV OF MULTIPLE CLADES OF HIV

59. **US20060222665A1** C12N STRATHMANN AG CO
VIRUS VACCINE

60. **US20060240042A1** C12N GOVT OF THE U S A AS REPRESENT
IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

61. **US20060216305A1** C07K
IMMUNOGENIC HIV-1 MULTI-CLADE, MULTIVALENT CONSTRUCTS AND METHODS OF THEIR USE

62. **US20060148750A1** A61K
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

63. **US20060142221A1** C07H
VACCINE

64. **US20060094049A1** C12Q AARON DIAMOND AIDS RES CT
STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

65. **US20060051839A1** C12P EMORY UNIVERSITY A GEORGIA COR
DNA EXPRESSION VECTORS AND METHODS OF USE

66. **US20050271676A1** C07H EPIMMUNE INC
INDUCING CELLULAR IMMUNE RESPONSES TO HUMAN IMMUNODEFICIENCY VIRUS-1 USING PEPTIDE AND NUCLEIC ACID COMPOSITIONS

67. **US20050266025A1** C12N SMITHKLINE BEECHAM BIOLOG
NOVEL USE

68. **US20050287167A1** C12Q CHIRON CORP
POLYCISTRONIC HIV VECTOR CONSTRUCTS

69. **US20050266024A1** C07D GLAXO GROUP LTD
ADJUVANT

70. **US20050256070A1** A61K
ADJUVANT

71. **US20050220883A1** A61K
MICROPARTICLES WITH ADSORBED POLYPEPTIDE-CONTAINING MOLECULES

72. **US20050220816A1** A61K ADVANCED BIOSCIENCE LAB INC
MUTANT VIRAL NUCLEIC ACIDS AND VACCINE CONTAINING SAME

73. **US20050215508A1** C07K
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

74. **US20050208072A1** C07K
PREVENTIVE AND THERAPEUTIC AIDS VACCINES

75. **US20050175627A1** A61K OXXON THERAPEUTICS LTD
HIV PHARMACCINES

76. **US20050158336A1** A61K HOPE CITY
SYNTHETIC CONJUGATE OF CPG SINGLE-STRANDED DNA AND T-HELP/CTL FUSION PEPTIDE

77. **US20050112102A1** C12N
DNA VACCINE COMPOSITIONS AND METHODS OF USE

78. **US20050058657A1** A61P
VACCINE COMPRISING GP120 AND NEF AND/OR TAT FOR THE IMMUNISATION AGAINST HIV

79. **US20040236093A1** C12N
MHC-I-RESTRICTED PRESENTATION OF HIV-1 VIRION ANTIGENS WITHOUT VIRAL REPLICATION. APPLICATION TO THE STIMULATION OF CTL AND VACCINATION IN VIVO; ANALYSIS OF VACCINATING COMPOSITION IN VITRO

80. **US20040224308A1** C12N PROGENICS PHARM INC
STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

81. **US20040191269A1** C07K
POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

82. **US20040180329A1** C07K
SYNTHETIC HIV GAG GENES

83. **US20040116660A1** C07K
PROCESS FOR THE SELECTION OF HIV-1 SUBTYPE C ISOLATES, SELECTED HIV-1 SUBTYPE C ISOLATES, THEIR GENES AND MODIFICATIONS AND DERIVATIVES THEREOF

84. **US20040076636A1** C07K
HIV IMMUNOGENIC COMPLEXES

85. **US20040106105A1** C12N
VACCINE

86. **US20040106100A1** C12N
DNA VACCINES ENCODING HIV ACCESSORY PROTEINS

87. **US20040077577A1** C12N GOVERNMENT OF THE USA AS REPRE
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

88. **US20040033237A1** A61K
IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

89. **US20040063653A1** C07K
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

90. **US20040034209A1** A61K
VACCINATION OF HIV INFECTED PERSONS FOLLOWING HIGHLY ACTIVE ANTIRETROVIAL THERAPY

91. **US20040033487A1** C12N
MODIFICATIONS OF HIV ENV, GAG, AND POL ENHANCE IMMUNOGENICITY FOR GENETIC IMMUNIZATION

92. **US20030228327A1** A61K
DNA-BASED PLASMID FORMULATIONS AND VACCINES AND PROPHYLACTICS CONTAINING THE SAME

93. **US20030220276A1** C07K
HIV VACCINE AND METHOD OF USE

94. **US20030161834A1** A61K SMITHKLINE BEECHAM BIOLOG
VACCINES

95. **US20030175292A1** C12N
COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

96. **US20030158134A1** C12N
VACCINE FOR THE PROPHYLACTIC OR THERAPEUTIC IMMUNIZATION AGAINST HIV

97. **US20030190308A1** A61K
ADJUVANT

98. **US20030158131A1** C12N
DNA VECTORS CONTAINING MUTATED HIV PROVIRUSES

99. **US20030129169A1** C12N
NOVEL EXPRESSION VECTORS AND USES THEREOF

100. **US20030099934A1** C07K
CHEMICALLY MODIFIED HIV ENVELOPE GLYCOPROTEIN

101. **US20030096778A1** C07K
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

102. **US20030091594A1** C12N UNIV PENNSYLVANIA
CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

103. **US20030087225A1** C12N
SYNTHETIC HIV GENES

104. **US20030082521A1** C07K
POLYPEPTIDE INDUCING ANTIBODIES NEUTRALIZING HIV

105. **US20030050468A1** C07K
SYNTHETIC HIV GAG GENES

106. **US20030021800A1** C07K
VACCINE AGAINST INFECTIOUS AGENTS HAVING AN INTRACELLULAR PHASE, COMPOSITION FOR THE TREATMENT AND PREVENTION OF HIV INFECTIONS, ANTIBODIES AND METHOD OF DIAGNOSIS

107. **US20020193330A1** C07K
GENETICALLY ENGINEERED CO-EXPRESSION DNA VACCINES, CONSTRUCTION METHODS AND USES THEREOF

108. **US20020172683A1** G01N
MHC-I-RESTRICTED PRESENTATION OF HIV-1 VIRION ANTIGENS WITHOUT VIRAL REPLICATION. APPLICATION TO THE STIMULATION OF CTL AND VACCINATION IN VIVO; ANALYSIS OF VACCINATING COMPOSITION IN VITRO

109. **US20020141975A1** C07K ALPHAVAX INC
ALPHAVIRUS VECTORS AND VIROSOMES WITH MODIFIED HIV GENES FOR USE IN VACCINES

110. **US20020127238A1** C07K
HIV-1 VACCINES AND SCREENING METHODS THEREFOR

111. **US20020061517A1** C12Q
ADENOVIRUS CARRYING GAG GENE HIV VACCINE

112. **US20020022034A1** A61K
THERAPEUTIC DNA VACCINATION

113. **US20020015707A1** A61K CHIRON CORP
POSTINFECTION HUMAN IMMUNODEFICIENCY VIRUS (HIV) VACCINATION THERAPY

114. **US20010004531A1** C07K GENECCIN CO LTD
AIDS DNA VACCINE THAT PREVENTS SIVMAC239 VIRUS INFECTION IN MONKEYS

115. **EP449116B2** C07K GENEART GMBH
DNA SEQUENCES ENCODING MODIFIED RETROVIRAL GAG POLYPEPTIDES AND VACCINES CONTAINING THEM OR AGGREGATES THEREOF

116. **EP1402019A4** C12N US GOVERNMENT
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

117. **EP1369427A2** C12N INNOGENETICS NV
HIV-3 RETROVIRUS STRAINS AND THEIR USE

118. **EP1369427A3** C12N INNOGENETICS NV
HIV-3 RETROVIRUS STRAINS AND THEIR USE

119. **EP1279404A1** A61P IST SUPERIORE SANITA
USE OF HIV-1 TAT, FRAGMENTS OR DERIVATIVES THEREOF, TO TARGET OR TO ACTIVATE ANTIGEN-PRESENTING CELLS, TO DELIVER CARGO MOLECULES FOR VACCINATION OR TO TREAT OTHER DISEASES

120. **EP335635A1** A61K UNIV LELAND STANFORD JUNIOR
MUTATED HIV ENVELOPE PROTEIN

121. **WO2007126788A2** A61K US GOVERNMENT
METHODS AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF VIRAL INFECTION

122. **WO2007126788A3** A61K US GOVERNMENT
METHODS AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF VIRAL INFECTION

123. **WO2007126959A2** A61K DANA FARBER CANCER INST INC
METHODS AND COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV AND MODELS FOR TESTING

124. **WO2007066236A2** IntC INST LA RECH POUR LE DEV IRD
CHIMERIC HIV-1 GLYCOPROTEINS AND THEIR BIOLOGICAL APPLICATIONS

125. **WO2007066236A3** C07K INST LA RECH POUR LE DEV IRD
CHIMERIC HIV-1 GP120 GLYCOPROTEINS AND THEIR BIOLOGICAL APPLICATIONS

126. **WO2007024976A2** C07H UNIV MARYLAND BIOTECH INST
VIRUS COAT PROTEIN/RECEPTOR CHIMERAS AND METHODS OF USE

127. **WO2007004231A1** A61K SETH PRADEEP
HIV-1 VACCINOGENS WITH IMMUNOMODULATORS

128. **WO2006110344A1** C07K WYETH CORP
NOVEL METHODS FOR INDUCING AN IMMUNE RESPONSE AGAINST HUMAN IMMUNODEFIENCY VIRUS

129. **WO2006085959A2** C12Q CHIRON CORP
FUSION PROTEINS COMPRISING CD4 MINIMAL MODULES AND METHODS OF USE THEREOF

130. **WO2006050394A2** IntC CHIRON CORP
COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

131. **WO2006050394A3** C07K CHIRON CORP
COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

132. **WO2006020071A2** A61P US GOVERNMENT
VACCINE CONSTRUCTS AND COMBINATIONS OF VACCINES DESIGNED TO IMPROVE THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV

133. **WO2006020071A3** A61P US GOVERNMENT
VACCINES AGAINST AIDS COMPRISING CMV/R-NUCLEIC ACID CONSTRUCTS

134. **WO2006009746A2** C12N WYETH CORP
PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

135. **WO2006009746A3** C12N WYETH CORP
PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

136. **WO2006009746A9** C12N WYETH CORP
PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

137. **WO2005027844A2** C12N UNIV KANSAS MEDICAL CT
DNA VACCINE COMPOSITIONS AND METHODS OF USE

138. **WO2005027844A3** C12N UNIV KANSAS MEDICAL CT
DNA VACCINE COMPOSITIONS AND METHODS OF USE

139. **WO2005027840A2** A61K CHIRON CORP
COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

140. **WO2005026316A2** C12N BIOPTION AB
ALPHAVIRUS VACCINES

141. **WO2005026316A3** C12N BIOPTION AB
ALPHAVIRUS VACCINES

142. **WO2005026316A8** C12N BIOPTION AB
ALPHAVIRUS VACCINES

143. **WO2005034992A2** C07K US GOVERNMENT
MECHANISMS FOR IMPROVING THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV

144. **WO2005034992A3** C07K US GOVERNMENT
HIV VACCINES BASED ON ENV OF MULTIPLE CLADES OF HIF

145. **WO2005016378A1** C07K ALL INDIA INST MED
AN IMMUNODEFICIENCY VIRUS (HIV) DNA VACCINE AND TO THE PROCESS OF PREPARATION THEREOF

146. **WO2004050856A2** C07K UNIV MASSACHUSETTS
POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

147. **WO2004050856A3** C07K UNIV MASSACHUSETTS
POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

148. **WO2004067020A1** A61K UNIV POHANG
DNA VACCINE COMPOSITION WITH ENHANCED IMMUNOGENICITY

149. **WO2004037847A2** C07K CHIRON CORP
HIV ENVELOPE-CD4 COMPLEXES AND HYBRIDS

150. **WO2004037847A3** C07K CHIRON CORP
HIV ENVELOPE-CD4 COMPLEXES AND HYBRIDS

151. **WO2004032860A2** C12Q CHIRON CORP
HIV VACCINE FORMULATIONS

152. **WO2004032860A3** C12Q CHIRON CORP
HIV VACCINE FORMULATIONS

153. **WO2004041851A2** C12N GLAXO GROUP LTD
VACCINE

154. **WO2004041851A3** C12N GLAXO GROUP LTD
VACCINE

155. **WO2004035006A2** C12N AARON DIAMOND AIDS RES CT
METHODS AND COMPOSITIONS FOR IMMUNIZATION AGAINST HIV

156. **WO2004035006A3** C12N AARON DIAMOND AIDS RES CT
METHODS AND COMPOSITIONS FOR IMMUNIZATION AGAINST HIV

157. **WO2003080112A2** A61K POWDERJECT RES LTD
ADJUVANT

158. **WO2003080112A3** A61K POWDERJECT RES LTD
IMIDAZOQUINOLINEAMINES AS ADJUVANTS IN HIV DNA VACCINATION

159. **WO2003076591A2** C12N UNIV EMORY
COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

160. **WO2003076591A3** C12N UNIV EMORY
COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

161. **WO2003076591A8** C12N UNIV EMORY
COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

162. **WO2003045304A2** C12N MAYO FOUNDATION
MUTABLE VACCINES

163. **WO2003045304A3** C12N MAYO FOUNDATION
MUTABLE VACCINES

164. **WO2003025003A2** C12N GLAXO GROUP LTD
VACCINES

165. **WO2003025003A3** C12N GLAXO GROUP LTD
HIV-GAG CODON-OPTIMISED DNA VACCINES

166. **WO2003004657A1** C07K CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE B AND/OR TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

167. **WO2003037919A2** C12N SOUTH AFRICAN MEDICAL RES COUN
HIV-1 SUBTYPE ISOLATE REGULATORY/ACCESSORY GENES, AND MODIFICATIONS AND DERIVATIVES THEREOF

168. **WO2003037919A3** C12N SOUTH AFRICAN MEDICAL RES COUN
HIV-1 SUBTYPE ISOLATE REGULATORY/ACCESSORY GENES, AND MODIFICATIONS AND DERIVATIVES THEREOF

169. **WO2003011334A1** A61K GLAXOSMITHKLINE BIOLOG SA
VACCINE COMPRISING GP120 AND NEF AND/OR TAT FOR THE IMMUNISATION AGAINST HIV

170. **WO2002099101A1** C07K US GOVERNMENT
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

171. **WO2002004493A2** C07K CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

172. **WO2002004493A3** C07K CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

173. **WO2001054719A2** C12N SMITHKLINE BEECHAM BIOLOG
NOVEL USE

174. **WO2001054719A3** C12N SMITHKLINE BEECHAM BIOLOG
VACCINE FOR THE PROPHYLACTIC OR THERAPEUTIC IMMUNIZATION AGAINST HIV

175. **WO2001045748A1** A61K MERCK CO INC
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

176. **WO2001082964A1** A61K US HEALTH
IMPROVED IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

177. **WO2001082962A2** C07K AVENTIS PASTEUR
IMMUNIZING AGAINST HIV INFECTION

178. **WO2001082962A3** C07K AVENTIS PASTEUR
IMMUNIZING AGAINST HIV INFECTION

179. **WO2001046408A2** C07K US HEALTH
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

180. **WO2001046408A3** C07K US HEALTH
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

181. **WO2001046408A9** C07K US GOVERNMENT
MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

182. **WO2001043693A2** A61K MERCK CO INC
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

183. **WO2001043693A3** A61K MERCK CO INC
POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

184. **WO2001026608A2** C12P LEDBETTER JEFFREY A
DNA VACCINES ENCODING ANTIGEN LINKED TO A DOMAIN THAT BINDS CD40

185. **WO2001026608A3** C12P LEDBETTER JEFFREY A
DNA VACCINES ENCODING ANTIGEN LINKED TO A DOMAIN THAT BINDS CD40

186. **WO2001000648A1** C07K PROGENICS PHARM INC
STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

187. **WO2001019958A2** C07K DANA FARBER CANCER INST INC
STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

188. **WO2001019958A3** C07K DANA FARBER CANCER INST INC
STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

189. **WO2001019958A9** C07K DANA FARBER CANCER INST INC
STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

190. **WO2001002607A1** C12N MERCK CO INC
ADENOVIRUS CARRYING GAG GENE HIV VACCINE

191. **WO2000071561A1** C12N UNIV PENNSYLVANIA
CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

192. **WO2000071561A9** C12N TRUSTEES OF THE UNIVERSITY OF
CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

193. **WO2000039303A2** C07K CHIRON CORP
MODIFIED HIV ENV POLYPEPTIDES

194. **WO2000039303A3** C07K CHIRON CORP
MODIFIED HIV ENV POLYPEPTIDES

195. **WO2000047223A2** A61P STRATHMANN AG CO
VIRAL VACCINE

196. **WO2000047223A3** A61P STRATHMANN AG CO
VIRAL VACCINE

197. **WO2000034494A1** C07K US HEALTH
A RECOMBINANT VECTOR EXPRESSING MULTIPLE COSTIMULATORY MOLECULES AND USES THEREOF

198. **WO2000039304A2** A61P CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

199. **WO2000039304A3** A61P CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

200. **WO2000039304A9** A61P CHIRON CORP
POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

201. **WO2000029561A2** C12N STATENS SERUMINSTITUT
METHOD FOR PRODUCING A NUCLEOTIDE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE BX08 CONSTRUCTS

202. **WO2000029561A3** C12N STATENS SERUMINSTITUT
NUCLEOTIDE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE

203. **WO2000029561A8** C12N STATENS SERUMINSTITUT
METHOD FOR PRODUCING A NUCLEOTIDE SEQUENCE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE BX08 CONSTRUCTS

204. **WO2000002591A1** A61K MERCK CO INC
POLYNUCLEOTIDE VACCINE FORMULATIONS

205. **WO1999027958A2** A61P IST SUPERIORE SANITA
HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

206. **WO1999027958A3** A61P IST SUPERIORE SANITA
HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

207. **WO1999027958A9** A61P IST SUPERIORE SANITA
HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

208. **WO1998035562A1** A61K MERCK CO INC
POLYNUCLEOTIDE VACCINE FORMULATIONS

209. **WO1998034640A2** C07K MERCK CO INC
SYNTHETIC HIV

210. **WO1998034640A3** C07K MERCK CO INC
SYNTHETIC HIV GAG GENES

211. **WO1997048370A2** C12N MERCK CO INC
VACCINES COMPRISING SYNTHETIC GENES

212. **WO1997048370A3** C12N MERCK CO INC
VACCINES COMPRISING SYNTHETIC GENES

213. **WO1997031115A2** A61P MERCK CO INC
SYNTHETIC HIV GENES

214. **WO1997031115A3** A61P MERCK CO INC
SYNTHETIC HIV GENES

215. **WO1995020660A2** A61K UNIV MASSACHUSETTS MEDICAL
IMMUNIZATION BY INOCULATION OF DNA TRANSCRIPTION UNIT

216. **WO1995020660A3** A61K UNIV MASSACHUSETTS MEDICAL
IMMUNIZATION BY INOCULATION OF DNA TRANSCRIPTION UNIT

217. **WO1994022477A1** A61P PROGENICS PHARM INC
HIV-1 VACCINES, ANTIBODY COMPOSITIONS RELATED THERETO, AND THERAPEUTIC AND PROPHYLACTIC USES THEREOF

218. **WO1994017825A1** C12N UNIV CALIFORNIA
MULTIPLE-GENE MUTANTS OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) FOR VACCINE USE

GENOME OF THE HIV-1 INTER-SUBTYPE (C/B') AND USE THEREOF

[71] Applicant: GENEART AG

[75] Inventors: Wagner, Ralf; Wolf, Hans; Graf, Marcus

[21] Application No.: NA

[22] Filed: 20060519

[43] Published: 20080129

[30] Priority: DE DE19955089A 19991116 ...

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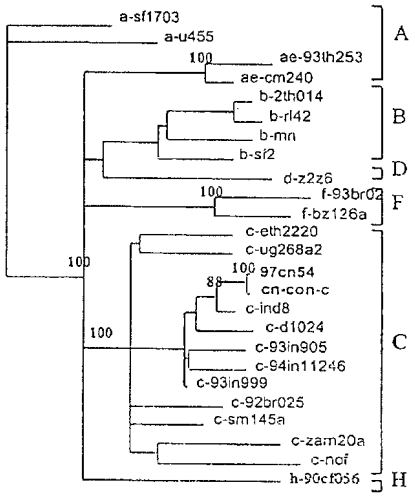
Fig. 1



[57] Abstract:

The present invention refers to a polynucleotide comprising the nucleic acid sequence as depicted in SEQ ID NO:1, 2 or 3 or the fragment or derivative thereof, or a polynucleotide hybridizing with the nucleic acid sequence as depicted in SEQ ID NO:1, 2 or 3. The present invention further refers to polypeptides encoded by the nucleic acid sequence or the fragment or derivative thereof as depicted in SEQ ID NO:1, 2 or 3. The polynucleotides and polypeptides may be used as medicaments, vaccines or diagnostic substances, preferably for the treatment, prevention or diagnostic of HIV infections.

[52] US Class: 5360231 4353201

[51] Int'l Class: C12N001511 C12N001509 C07H002104 C07K001416 C12N001563 A61K003900

[52] ECLA: C07K001416 K61K003900 K61K003953 M07K020300 M07K020700 M07K021500

HUMAN IMMUNODEFICIENCY VIRUS (HIV) NUCLEOTIDE SEQUENCES, RECOMBINANT POLYPEPTIDES, AND APPLICATIONS THEREOF

[71] Applicant: NOVARTIS VACCINES DIAGNOSTIC

[75] Inventors: Luciw, Paul A.; Dina, Dino

[21] Application No.: NA

[22] Filed: 19950517

[43] Published: 20070417

[30] Priority: US US1984667501A 19841031 ...

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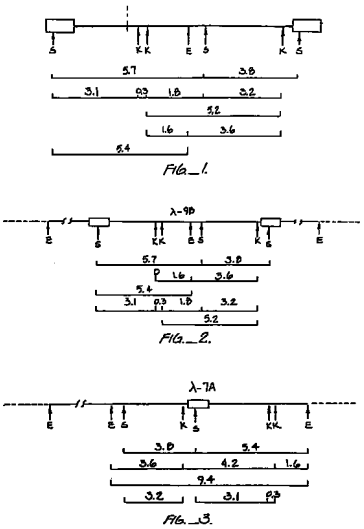

[57] Abstract:

Polynucleotide sequences are provided for the diagnosis of the presence of retroviral infection in a human host associated with lymphadenopathy syndrome and/or acquired immune deficiency syndrome, for expression of polypeptides and use of the polypeptides to prepare antibodies, where both the polypeptides and antibodies may be employed as diagnostic reagents or in therapy, e.g., vaccines and passive immunization. The sequences provide detection of the viral infectious agents associated with the indicated syndromes and can be used for expression of antigenic polypeptides.

[52] US Class: 435005 4350691 4350693 4352351 4353201 435948 435974 5360231 53602372 5360243

[51] Int'l Class: C12N001548 C12N000902 C12N001581 C07K001416 C12N001585 C12N001500 C12Q000170 C12N001509 A61K003800

[52] ECLA: C07K001416 C12N000902M C12N001581 C12N001585 C12Q000170B2B K61K003800 M07K020300 M07K020700 M07K021500 M07K031900 M07K031900E M12N083000 M12N083015 M12N083055 M12N083070A M12N083070A1

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP

[75] Inventors: zur Megede, Jan; Barnett, Susan

[21] Application No.: NA

[22] Filed: 20020705

[43] Published: 20070501

[30] Priority: US US2001303192P 20010705 ...

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Figure 1A

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV polypeptides. Uses of the polynucleotides in applications including immunization, generation of packaging cell lines, and production of HIV polypeptides are also described. Polynucleotides encoding antigenic HIV polypeptides are described, as are uses of these polynucleotides and polypeptide products therefrom, including formulations of immunogenic compositions and uses thereof.

[52] US Class: 53602372 4240092 4241921 4241991 4242081 435005 435006 4350697 4350701 5360234

[51] Int'l Class: C07K001416 C12N0015867 C12P001904 A61K003921 C07H002104 A61K003912 C12Q000168 A61K003900 A61K003800 C12Q000170 A61K004900

[52] ECLA: C07K001416 C12N0015867P K61K003900 K61K003953 M07K020700 M07K022124 M12N080010E M12N083042 M12N084020A

DNA VECTORS CONTAINING MUTATED HIV PROVIRUSES

[71] Applicant: CHILDRENS MEDICAL CENTER

[75] Inventors: Aldovini, Anna

[21] Application No.: NA

[22] Filed: 20011023

[43] Published: 20061017

[30] Priority: US US2000242589P 20001023 ...

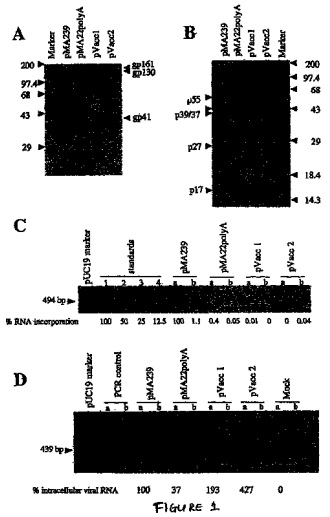

FIGURE 1.

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[57] Abstract:

The present invention pertains to mutated, non-infectious HIV viral particles, vectors for production of such particles and vaccines employing such vectors. The non-infectious particles are obtained by introducing a number of inactivating mutations into a native viral genome. These mutations are designed so as to minimize the probability of genetic reversion to an infectious virus, while retaining the basic protein content and immunogenic properties of a wild-type virion. The altered viral genome expresses proteins that can assemble into non-infectious particles which contain immunogenic components of the virus, but which are unable to infect cells. The preferred mutations are introduced in at least one amino acid position of the nucleocapsid (NC) protein in combination with at least one other mutation in an amino acid position of the reverse transcriptase (RT) protein or the In protein. In one embodiment, the mutations to the native HIV genome may also be made in at least one amino acid position of the NC protein, at least one position in the RT protein, and at least one position in the integrase (In) protein. In another embodiment, the mutations to the native HIV genome may be introduced in clusters, where two or more mutations are made in the NC protein, the RT protein, the In protein, or any combinations thereof.

[52] US Class: 4240932 514044 4353201 435456 435366 5360241 53602372

[51] Int'l Class: C12N000508 C07H002104 C12N001586 A61K003921 C12N0015867 C07K001416 A61K003170 A61K004800 C12N000100

[52] ECLA: A61K003921 C07K001416B C12N0015867 K61K003953 M07K022124

IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

[71] Applicant: US GOVERNMENT

[75] Inventors: Franchini, Genoveffa; Hel, Zdenek; Pavlakis, George

[21] Application No.: NA

[22] Filed: 20021025

[43] Published: 20060822

[30] Priority: US US2000200444P 20000428 ...

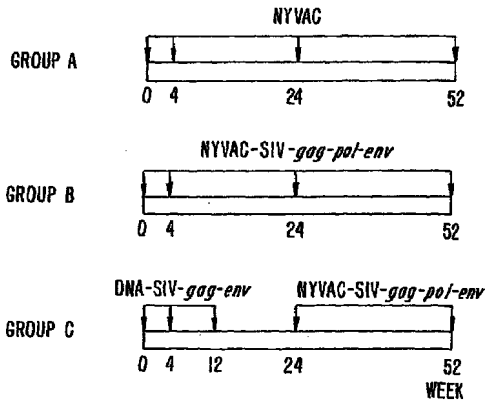


FIG. 1.

Go to Fulltext

[57] Abstract:

This invention relates to improved methods of inducing an immune response for the prevention or treatment of HIV-1 infection by using a nucleic acid vaccine in conjunction with a recombinant viral vaccine, e.g., a poxvirus vaccine, to potentiate and broaden the immune response. The present invention further provides a particularly effective vaccine regimen comprising a DNA vaccine used in combination with a poxvirus virus, especially NYVAC or ALVAC.

[52] US Class: 4241921 4241881 4242081 4352351 4353201 514044 530826 53602372

[51] Int'l Class: A61K003921 A61K003900

[52] ECLA: A61K003921 K61K0039525C K61K003953

NON-INFECTIOUS, NON-REPLICATING, IMMUNOGENIC HUMAN IMMUNODEFICIENCY VIRUS-LIKE PARTICLES

[71] Applicant: AVENTIS PASTEUR

[75] Inventors: Haynes, Joel;
Klein, Michel Henri;
Rovinski, Benjamin; Cao, . . .

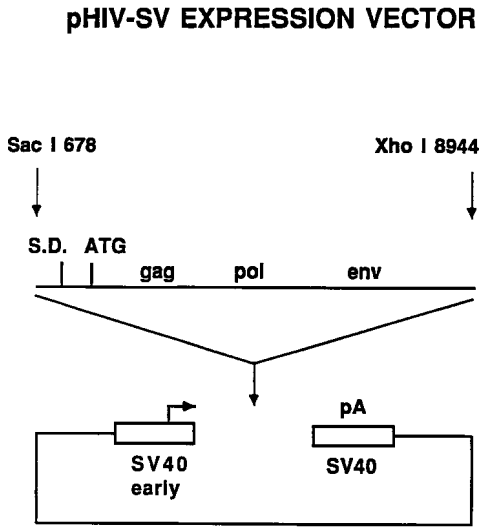
[21] Application No.: NA

[22] Filed: 19990903

[43] Published: 20060307

[30] Priority: GB GB198923123A 19891013 ...

Go to Fulltext



[57] Abstract:

The present invention is directed toward methods for the production of non-infectious, replication-deficient, immunogenic human immunodeficiency virus (HIV)-like particles. These particles are prepared from a recombinant expression vector comprising a heterologous promoter operatively connected to a DNA molecule comprising a modified HIV genome devoid of the long terminal repeat (LTR) regulatory regions but containing at least the gag and pol genes in their natural genomic arrangement. This vector is introduced into mammalian cells to produce the particles of interest. These particles should prove useful in a number of diagnostic, virologic, and immunologic applications.

[52] US Class: 435236 4241881 4242081 435238 4353201

[51] Int'l Class: C07K001416 C12N000704 A61K003900

[52] ECLA: C07K001416 K61K003900 M07K020300 M07K020700

RECOMBINANT POXVIRUSES HAVING FOREIGN DNA EXPRESSED UNDER THE CONTROL OF POXVIRUS REGULATORY SEQUENCES

[71] Applicant: US HEALTH

[75] Inventors: Moss, Bernard; Mackett, Michael; Smith, Geoffrey L.

[21] Application No.: NA

[22] Filed: 19950606

[43] Published: 20060214

[30] Priority: US US1982445451A 19821130 ...

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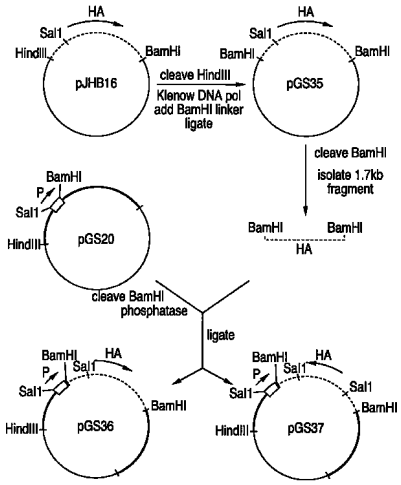
FIG. 1



[57] Abstract:

Recombinant poxviruses, such as vaccinia, are provided that comprises a segment comprised of (A) a first DNA sequence encoding a polypeptide that is foreign to poxvirus and (B) a poxvirus transcriptional regulatory sequence, wherein (i) said transcriptional regulatory sequence is adjacent to and exerts transcriptional control over said first DNA sequence and (ii) said segment is positioned within a nonessential genomic region of said recombinant poxvirus. Vaccines, carriers, cells, and media comprising recombinant poxviruses, and methods of immunization with recombinant poxviruses also are provided.

[52] US Class: 4350691 4350693 4350914 43509141 4352351 4353201

[51] Int'l Class: C12N000910 C07K0014035 C12N001509 C07K001402 C12N001564 C07K001407 C12N0015863 C12N000701 A61K003900

[52] ECLA: C07K001402 C07K0014035 C07K001407 C12N000910C1A28 C12N0015863V K61K003900 M07K020700

CLONED DNA SEQUENCES RELATED TO THE GENOMIC RNA OF LYMPHADENOPATHY-ASSOCIATED-VIRUS (LAV) AND PROTEINS ENCODED BY SAID LAV GENOMIC RNA

[71] Applicant: CENTRE NAT RECH SCIENT

[75] Inventors: Alizon, Marc; Sonigo, Pierre; Stewart, Cole; Danos, Oliver; Wain . . .

[21] Application No.: NA

[22] Filed: 19940225

[43] Published: 20050517

[30] Priority: GB GB198429099A 19841116 ...

Go to Fulltext

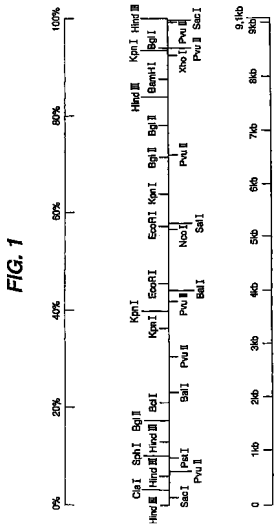


FIG. 1

[57] Abstract:

This invention is in the field of lymphadenopathy virus which has been designated Human Immunodeficiency Virus Type 1 (HIV-1). This invention relates to a diagnostic means and method to detect the presence of DNA, RNA or antibodies of the lymphadenopathy retrovirus associated with the acquired immune deficiency syndrome or of the lymphadenopathy syndrome by the use of DNA fragments of the peptides encoded by said DNA fragments. The invention further relates to the DNA fragments, vectors comprising them and the proteins expressed.

[52] US Class: 5360231 435005 435006 5360243

[51] Int'l Class: C12Q000168 C07H002102

[52] ECLA:

ENHANCING IMMUNE RESPONSES TO GENETIC IMMUNIZATION BY USING A CHEMOKINE

[71] Applicant: CHIRON CORP

[75] Inventors: Paliard, Xavier

[21] Application No.: NA

[22] Filed: 20001019

[43] Published: 20050719

[30] Priority: US US199882600P 19980422 ...

Go to Fulltext

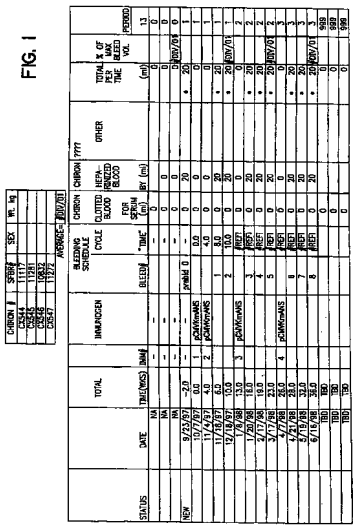


FIG. 1

[57] Abstract:

The immune response to a DNA immunogen in a mammal can be enhanced by administration of a chemokine or a polynucleotide encoding the chemokine. This method can be used, for example, to immunize or vaccinate a mammal against an infectious disease or a tumor.

[52] US Class: 514044 4241841 4241881 4241891 4353201 514002 530350

[51] Int'l Class: A61K004800 A61K003843 C07K001400 A61K003819 A61K003800 C12N001574

[52] ECLA: A61K003921 A61K003819 A61K003929 K61K003953 K61K0039555B2 M12N074003F M12N077017C

AIDS DNA VACCINE THAT PREVENTS SIVMAC239 VIRUS INFECTION IN MONKEYS

[71] Applicant: GENEXINE CO LTD;
UNIV POHANG

[75] Inventors: Sung, Young Chul;
Suh, You Suk

[21] Application No.: NA

[22] Filed: 20001206

[43] Published: 20041116

[30] Priority: KR KR199955129A 19991206 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to a plasmid carrying simian immunodeficiency virus (SIV)-derived genes. Particularly, the present invention relates to the plasmid pSIV/GE which carrys gag, protease, env and rev gene, all derived from SIV, but not tat and nef gene and the plasmid pSIV/pol which carrys SIV-derived pol gene; the plasmid pHIV/GE and pHIV/pol that are substituted the SIV-derived genes in the plasmid pSIV/GE and pSIV/pol by human immunodeficiency virus (HIV)-derived corresponding genes; DNA vaccine containing the plasmid pSIV/GE and pSIV/pol; and DNA vaccine containing the plasmid pHIV/GE and pHIV/pol. The present invention offers AIDS DNA vaccines which successfully exert perfect medicinal efficacy on primates, giving a measure of success in developing effective AIDS DNA vaccines applicable to humans. The plasmid of the present invention can be effectively used for not only AIDS prevention by AIDS infection but also therapeutic agent for AIDS.

[52] US Class: 4353201 4240932 4240936 4241841 4241881 435325 435455 514044

[51] Int'l Class: C07K001416 C07K0014155 C07K0014035

[52] ECLA: C07K0014035 C07K0014155 C07K001416 C07K001416B M07K020700 M07K031900 M61K003953

ALPHAVIRUS VECTORS AND VIROSOMES WITH MODIFIED HIV GENES FOR USE IN VACCINES

[71] Applicant: ALPHAVAX INC; UNIV NORTH CAROLINA

[75] Inventors: Olmsted, Robert; Keith, Paula; Dryga, Sergey; Caley, Ian; Maughan, . . .

[21] Application No.: NA

[22] Filed: 20011116

[43] Published: 20040831

[30] Priority: US US2000216995P 20000707 ...

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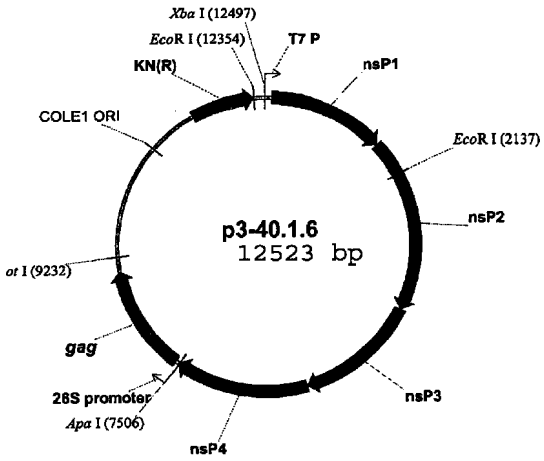


[57] Abstract:

The present invention provides methods and compositions comprising a population of alphavirus replicon particles comprising two or more isolated nucleic acids selected from 1) an isolated nucleic acid encoding an env gene product or an immunogenic fragment thereof of a human immunodeficiency virus, 2) an isolated nucleic acid encoding a gαg gene product or an immunogenic fragment thereof of a human immunodeficiency virus, wherein the gαg gene product or immunogenic fragment thereof is modified to inhibit formation of virus-like particles containing the gαg gene product or the immunogenic fragment thereof and their release from a cell, and 3) an isolated nucleic acid encoding a pol gene product or an immunogenic fragment thereof of a human immunodeficiency virus, wherein the pol gene product or immunogenic fragment thereof is modified to inhibit protease, integrase, RNase H and/or reverse transcriptase activity, and wherein the nucleic acids are each contained within a separate alphavirus replicon particle.

[52] US Class: 435006 4241921 4242081 435005 4350697 4353201 4353391 5360231 53602372

[51] Int'l Class: C07K001418 C07K001416 C12N000702 A61K003921 A61K003900

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001418A C12N000702 K61K003900 K61K0039525C M07K020700 M07K022100 M12N077016A

NONINVASIVE GENETIC IMMUNIZATION, EXPRESSION PRODUCTS THEREFROM, AND USES THEREOF

[71] Applicant: UAB RESEARCH FOUNDATION

[75] Inventors: Tang, De chu C.; Marks, Donald H.; Curiel, David T.; Shi, Zhongkai

[21] Application No.: NA

[22] Filed: 20000323

[43] Published: 20040406

[30] Priority: US US199755520P 19970813 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Disclosed and claimed are methods of non-invasive genetic immunization in an animal and/or methods of inducing a systemic immune or therapeutic response in an animal, products therefrom and uses for the methods and products therefrom. The methods can include contacting skin of the animal with a vector in an amount effective to induce the systemic immune or therapeutic response in the animal. The vector can include and express an exogenous nucleic acid molecule encoding an epitope or gene product of interest. The systemic immune response can be to or from the epitope or gene product. The nucleic acid molecule can encode an epitope of interest and/or an antigen of interest and/or a nucleic acid molecule that stimulates and/or modulates an immunological response and/or stimulates and/or modulates expression, e.g., transcription and/or translation, such as transcription and/or translation of an endogenous and/or exogenous nucleic acid molecule; e.g., one or more of influenza hemagglutinin, influenza nuclear protein, influenza M2, tetanus toxin C-fragment, anthrax protective antigen, anthrax lethal factor, rabies glycoprotein, HBV surface antigen, HIV gp 120, HIV gp 160, human carcinoembryonic antigen, malaria CSP, malaria SSP, malaria MSP, malaria pfg, and mycobacterium tuberculosis HSP; and/or a therapeutic, an immunomodulatory gene, such as co-stimulatory gene and/or a cytokine gene. The immune response can be induced by the vector expressing the nucleic acid molecule in the animal's cells. The animal's cells can be epidermal cells. The immune response can be against a pathogen or a neoplasm. A prophylactic vaccine or a therapeutic vaccine or an immunological composition can include the

[52] US Class: 514044 42409321 4353201 435375

[51] Int'l Class: A61K004800 A61K0039145 A61K003908 A61K003900

[52] ECLA: A61K003900 A61K003900D6 A61K003908 A61K0039145 A61K004800 K61K003953 K61K003954A K61K003954A1 K61K003954A2

SYNTHETIC HIV GAG GENES

[71] Applicant: MERCK CO INC

[75] Inventors: Shiver, John W.; Freed, Daniel C.; Davies, Mary Ellen; Liu, Margaret A. . . .

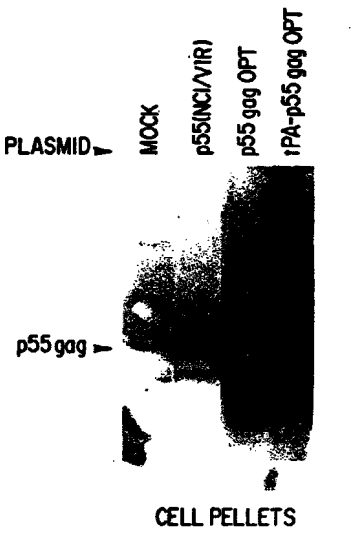
[21] Application No.: NA

[22] Filed: 20011009

[43] Published: 20040224

[30] Priority: US US199737854P 19970207 ...

Go to Fulltext



[57] Abstract:

Synthetic DNA molecules encoding HIV gag and modifications of HIV gag are provided. The codons of the synthetic molecules are codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through stimulation of neutralizing antibody and cell-mediated immunity.

[52] US Class: 4353391 435005 435006 435325 5360231

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416B K61K003900 M07K020300 M07K020700 M07K031902

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US HEALTH

[75] Inventors: Pavlakis, George N.

[21] Application No.: NA

[22] Filed: 20010601

[43] Published: 20031202

[30] Priority: US US1999173036P 19991223 ...

[No drawing]

Go to Fulltext

[57] Abstract:

Nucleic acid constructs containing HIV-1 gag/pol and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numerous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class: 4350691 4240932 4350914 4352523 4353201 435325 435455 514044 5360231

[51] Int'l Class: C12N000700 C07K0014155 C12N0015867 C07K001416 A61K003921 C12N000508 A61K004800 A61K003900

[52] ECLA: A61K003921 C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N074003F M12N083042 M12N083048 M12N083050 M12N084010C M12N084020

METHOD FOR PRODUCING A NUCLEOTIDE SEQUENCE CONSTRUCT WITH OPTIMIZED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV

[71] Applicant: STATENS SERUMINSTITUT

[75] Inventors: Fomsgaard, Anders

[21] Application No.: NA

[22] Filed: 20000329

[43] Published: 20031118

[30] Priority: DK DK1999427A 19990329 ...

Go to Fulltext

Amino acid	One letter amino acid code	Three letter amino acid code	Codon
Alanine	A	Ala	GCC
Arginine	R	Arg	CGC
Aspargine	N	Asn	AAC
Aspartic acid	D	Asp	GAC
Cysteine	C	Cys	TGC
Glutamine	Q	Gln	CAG
Glutamic acid	E	Glu	GAG
Glycine	G	Gly	GGC
Histidine	H	His	CAC
Isoleucine	I	Ile	ATC
Leucine	L	Leu	CTG
Lysine	K	Lys	AAG
Proline	P	Pro	CCC
Phenylalanine	F	Phe	TTC
Serine	S	Ser	AGC
Threonine	T	Thr	ACC
Tyrosine	Y	Tyr	TAC
Valine	V	Val	GTG

[57] Abstract:

The present invention relates to a method for producing a nucleotide sequence construct with optimized codons for an HIV genetic vaccine based on a primary, early HIV isolate. Specific such nucleotide sequence construct are the synthetic envelope BX08 constructs. The invention further relates to the medical use of such constructs for the treatment and prophylaxis of HIV through DNA vaccine and for diagnostics.

[52] US Class: 4353391 4242081 4350691 435325 53602372

[51] Int'l Class: C12N000506 C12N000500 C12N000700 C07H002104 A61K003921 C12P002106

[52] ECLA: C12N000700 A61K003921 M12N074003F

NUCLEOTIDE VECTOR COMPOSITION CONTAINING SUCH VECTOR AND VACCINE FOR IMMUNIZATION AGAINST HEPATITIS

[71] Applicant: PASTEUR INSTITUT; INST NAT SANT ET DE LA RECH ME; UNIV D OTTAWA

[75] Inventors: Davis, Heather Lynn; Whalen, Robert Gerald; Michel, Marie Louise

[21] Application No.: NA

[22] Filed: 19980902

[43] Published: 20031021

[30] Priority: FR FR199312659A 19931022 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to methods of inducing an immunogenic response in a subject that include administering a nucleotide plasmid vector that includes a gene coding for a surface antigen protein derived from hepatitis B virus and a promoter for the expression of the gene. The invention also relates to vaccine compositions for protecting against hepatitis B virus.

[52] US Class: 514044 4353201

[51] Int'l Class: C07K001402 A61K003929 A61K004800 A61K003900

[52] ECLA: A61K003929B C07K001402 K61K003900 K61K004800 M07K020700

ADJUVANT COMPOSITIONS AND METHODS FOR ENHANCING IMMUNE RESPONSES TO POLYNUCLEOTIDE-BASED VACCINES

[71] Applicant: VICAL INC

[75] Inventors: Wheeler, Carl J.

[21] Application No.: NA

[22] Filed: 20000324

[43] Published: 20030701

[30] Priority: US US1999126340P 19990326 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides adjuvants, immunogenic compositions, and methods useful for polynucleotide-based vaccination and immune response. In particular, the invention provides an adjuvant of cytofectin:co-lipid mixture wherein cytofectin is GAP-DMORIE.

[52] US Class: 514044 424450 435006 4353201 435455 530323 560155 560224 560252 977802

[51] Int'l Class: A61K003939 A61K0009127 A61K000900

[52] ECLA: A61K0009127B2 A61K003939 K61K003953 K61K0039555B

VACCINES

[71] Applicant: SMITHKLINE BEECHAM BIOLOG

[75] Inventors: Friede, Martin; Garcon, Nathalie; Gerard, Catherine Marie Ghislaine; . . .

[21] Application No.: NA

[22] Filed: 20001018

[43] Published: 20030408

[30] Priority: GB GB19998885A 19990419 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to adjuvant compositions which are suitable to be used in vaccines. In particular, the adjuvant compositions of the present invention comprises a saponin and an immunostimulatory oligonucleotide, optionally with a carrier. Also provided by the present invention are vaccines comprising the adjuvants of the present invention and an antigen. Further provided are methods of manufacture of the adjuvants and vaccines of the present invention and their use as medicaments. Methods of treating an individual susceptible to or suffering from a disease by the administration of the vaccines of the present invention are also provided.

[52] US Class: 4241841 4242081 4242281 4242291 4242311 4242491 4242781 4242831 514025

[51] Int'l Class: A61K003921 A61P003302 A61K0039112 A61P002528 A61K003900 A61P003500 A61K00317088 A61P003104 C12N001509 A61P003704 A61P000910 A61K003925 A61P004300 A61K0039102 A61K003902 A61K003912 A61K0039245 A61P003300 A61K003929 A61K003939 A61K0039118 A61K0039095 A61P003708 A61P003112 A61K0039145 A61K003910

[52] ECLA: A61K003900D6 A61K003939 K61K0039555A K61K0039555B5 K61K0039555B7 K61K0039555B8 K61K0039555B13

CONDITIONALLY CONTROLLED, ATTENUATED HIV VACCINE

[71] Applicant: INFECTIOUS DISEASES FOUNDATION

[75] Inventors: Smith, Stephen M.

[21] Application No.: NA

[22] Filed: 20000725

[43] Published: 20030401

[30] Priority: US US1999146085P 19990728 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A live attenuated human immunodeficiency virus type 1 (HIV-1) whose replication is not constitutive but is instead conditionally regulated (such that rounds of reverse transcription with accompanying potential for error are strictly limited) might yield a paradigm that minimizes evolution to virulence and facilitate vaccine development. We have broached the concept of conditional control of HIV-1 through gain-of-function. Here, we describe the design of constitutively inactive HIV-1 genomes (HIV-DoxT and HIV-DoxSp) which can be conditionally resuscitated to an active state by tetracycline or related analogues. The HIV-DoxT construct comprises an inactivating mutation engineered into TAR, thereby rendering the virus non-responsive to Tat, a 302-bp DNA fragment (TetopT) which contains the tet-operator ligated into a position upstream of the HIV TATAA box, in both the 5' and 3' LTRs, and a reverse tetracycline-controlled activator (RTTA) coding sequence in place of the nef coding region. The HIV-DoxSp construct contains three additional Sp1 sites in the TetopT promoter upstream of the TATAA box thereby generating the promoter TetopSp. Genotypically, HIVDoxT is tat(+)tar(-)nef(-)Sp1(-) and HIVDoxSp is tat(+)tar(-)nef(-)Sp1(+). Since both genomes are genetically tar(-), they would ordinarily be expected to be wholly defective in producing viral proteins and/or particles. However, following transfection into an appropriate cell target, both proviruses, in a doxycycline-dependent fashion, capably released Gag and RT from cells. In the absence of doxycycline, no replication competent virus could be recovered. These findings suggest that the

[52] US Class: 4241881 4242081 435236

[51] Int'l Class: C12N001585 C12N000704 A61K003921 C12N0015867

[52] ECLA: A61K003921 C12N000704 C12N001585 C12N0015867 K61K0039525B M12N074003F M12N083000A1A

VACCINES COMPRISING SYNTHETIC GENES

[71] Applicant: MERCK CO INC

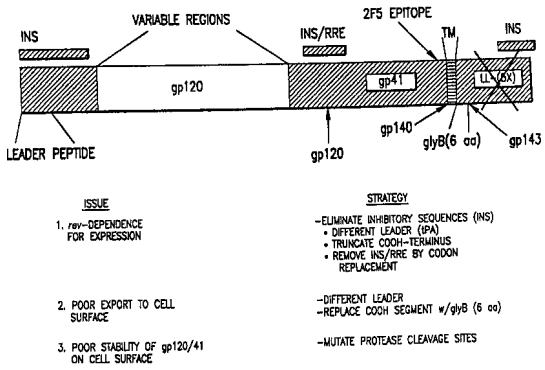
[75] Inventors: Shiver, John W.; Davies, Mary Ellen; Freed, Daniel C.; Liu, Margaret A.; . . .

[21] Application No.: NA

[22] Filed: 19990628

[43] Published: 20030318

[30] Priority: US US199612082P 19960222 ...



Go to Fulltext

[57] Abstract:

Synthetic polynucleotides comprising a DNA sequence encoding a peptide or protein are provided. The DNA sequence of the synthetic polynucleotides comprise codons optimized for expression in a nonhomologous host. The invention is exemplified by synthetic DNA molecules encoding HIV env as well as modifications of HIV env. The codons of the synthetic molecules include the projected host cell's preferred codons. The synthetic molecules provide preferred forms of foreign genetic material. The synthetic molecules may be used as a polynucleotide vaccine which provides immunoprophylaxis against HIV infection through neutralizing antibody and cell-mediated immunity. This invention provides polynucleotides which, when directly introduced into a vertebrate in vivo, including mammals such as primates and humans, induces the expression of encoded proteins within the animal.

[52] US Class: 435339 4242081 435005 435006 4350697 5360234

[51] Int'l Class: C12N001567 C07K001416

[52] ECLA: C07K001416D C12N001567 K61K003951 M07K020700 M07K031900

METHODS FOR INCREASING A CYTOTOXIC T LYMPHOCYTE RESPONSE IN VIVO

[71] Applicant: UNIV CALIFORNIA;
US DEPT OF VETERANS AFFAIRS

[75] Inventors: Raz, Eyal; Cho,
Hearn Jay; Richman, Douglas;
Horner, Anthony A.

[21] Application No.: NA

[22] Filed: 20010328

[43] Published: 20030318

[30] Priority: US US2000192537P 20000328 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides methods for T helper-independent activation of an antigen-specific cytotoxic T lymphocyte response in an individual. The methods generally involve administering to an individual an immunostimulatory nucleic acid molecule in an amount effective to increase an antigen-specific CTL response in the individual. The invention further provides methods for increasing chemokine secretion, which can block HIV infection.

[52] US Class: 4241931 5360231 5360241

[51] Int'l Class: A61K0039385 A61K003921 A61K003900 A61K003939 C12Q000170

[52] ECLA: A61K003900D6 A61K003921 A61K0039385 A61K003939 K61K003953 K61K003954 K61K003954A2 K61K003955 K61K0039555B7 K61K003957 K61K003960N M12Q000170B2B

CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

[71] Applicant: TRUSTEES OF THE UNIVERSITY OF; UNIV DUKE

[75] Inventors: Hoxie, James A.; LaBranche, Celia C. ; Doms, Robert W.; Hoffman, Trevor . . .

[21] Application No.: NA

[22] Filed: 19990622

[43] Published: 20020716

[30] Priority: US US1999317556A 19990524 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to novel CD4-independent HIV Envelope proteins and uses therefor.

[52] US Class: 53602372 4242081 4350691 4352351 4353201 5360231 5360234

[51] Int'l Class: C07H002104

[52] ECLA:

NONINVASIVE GENETIC IMMUNIZATION, EXPRESSION PRODUCTS THEREFROM AND USES THEREOF

[71] Applicant: UAB RESEARCH FOUNDATION

[75] Inventors: Tang, De chu C.; Marks, Donald H.; Curiel, David T.; Shi, Zhongkai; . . .

[21] Application No.: NA

[22] Filed: 20000503

[43] Published: 20020219

[30] Priority: US US199755520P 19970813 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Disclosed and claimed are methods of non-invasive genetic immunization in an animal and/or methods of inducing a systemic immune or therapeutic response in an animal, products therefrom and uses for the methods and products therefrom. The methods can include contacting skin of the animal with a vector in an amount effective to induce the systemic immune or therapeutic response in the animal. The vector can include and express an exogenous nucleic acid molecule encoding an epitope or gene product of interest. The systemic immune response can be to or from the epitope or gene product. The nucleic acid molecule can encode an epitope of interest and/or an antigen of interest and/or a nucleic acid molecule that stimulates and/or modulates an immunological response and/or stimulates and/or modulates expression, e.g., transcription and/or translation, such as transcription and/or translation of an endogenous and/or exogenous nucleic acid molecule; e.g., one or more of influenza hemagglutinin, influenza nuclear protein, tetanus toxin C-fragment, anthrax protective antigen, HIV gp 120, human carcinoembryonic antigen, and/or a therapeutic, an immunomodulatory gene, such as co-stimulatory gene and/or a cytokine gene. The immune response can be induced by the vector expressing the nucleic acid molecule in the animal's cells. The immune response can be against a pathogen or a neoplasm. A prophylactic vaccine or a therapeutic vaccine or an immunological composition can include the vector.

[52] US Class: 514044 42409321 4353201 435375

[51] Int'l Class: A61K0039145 A61K003908 A61K003900 A61K004800

[52] ECLA: A61K003900 A61K003900D6 A61K003908 A61K0039145 A61K004800 K61K003953 K61K003954A K61K003954A1 K61K003954A2

ATTENUATED LENTIVIRUS VECTORS EXPRESSING INTERFERON

[71] Applicant: UNIV CALIFORNIA

[75] Inventors: Yilma, Tilahun D.; Giavedoni, Luis D.; Luciw, Paul A.

[21] Application No.: NA

[22] Filed: 19950720

[43] Published: 20011204

[30] Priority: US US1995504723A 19950720

Go to Fulltext

[No drawing]

[57] Abstract:

This invention discloses recombinant vectors and live attenuated pathogens produced by these vectors which are useful as vaccines and therapeutic agents. Particularly disclosed are live attenuated recombinant viruses that remain at very low virus loads, and preferably do not persist in the infected hosts. These recombinant viruses are useful against retroviruses such as human immunodeficiency virus and against acquired immunodeficiency diseases. In the recombinant vectors and pathogens, one or more genes, or part of the gene(s), responsible for pathogenesis have been completely or partially rendered nonfunctional, e. g., by full or partial deletion or mutagenesis. Further, the recombinant vectors and pathogens contain one or more genes encoding cytokine(s) and/or lymphokine(s).

[52] US Class: 4242071 4241871 4241991 4242051 4242081 4352351 435236 4353201 514044 530350 5360231 53602372

[51] Int'l Class: A61P003118 A61K003921 C12N0015867 A61K004800

[52] ECLA: A61K003921 C12N0015867 K61K004800

METHOD OF USING MOUSE MODEL FOR EVALUATION OF HIV VACCINES

[71] Applicant: CHANG LUNG-JI

[75] Inventors: Chang, Lung Ji

[21] Application No.: NA

[22] Filed: 19970501

[43] Published: 20010619

[30] Priority: US US1997838702A 19970409 ...

[No drawing]

Go to Fulltext

[57] Abstract:

The present invention provides animals and methods for the evaluation of vaccines. In particular, the present invention provides humanized animal models for the evaluation of vaccines designed to confer immunity against human pathogens, including vaccines directed against the human immunodeficiency virus. The present invention further relates to HIV vaccines. In particular, the present invention provides attenuated replication-competent HIV vaccines and replication-defective HIV vaccines. In addition, the invention provides modified Leishmania cells expressing HIV proteins.

[52] US Class: 514044 4240092 4352351 4353201 435375 800003 800008 800011

[51] Int'l Class: C07K001416 A01K0067027 C12N000704 A61K003900

[52] ECLA: A01K0067027B C07K001416 C12N000704 K61K003900 M07K020700 M07K022120 M12N074003F

METHODS OF AUGMENTING MUCOSAL IMMUNITY THROUGH SYSTEMIC PRIMING AND MUCOSAL BOOSTING

[71] Applicant: WISTAR INST

[75] Inventors: Ertl, Hildegund C. J.

[21] Application No.: NA

[22] Filed: 19990819

[43] Published: 20010403

[30] Priority: US US199897185P 19980820 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A method for inducing and enhancing mammalian mucosal immunity includes the steps of first administering to a mammal via a non-mucosal route a suitable amount of a priming vaccine composition which comprises a DNA sequence encoding an antigen of a pathogen under the control of regulatory sequences directing expression thereof in a mammalian cell, and subsequently, administering intranasally a boosting vaccine composition which comprises the same antigen in protein form or a DNA sequence encoding the same antigen. A method to reduce the anti-viral immune response to a recombinant viral vaccine includes the steps of administering a similar priming DNA vaccine composition that lacks any viral protein and subsequently administering as a boosting vaccine, a recombinant virus containing a DNA sequence encoding the same antigen as encoded by the DNA vaccine, wherein upon said recombinant virus vaccine administration, the immune response to the antigen is enhanced and the immune response to the recombinant virus is reduced.

[52] US Class: 4240932 4241841 4242081 4242291 4242491 4353201

[51] Int'l Class: A61K0039205 A61K003912

[52] ECLA: A61K003912 A61K0039205 K61K0039525C K61K003954A2

COMPOSITIONS AND METHODS FOR USE OF IL-12 AS AN ADJUVANT

[71] Applicant: WISTAR INST; UNIV PENNSYLVANIA

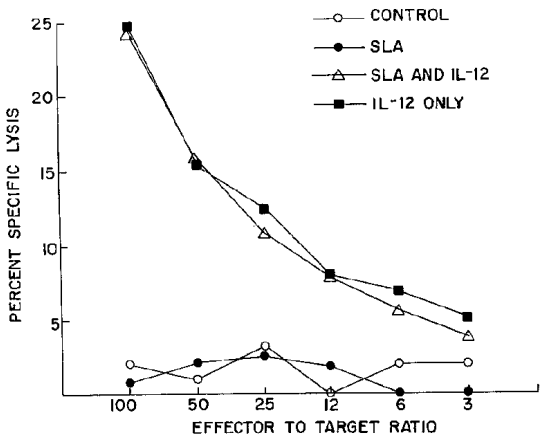
[75] Inventors: Scott, Phillip; Trinchieri, Giorgio

[21] Application No.: NA

[22] Filed: 19990301

[43] Published: 20010102

[30] Priority: US US1994229282A 19940418 ...



Go to Fulltext

[57] Abstract:

Improved vaccine compositions and methods of making same are provided, which vaccines are characterized by an antigen from a pathogen and an effective adjuvanting amount of Interleukin-12. These IL-12 adjuvanted vaccines are capable of increasing the vaccinated host's cell mediated immune response to provide an increased and protective immune response to the pathogen. Also disclosed are methods for vaccinating hosts by administering a vaccine containing an antigen from a pathogenic microorganism and co-administering an adjuvanting amount of IL-12. Vaccines or therapeutic compositions directed against a cancer may also be adjuvanted with IL-12 according to this invention.

[52] US Class: 435006 4241841 4241911 4242041 4242081 4242341 4242691 435005 4353391 530350

[51] Int'l Class: A61K003939

[52] ECLA: A61K003939 K61K0039555B1 K61K0039555B2L12 K61K003957

BI-FUNCTIONAL PLASMID THAT CAN ACT AS BOTH A DNA VACCINE AND A RECOMBINANT VIRUS VECTOR

[71] Applicant: ST JUDE CHILDRENS RES HOSPITAL

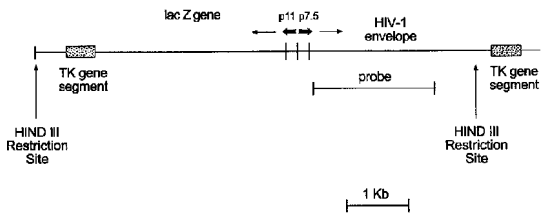
[75] Inventors: Hurwitz, Julia; Coleclough, Christopher

[21] Application No.: NA

[22] Filed: 19980921

[43] Published: 20000711

[30] Priority: US US1996590288A 19960123 ...



Go to Fulltext

[57] Abstract:

Polyenv vaccines are provided that comprise mixtures of at least 4 to about 10,000 different recombinant viruses that each express a different HIV env variant or a portion thereof containing both constant and variable regions, as well as methods of making and using such polyenv vaccines and viruses, including the use of the polyenv vaccine, in live, attenuated or inactivated form, for prophylaxis or treatment of HIV infection. The viral vaccines of the invention are optimally combined with a recombinant HIV env booster, or a recombinant HIV env gene DNA priming or boosting vaccine.

[52] US Class: 4242081 4242301 5360231

[51] Int'l Class: A61K003921 A61P003118 C07K001416 C12N0015863 A61K003900 A61K003812

[52] ECLA: A61K003921 C07K001416D C12N0015863V K61K003812 K61K003900 M07K020700 M07K022100 M07K022104 M07K022112 M07K022120

VECTORS CONTAINING HIV PACKAGING SEQUENCES, PACKAGING DEFECTIVE HIV VECTORS, AND USES THEREOF

[71] Applicant: DANA FARBER CANCER INST INC

[75] Inventors: Sodroski, Joseph G. ; Haseltine, William A.; Poznansky, Mark; Lever, . . .

[21] Application No.: NA

[22] Filed: 19970820

[43] Published: 19991109

[30] Priority: US US1990540746A 19900620 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Packaging defective and packaging proficient HIV vectors are disclosed. These vectors can be used to establish HIV packaging defective cell lines, and to package desired genes. These cell lines can be used in developing a vaccine, HIV antibodies and as part of a system for gene transfer. The packaging proficient vector can be used to target HIV target cells.

[52] US Class: 4353201 435455

[51] Int'l Class: C07K001416 C12N001549 C12N0015867 A61K003900 A61K003800

[52] ECLA: C07K001416 C12N0015867P K61K003800 K61K003900 M07K020700

ISOLATION OF NOVEL HIV-2 PROVIRUSES

[71] Applicant: UNIV CALIFORNIA

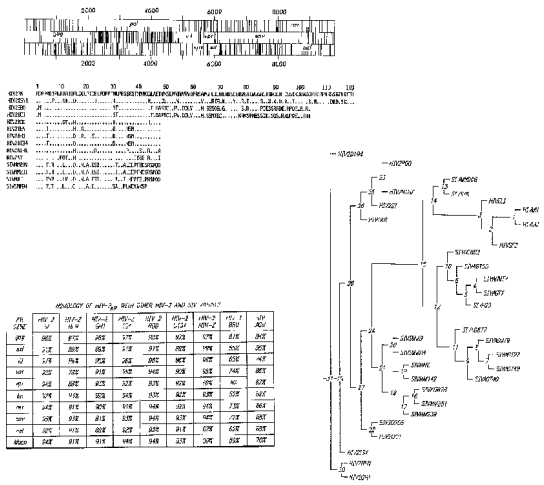
[75] Inventors: Kraus, Gunter;
Wong Staal, Flossie;
Talbott, Randy; Poeschla, . . .

[21] Application No.: NA

[22] Filed: 19960607

[43] Published: 19990316

[30] Priority: US US19951441P 19950726 ...



Go to Fulltext

[57] Abstract:

Novel HIV-2 proviruses, molecular clones, nucleic acids, polypeptides, viruses and viral components are described. The use of these compositions as components of diagnostic assays, as immunological reagents, as vaccines, as components of packaging cells, cell transduction vectors, and as gene therapy vectors is also described.

[52] US Class: 514044 4241601 4350691 4353201 53038835 5360231

[51] Int'l Class: C12N000700 C07K001416 A61K003800

[52] ECLA: C07K001416 C12N000700 K61K003800 M07K020300 M07K020500 M07K020700 M12N074003

MOLECULAR CLONES OF HIV-1 VIRAL STRAINS MN-ST1 AND BA-L, AND USES THEREOF

[71] Applicant: US HEALTH

[75] Inventors: Reitz, Jr., Marvin S.; Franchini, Genoveffa; Markham, Phillip D.; Gallo, . . .

[21] Application No.: NA

[22] Filed: 19960514

[43] Published: 19990209

[30] Priority: US US1990599491A 19901017 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to the HIV-1 strains MN-ST1 and BA-L which are typical United States HIV-1 isotypes. The present invention relates to DNA segments encoding the envelope protein of MN-ST1 or BA-L, to DNA constructs containing such DNA segments and to host cells transformed with such constructs. The viral isolates and envelope proteins of the present invention are of value for use in vaccines and bioassays for the detection of HIV-1 infection in biological samples, such as blood bank samples.

[52] US Class: 4352351 435006 4350691 4350693 435239 530324 53602372

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416D K61K003900 M07K020300 M07K020700

RECOMBINANT VACCINE

[71] Applicant: COMMW SCIENT IND RES ORG; UNIV AUSTRALIAN

[75] Inventors: Ramshaw, Ian Allister; Boyle, David Bernard; Coupar, Barbara . . .

[21] Application No.: NA

[22] Filed: 19950607

[43] Published: 19990202

[30] Priority: AU AU19867212A 19860801 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A recombinant vaccine comprises a vaccine vector which incorporates a first nucleotide sequence capable of being expressed as all or a part of an antigenic polypeptide, together with a second nucleotide sequence capable of being expressed as all or a part of a lymphokine effective in enhancing the immune response to the antigenic polypeptide. The vaccine vectors include poxvirus, herpes virus or adenovirus, and the lymphokine may be an interleukin, tumour necrosis factor or gamma-interferon. The vaccine vector may express an antigenic polypeptide which is foreign to the host vector.

[52] US Class: 4241861 4241881 4241991 4353201

[51] Int'l Class: C07K0014525 C07K001407 C07K001454 C07K001457 A61K003900

[52] ECLA: C07K001407 C07K0014525 C07K001454 C07K001457 K61K003900 M07K031900 M07K031940

VIRAL VECTOR CODING FOR A GLYCOPROTEIN OF THE VIRUS RESPONSIBLE FOR A.I.D. S.

[71] Applicant: TRANSGENE SA; PASTEUR INSTITUT

[75] Inventors: Kieny, Marie Paule; Rautmann, Guy; Lecocq, Jean Pierre; Hobson, Simon . . .

[21] Application No.: NA

[22] Filed: 19950607

[43] Published: 19980818

[30] Priority: FR FR19865043A 19860408 ...

Go to Fulltext

[No drawing]

[57] Abstract:

This invention relates to an immunogenic composition comprising a viral vector. The genome of the viral vector comprises a functional origin of replication of a poxvirus, a DNA fragment encoding a non-cleavable gp160, a DNA fragment encoding a signal peptide, and a promoter for expressing DNA fragments in mammalian cells.

[52] US Class: 4242081 4241881 4350691 4350693 4353201 530395

[51] Int'l Class: C07K0014145 C07K001416 A61K003900 A61K003800

[52] ECLA: C07K0014145 C07K001416D K61K003800 K61K003900 M07K020700 M07K021500 M07K022120 M07K031902

LIPOPPLYSACCHARIDE CONJUGATE VACCINES

[71] Applicant: US HEALTH

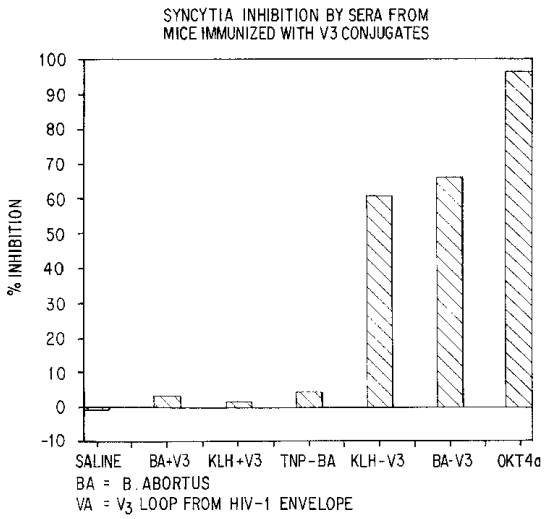
[75] Inventors: Golding, Basil

[21] Application No.: NA

[22] Filed: 19950106

[43] Published: 19981020

[30] Priority: US US1991780205A 19911022 ...



Go to Fulltext

[57] Abstract:

The present invention relates to lipopolysaccharides from Brucella abortus and their use as carriers in vaccines for humans and animals. In particular, the present invention relates to conjugate molecules having a carrier molecule of purified lipopolysaccharide from B. abortus coupled to an antigenic component of an infectious organism.

[52] US Class: 4241931 4241941 42419611 42419711 4242081 530403 530807

[51] Int'l Class: A61K0039385

[52] ECLA: A61K0039385 K61K003960S

ARTIFICIAL VIRAL ENVELOPES

[71] Applicant: UNIV FLORIDA

[75] Inventors: Schreier, Hans; Chander, Ramesh; Stecenko, Arlene A.

[21] Application No.: NA

[22] Filed: 19950607

[43] Published: 19980616

[30] Priority: US US1990600641A 19901019 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The production of artificial viral envelopes by a novel double-detergent dialysis technique is disclosed. Specifically exemplified is the production of HIV-1 and RSV viral envelopes. The resulting artificial viral envelopes are essentially identical to the natural virus with regard to characteristics which are relevant to immunogenicity and intracellular transfer of encapsulated material.

[52] US Class: 424450 2640041 2640043 4241921 4242041 4242081 424812 436829

[51] Int'l Class: A61K0009127

[52] ECLA: A61K0009127B A61K0009127P

VECTORS CONTAINING HIV PACKAGING SEQUENCES, PACKAGING DEFECTIVE HIV VECTORS, AND USES THEREOF

[71] Applicant: DANA FARBER CANCER INST INC

[75] Inventors: Sodroski, Joseph G. ; Haseltine, William A.; Poznansky, Mark; Lever, . . .

[21] Application No.: NA

[22] Filed: 19931115

[43] Published: 19970909

[30] Priority: US US1989307664A 19890206 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Packaging defective and packaging proficient HIV vectors are disclosed. These vectors can be used to establish HIV packaging defective cell lines, and to package desired genes. These cell lines can be used in developing a vaccine, HIV antibodies and as part of a system for gene transfer. The packaging proficient vector can be used to target HIV target cells.

[52] US Class: 435456 4240932 435236 4353201 435325 435358 435362 435364 435367 435372 435457 435465

[51] Int'l Class: C07K001416 A61K003900 A61K003800

[52] ECLA: C07K001416 K61K003800 K61K003900 M07K020700

VECTORS EXPRESSING HYBRID VIRUSES, METHODS OF USE AND NOVEL ASSAYS

[71] Applicant: DANA FARBER CANCER INST INC

[75] Inventors: Sodroski, Joseph; Haseltine, William A.; Letvin, Norman; Li, John

[21] Application No.: NA

[22] Filed: 19940701

[43] Published: 19970805

[30] Priority: US US1992887505A 19920522 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A vector which can be used to establish a hybrid SIV/HIV-1 virus is described. This virus can be used to infect an animal such as a monkey to establish an animal model for in vivo testing. This animal model can be used for purposes such as screening for therapeutics, adjuvants and vaccines.

[52] US Class: 4353201 4352351

[51] Int'l Class: C12N0015867 C07K0014155 A01K0067027 C12N001509 C07H002104 A61K003921 C12N000700 C07K001416 A61K004900 C12N001549 A61P003112 A61K003900

[52] ECLA: A01K0067027 C07K0014155 C07K001416 C12N000700 C12N0015867 K61K003900 M07K020700 M12N074003F

NON-INFECTIOUS, REPLICATION DEFECTIVE, IMMUNOGENIC HIV RETROVIRUS-LIKE PARTICLES PRODUCED FROM A RECOMBINANT HIV GENOME DEVOID OF

[71] Applicant: CONNAUGHT LAB

[75] Inventors: Haynes, Joel; Klein, Michel H.; Rovinski, Benjamin; Cao, Shi X.

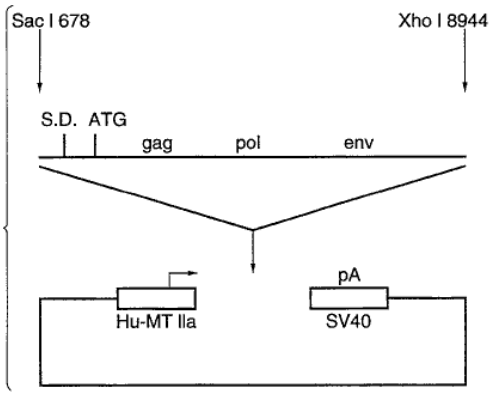
[21] Application No.: NA

[22] Filed: 19940506

[43] Published: 19961105

[30] Priority: GB GB198923123A 19891013 ...

Go to Fulltext



[57] Abstract:

This invention is directed towards nucleic acid molecules capable of producing human immunodeficiency virus (HIV) retrovirus-like particles, which are non-infectious, replication defective, and immunogenic. Recombinant HIV genomes were generated that are devoid of long terminal repeats (LTRs) but contain a heterologous, inducible metallothionein promoter. Additional modifications have been made to the primer binding site, pol, vif, and env coding regions. Upon transfection into a suitable host these DNA molecules are capable of producing HIV retrovirus-like particles that lack genomic RNA. These non-infectious particles will provide suitable antigens for HIV diagnostic assays and immunogenic preparations.

[52] US Class: 435364 4241881 4242081 4350693 4353201 435365 53602372

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416 K61K003900 M07K020300 M07K020700

NON-INFECTIOUS HIV PARTICLES LACKING LONG TERMINAL REPEATS

[71] Applicant: CONNAUGHT LAB

[75] Inventors: Haynes, Joel; Klein, Michel H.; Rovinski, Benjamin; Cao, Shi X.

[21] Application No.: NA

[22] Filed: 19920615

[43] Published: 19950808

[30] Priority: GB GB198923123A 19891013 ...

Go to Fulltext

[No drawing]

[57] Abstract:

An immunogenic HIV retrovirus-like particle which is non-infectious and non-replicating and which is useful as a candidate vaccine component against HIV infection, is produced by genetic engineering. A DNA molecule comprising the HIV genome devoid of long terminal repeats is incorporated into an expression vector, which is introduced into mammalian cells for expression of the HIV retrovirus-like particle.

[52] US Class: 4350693 4241841 4241851 4241861 4241871 4241881 4242041 4242071 4242081 4350691 4350701 4350711 4352351 435236 435466 435974 514002 530350 530826 5360231 53602372

[51] Int'l Class: C12Q000170 C12N001548 A61K003921 C12N000700 G01N0033569 C12N001509 A61P003112 C12P002100 C12N001549 C07K0014155 C12P002102 C07K001416 A61K003900 C12R000191

[52] ECLA: C07K001416 K61K003900 M07K020300 M07K020700

EXPRESSION OF IMMUNOLOGICALLY REACTIVE HIV ENVELOPE PROTEINS

[71] Applicant: SQUIBB BRISTOL MYERS CO

[75] Inventors: Watanabe, Suan M.; Cosand, Wesley L.; McArdle, Susan; Travis, Bruce M.

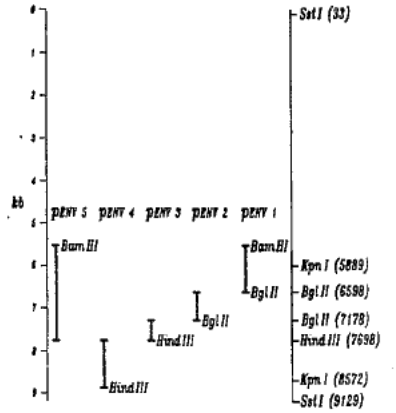
[21] Application No.: NA

[22] Filed: 19920824

[43] Published: 19940712

[30] Priority: US US1985721237A 19850408 ...

Go to Fulltext



[57] Abstract:

A method for expressing proteins which are immunologically reactive with antibodies to lymphadenopathy-associated virus (LAV), now known as Human Immunodeficiency Virus (HIV), is disclosed. The proteins are produced by bacterial host cells transformed with a recombinant plasmid which includes appropriate procaryotic transcriptional and translational signals for expression, followed in reading phase by a DNA sequence comprising a portion of the env region of the LAV genome. This portion codes for a protein which is immunologically reactive with antibodies to LAV, or antibodies to viruses defined to be the same as or equivalent to LAV. The proteins produced by the method disclosed may be used to screen for the presence of antibodies to LAV in a biological fluid, to determine the presence of LAV antigen in a biological fluid, or within a method for producing antibodies to LAV through the immunization of an animal with the protein.

[52] US Class: 4350693 435005 4350712 4352523 43525233 4353201 435974 5360231 930221

[51] Int'l Class: C07K001610 C07K001416 C12N001549 C12N001566 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001610 C12N001566 K61K003900 M07K020300 M07K020700 M07K031900 M07K031902 M07K031940 M07K0319735

NUCLEOTIDE SEQUENCE ENCODING A HUMAN IMMUNODEFICIENCY VIRUS ANTIGEN

[71] Applicant: DU PONT

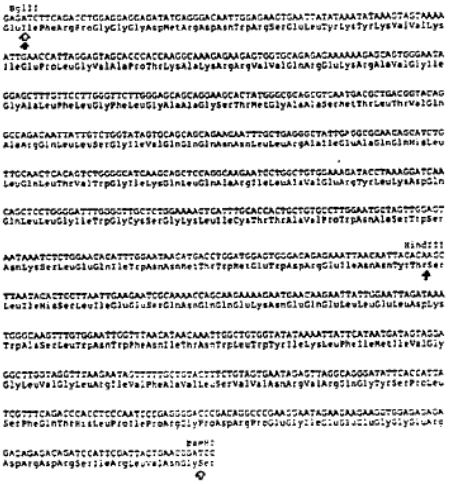
[75] Inventors: Ivanoff, Lucinda A.
; Petteway, Steven R.

[21] Application No.: NA

[22] Filed: 19890504

[43] Published: 19920825

[30] Priority: US US198710056A 19870202 ...



Go to Fulltext

[57] Abstract:

A nucleotide sequence encoding a recombinant peptide displaying the antigenicity of Human Immunodeficiency Virus (HIV) viral antigens is disclosed. The peptide comprises an antigenic segment having about 150 to about 400 amino acids corresponding to at least about 30 amino acids of the C-terminal of the gp120 domain and at least about 120 amino acids of the N-terminal of the gp41 domain.

[52] US Class: 4352523 435005 4353201 5360231 53602372

[51] Int'l Class: C12N000121 C07K001416 C12N001549 C12N001562 A61K003900

[52] ECLA: C07K001416D C12N001562 K61K003900 M07K020300 M07K020700 M07K031900 M07K031940

EXPRESSION OF FUSION PROTEIN OF HIV ENVELOPE AND HBSAG

[71] Applicant: MERCK CO INC

[75] Inventors: Kniskern, Peter J.; Hagopian, Arpi; Burke, Pamela

[21] Application No.: NA

[22] Filed: 19890919

[43] Published: 19920714

[30] Priority: US US1989409190A 19890919

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to recombinant fusion polypeptides of HIV envelope and HBsAg, suitable as vaccines against AIDS and/or ARC and hepatitis, as well as immunogens for inducing antibodies for passive protection or treatment of AIDS and/or ARC.

[52] US Class: 4352542 4350691 4350693 4353201 5360234 53602372

[51] Int'l Class: C07K001416 C07K001402 A61K003900

[52] ECLA: C07K001402 C07K001416D K61K003900 M07K020300 M07K020700 M07K031900 M07K031902 M07K031940 M07K0319735

EXPRESSION OF FUSION PROTEIN OF HIV ENVELOPE AND HBSAG

[71] Applicant: MERCK CO INC

[75] Inventors: Kniskern, Peter J.; Hagopian, Arpi; Burke, Pamela

[21] Application No.: NA

[22] Filed: 19890919

[43] Published: 19920714

[30] Priority: US US1989409180A 19890919

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to recombinant fusion polypeptides of HIV envelope and HBsAg, suitable as vaccines against AIDS and/or ARC and hepatitis, as well as immunogens for inducting antibodies for passive protection or treatment of AIDS and/or ARC.

[52] US Class: 4352542 4350691 4350693 43525421 4353201 5360234 53602372

[51] Int'l Class: C07K001416 C07K001402 A61K003900

[52] ECLA: C07K001402 C07K001416D K61K003900 M07K020300 M07K020700 M07K031900 M07K031902 M07K0319735

STEROIDAL LIPOSOMES EXHIBITING ENHANCED STABILITY

[71] Applicant: LIPOSOME CO INC

[75] Inventors: Bolcsak, Lois E.; Boni, Lawrence; Popescu, Mircea C.; Tremblay, Paul A.

[21] Application No.: NA

[22] Filed: 19891016

[43] Published: 19920331

[30] Priority: US US1989397777A 19890823 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to novel liposomes and liposome-like structures (vesicles) comprising an amount of a derivatized sterol either alone or in combination with additional liposome-forming lipids. <P> <P>Sterols such as cholesterol or other lipids, to which numerous charged or neutral groups are attached, may be used to prepare liposomes and liposome-like structures such as micelles, reverse micelles and hexagonal phases, suspensions of multilamellar vesicles or small unilamellar vesicles. The novel liposomes of the present invention may be prepared with or without the use of organic solvents. These vesicles may entrap compounds varying in polarity and solubility in water and other solvents. The vesicles of the present invention may function as vaccines after entrapment or association of an immunogen, as adjuvants, either alone or in combination with additional adjuvants, including, for example, Freund's adjuvant (and other oil emulsions), Bortedella Pertussis, aluminum salts and other metal salts and Mycobacterial products (including muramyldipeptides), among others. The present invention relates to novel liposomes and liposome-like structures (vesicles) comprising an amount of a derivatized sterol either alone or in combination with additional liposome-forming lipids.

[52] US Class: 424450 4240852 4242081 4242101 4242111 4242261 4242271 4242281 4242501 4242721 4242771 4242831 4284022

[51] Int'l Class: A61K0039145 A61K0009127

[52] ECLA: A61K0009127B A61K0009127B2 A61K0039145 K61K0039555B5

GENES AND THEIR ENCODED PROTEINS WHICH REGULATE GENE EXPRESSION OF THE INTERLEUKIN-2 RECEPTOR AND OF HUMAN LYMPHOTROPIC RETROVIRUSES

[71] Applicant: DANA FARBER CANCER INST INC

[75] Inventors: Cantor, Harvey I.; Patarca, Roberto

[21] Application No.: NA

[22] Filed: 19880211

[43] Published: 19900828

[30] Priority: US US1988154758A 19880211

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention is directed to genes, termed Rpt-1 (regulatory protein T lymphocyte-1), which are expressed at higher levels by resting CD4.sup.+ helper/inducer T cells relative to activated CD4.sup. + cells. The invention also relates to the proteins encoded by such genes, termed rpt-1 proteins, which regulate gene expression directed by the promoter region of the interleukin-2 receptor (IL-2r) alpha chain gene or by the promoter region of the long terminal repeat of human lymphotropic retroviruses such as the human immunodeficiency virus type 1 (HIV-1) human T cell leukemia virus (HTLV)-I, and HTLV-II. In particular, rpt-1 proteins down-regulate gene expression controlled by the promoter of the IL-2r alpha chain gene or by the promoter of the long terminal repeat of HIV-1. The proteins and nucleic acids of the invention have value in diagnosis and therapy of immune disorders such as AIDS.<P><P> In a specific example of the present invention, an Rpt-1 gene and its encoded intracellular protein of approximately 41,000 daltons molecular weight are described. The rpt-1 protein is shown to be selectively expressed by activated CD4.sup.+ T cells, and to down-regulate gene expression of the IL-2r and the HIV-1.

[52] US Class: 4350691 43525233 4353201 435358 4353723 435455 53602352 53602372 5360241

[51] Int'l Class: C12N000121 C07K001447 C12N001509 C12P002102 C12N000510 C12N001524 C12N001585 C12R000119

[52] ECLA: C07K001447A1 C12N001585 M07K020700

MICROPARTICLES FOR DELIVERY OF HETEROLOGOUS NUCLEIC ACIDS

[71] Applicant: N/A

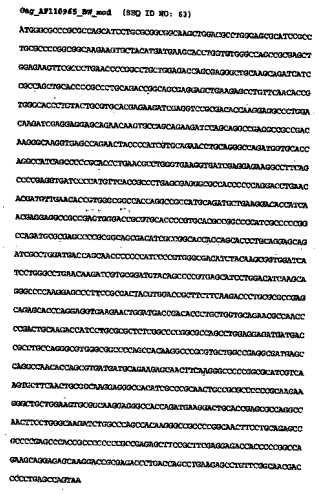
[75] Inventors: O'Hagan, Derek; Otten, Gillis; Donnelly, John; Polo, John; Barnett, . . .

[21] Application No.: NA

[22] Filed: 20070116

[43] Published: 20080131

[30] Priority: US US2000236105P 20000928 ...



Go to Fulltext

[57] Abstract:

Microparticles with adsorbent surfaces, methods of making such microparticles, and uses thereof, are disclosed. The microparticles comprise a polymer, such as a poly(α-hydroxy acid), a polyhydroxy butyric acid, a polycaprolactone, a polyorthoester, a polyanhydride, and the like, and are formed using cationic, anionic, or nonionic detergents. Also provided are microparticles in the form of submicron emulsions of an oil droplet emulsion having a metabolizable oil and an emulsifying agent. The surface of the microparticles efficiently adsorb polypeptides, such as antigens, and nucleic acids, such as ELVIS vectors and other vector constructs, containing heterologous nucleotide sequences encoding biologically active macromolecules, such as polypeptides, antigens, and adjuvants. Methods of stimulating an immune response, methods of immunizing a host animal against a viral, bacterial, or parasitic infection, and uses of the microparticle compositions for vaccines are also provided.

[52] US Class: 424497 4241841 4242081 4242091 4242111 4242161 4242181 4242211 4242281

[51] Int'l Class: A61K003929 A61K0039125 C12N000701 A61K000916 A61K000900 C12N001586 A61K003921 C12N000502 A61P003104 A61K003912 A61K000950 A61K0039155 A61K004748 A61P003300 A61P003112 A61K0039145 A61K000951 A61K0039215 A61K003900

[52] ECLA: C12N001586 A61K000916H6D4 A61K000951 A61K003900 A61K003921 A61K004748W8 K61K003953 K61K0039555B5

THERAPEUTIC CALCIUM PHOSPHATE PARTICLES AND METHODS OF MANUFACTURE AND USE

[71] Applicant: N/A

[75] Inventors: Bell, Steve, J.D.; Morcol, Tulin; He, Qing

[21] Application No.: NA

[22] Filed: 20070403

[43] Published: 20071220

[30] Priority: US US1999118356P 19990203 ...

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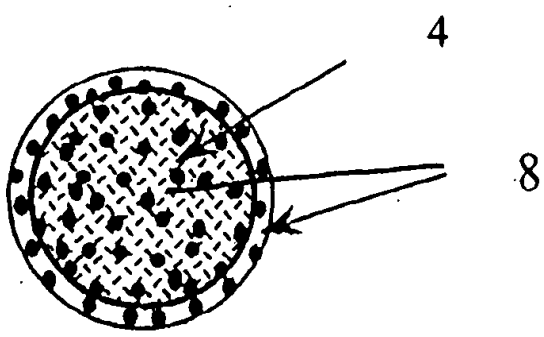


[57] Abstract:

Novel calcium phosphate core particles, methods of making them, and methods of using them as vaccine adjuvants, as cores, as carriers of biologically active material, and as controlled release matrices for biologically active material are disclosed. The core particles may have a surface modifying agent and/or biologically active material, such as antigenic material or natural immunoenhancing factor, polynucleotide material, or therapeutic proteins or peptides, partially coating the particle or impregnated therein. The core particles have a diameter between about 300 nm and about 4000 nm, more particularly between about 300 nm and about 2000 nm, and even more particularly between about 300 nm and about 1000 nm, are substantially spherical in shape, and have a substantially smooth surface

[52] US Class: 4242081 4240852 4241841 4242041 4242091 4242311 4242321 4242341 4242431 4242441 4242471 4242481 4242601 4242741 4242781 424489 424491 424493 424499 514002 514003 514770

[51] Int'l Class: A61K003921 A61K003909 A61K003802 A61K000914 A61K003900 A61K0039275 A61K0039085 A61K003820 A61K003912 A61K0039245 A61K004702 A61K004500 A61K0039104 A61K003904 A61K0039145 A61K003908

[52] ECLA: A61K000950K2 A61K000916K A61K003904 A61K003939 C12N001587 K61K003953 K61K0039555B5

BROADLY CROSS-REACTIVE HIV-1 NEUTRALIZING HUMAN MONOCLONAL ANTIBODIES

[71] Applicant: N/A

[75] Inventors: Dimitrov, Dimiter, S.; Zhang, Mei Yun

[21] Application No.: NA

[22] Filed: 20070810

[43] Published: 20071220

[30] Priority: US US2004623394P 20041029 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides polypeptides that bind with an epitope of the gp41 subunit of the HIV-1 envelope glycoprotein, as well as polypeptides comprising the aforementioned epitopes. The invention also provides methods of inhibiting an HIV infection in a mammal using the polypeptides of the invention, as well as compositions comprising the polypeptides, nucleic acid molecules encoding the polypeptides, and host cells and vectors comprising the nucleic acid molecules. A method of isolating antibodies that bind with an epitope of the gp41 subunit of the HIV-1 envelope glycoprotein using competitive antigen panning (CAP) is also provided. The invention also features the use of the polypeptides to detect the presence of HIV in a mammal, and epitopes that can be used as vaccine immunogens.

[52] US Class: 4240852 4240854 4241601 435005 435243 4353201 436086 53038835 5303911 5360235

[51] Int'l Class: C12N001512 A61K003820 A61K00317105 A61K003942 C12N000100 A61K003821 G01N003353 C12N001563 A61P003118 C07K001608

[52] ECLA: C07K001610K1D K61K0039505 M07K0316210 M07K0316550

HUMAN ANTIBODIES INTERACTING WITH HIV GP41

[71] Applicant: N/A

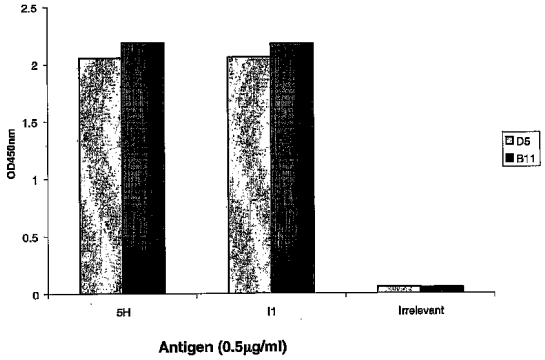
[75] Inventors: Shiver, John, W.;
Miller, Michael, D. ;
Geleziunas, Romas; Hazuda, . . .

[21] Application No.: NA

[22] Filed: 20061130

[43] Published: 20071025

[30] Priority: US US2004576012P 20040601 ...



Go to Fulltext

[57] Abstract:

Human scFvs are disclosed which interact with a conformational epitope along the pre-hairpin, N-helix coiled coil structure within the heptad repeat 1 (HR1) region of gp41 of HIV. These antibodies, as well as IgG conversions, are shown to neutralize diverse HIV isolates. Isolated nucleic acid molecules are also disclosed which encode relevant portions of these antibodies, as well as the purified forms of the expressed antibodies or relevant antibody fragments, such as V_H and V_L chains. The antibody compositions disclosed within this specification may provide for a therapeutic treatment against HIV infection by reducing viral load levels within an infected individual, thus prolonging the asymptomatic phase of HIV infection. These antibodies will also be useful in assays to identify HIV antiviral compounds as well as allowing for the identification of candidate HIV vaccines, such as HIV peptide vaccines.

[52] US Class: 4241601 4241841 424600 4350691 4353201 435326 436501 5303871 5303879 5360231

[51] Int'l Class: G01N0033566 A61P003118 A61K003300 A61K0039395 C12P002106 C07H002104 C07K001600 C12N001500

[52] ECLA: G01N0033569K2 C07K001610K1D M07K0316210 M07K0316561 M07K0316960 S01N050000

DNA-BASED PLASMID FORMULATIONS AND VACCINES AND PROPHYLACTICS CONTAINING THE SAME

[71] Applicant: N/A

[75] Inventors: Lasher, Alfred, W.; Kittle, Joseph, D. ; Widen, Steven, G.

[21] Application No.: NA

[22] Filed: 20070306

[43] Published: 20071122

[30] Priority: US US2001337860P 20011105 ...

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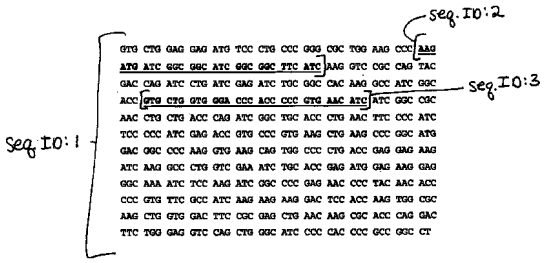


[57] Abstract:

The invention is a general method for improving the performance of the DNA-based vaccines. The method utilizes a complex DNA-generated profile of antigens to extend the effects of DNA-based vaccines and to broaden the immune response. This broadened immune response in turn improves the protection of the recipient from divergent (but related) strains of a pathogen. In addition, it effectively improves the efficacy of DNA-based vaccines used for treatment of viral diseases, including acquired immunity disorder (AIDS). One embodiment, where the target viral pathogen is HIV (the causative agent for aids), the method identifies an orderly set of plasmids of related sequences that may be used to prime a broad and strong immune response to HLA-restricted viral antigens. This mixture of plasmids is thus capable of priming an appropriate immune response to reduce the viral burden in HIV infected patients or to protect uninfected patients from HIV infection.

[52] US Class: 4242081 4242091 4242241 4242331 4242431 4242441 4242461 4242571 4242581

[51] Int'l Class: A61K004800 A61K003921 A61K003900 A61P003118 A61P003104 A61P003112 A61P003116

[52] ECLA: A61K003921 A61K004800B2 K61K003953 M07K022104

VACCINE

[71] Applicant: GLAXO GROUP LTD

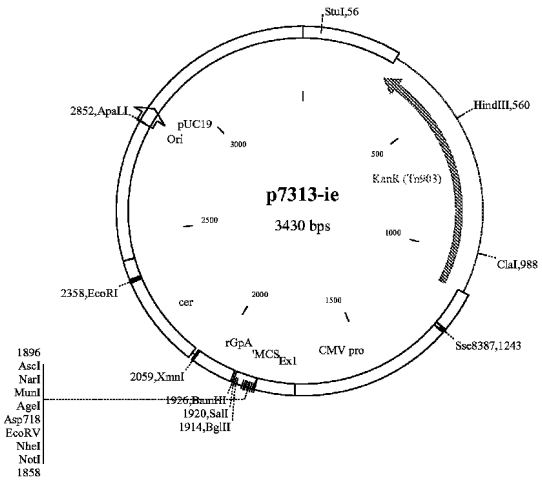
[75] Inventors: ERTL, PETER, Franz

[21] Application No.: NA

[22] Filed: 20070412

[43] Published: 20071025

[30] Priority: GB GB200225786A 20021105 ...



Go to Fulltext

[57] Abstract:

The invention relates to polynucleotides for DNA vaccination which polynucleotides encode an HIV envelope protein or fragment or immunogenic derivative fused to an additional HIV protein selected from a non-structural protein or capsid protein or fragment or immunogenic derivative thereof. Preferably the HIV envelope molecule is gp120 and preferred fusions include one or more of HIV Nef, Gag, RT or Tat. Preferably the HIV envelope molecule is non-glycosylated in mammalian cells.

[52] US Class: 424489 4350691 4353201 514044 530350 53602372

[51] Int'l Class: C12N001548 A61K000914 A61K0031711 C07K001900 A61P003118 C12P002100 C12N001586 C07H002104 C07K001416 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 M07K020700 M07K031900

PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

[71] Applicant: N/A

[75] Inventors: Sidhu, Maninder, K. ; Eldridge, John, H.; Egan, Michael; Israel, Zimra

[21] Application No.: NA

[22] Filed: 20061214

[43] Published: 20070816

[30] Priority: US US2004580438P 20040617 ...

Go to Fulltext

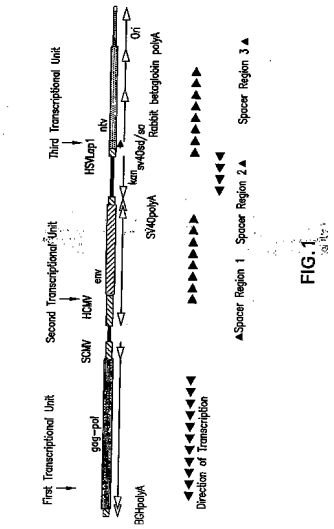


FIG. 1

[57] Abstract:

The invention provides a DNA plasmid comprising: (a) a first transcriptional unit comprising a nucleotide sequence that encodes a first polypeptide operably linked to regulatory elements including a first promoter and a first polyadenylation signal; (b) a second transcriptional unit comprising a nucleotide sequence that encodes a second polypeptide operably linked to regulatory elements including a second promoter and a second polyadenylation signal; (c) a third transcriptional unit comprising a nucleotide sequence that encodes a third polypeptide operably linked to regulatory elements including a third promoter and a third polyadenylation signal; and wherein said first, said second and said third promoters are each derived from different transcriptional units; and wherein said first, said second and said third polyadenylation signals are each derived from different transcriptional units. The invention further relates to immunogenic compositions for inducing an immune response to HIV comprising combinations of two, three, or four plasmids, where each plasmid is expressing a defined antigen, which may be a single antigen or a fusion of two or three antigens.

[52] US Class: 4240932 4242081 435456

[51] Int'l Class: C12N0015867 A61K004800 A61K003921

[52] ECLA: A61K003921 C07K001416 C12N001585 K61K003953 K61K003954 K61K0039545 M12N080010D1 M12N084060

COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

[71] Applicant: N/A

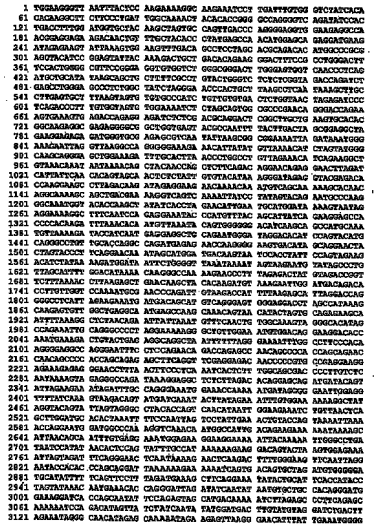
[75] Inventors: Barnett, Susan, W.; Gomez Roman, Victor, Raul; Lian, Ying; Peng, Bo; . . .

[21] Application No.: NA

[22] Filed: 20061212

[43] Published: 20070719

[30] Priority: US US2003503617P 20030915 ...



Go to Fulltext

[57] Abstract:

The present invention relates to methods, polynucleotides, and polypeptides encoding immunogenic HIV polypeptides derived from different strains within an HIV subtype and/or immunogenic HIV polypeptides from different subtypes. Uses of the polynucleotides and polypeptides in combination approaches for generating immune responses are described. The combination approaches described herein have been shown to induce broad and potent neutralizing activity against diverse HIV strains from multiple strains within a given subtype and against diverse subtypes. Formulations of compositions for generating immune responses and methods of use for such compositions are also disclosed.

[52] US Class: 4350691 435006

[51] Int'l Class: C12P002106 C12Q000168

[52] ECLA:

DNA VACCINE COMPOSITION WITH ENHANCED IMMUNOGENICITY

[71] Applicant: N/A

[75] Inventors: Park, Ki Seok; Park, Su Hyung; Yang, Se Hwan; Lee, Chang Geun; Choi, . . .

[21] Application No.: NA

[22] Filed: 20050824

[43] Published: 20070308

[30] Priority: KR KR20036393A 20030130 ...

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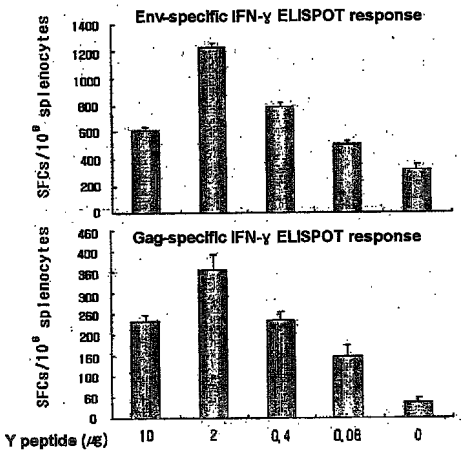
FIG. 1



[57] Abstract:

Disclosed is a vaccine composition that includes a peptide adjuvant, and a DNA vaccine encoding an immunogenic protein. Also, the present invention discloses a method of enhancing immune responses, which is based on the administration of the vaccine composition.

[52] US Class: 4241881 514044

[51] Int'l Class: A61K003939 A61K003921 A61K004800

[52] ECLA: A61K003939 C07K001411 C07K001416 K61K003953 K61K0039555B1

HIV-GAG CODON-OPTIMISED DNA VACCINES

[71] Applicant: N/A

[75] Inventors: Beaton, Andrew; Ertl, Peter; Gough, Gerald; Lear, Andrew; Tite, John; . . .

[21] Application No.: NA

[22] Filed: 20041025

[43] Published: 20070118

[30] Priority: GB WO2001GB4207A 20010920 ...

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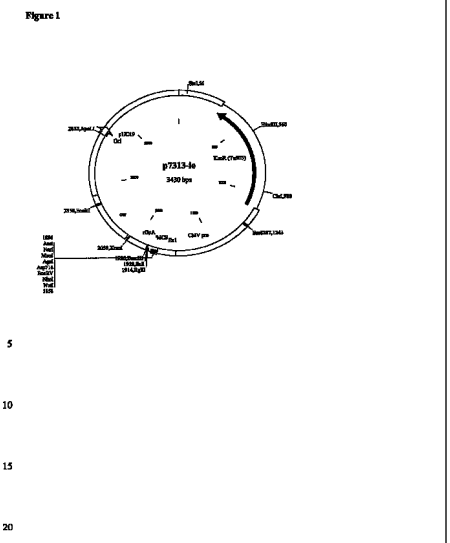

[57] Abstract:

The invention provides a nucleotide sequence that encodes an HIV-1 gag protein or fragment thereof containing a gag epitope and a second HIV antigen or a fragment encoding an epitope of said second HIV antigen, operably linked to a heterologous promoter. Preferred polynucleotide sequences further encodes nef or a fragment thereof and RT or a fragment thereof.

[52] US Class: 514044 435455 435456 5360231 977906

[51] Int'l Class: C12N001586 C07H002102 A61P003118 A61K004800 C12N001549 C07K001416 C12N0015869 C12N001509 C12N001548

[52] ECLA: C07K001416B A61K003921 C07K001416F K61K003953

HIV DNA VACCINE

[71] Applicant: N/A

[75] Inventors: Narayan, Opendra

[21] Application No.: NA

[22] Filed: 20060223

[43] Published: 20070111

[30] Priority: US US1997850492A 19970502 ...

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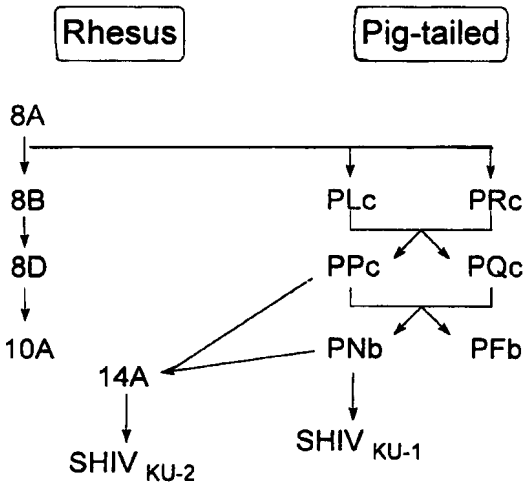

FIG. 1

[57] Abstract:

A DNA vaccines or immunogenic composition for providing an immune response against HIV without exhibiting pathogenicity in the immunized individual because of the disruption of the ability of the DNA molecules to encode for viral proteins critical in producing pathogenicity. The DNA molecule is derived by passaging a SHIV in order to develop a SHIV that exhibits an increased replication efficiency and increased pathogenicity. Following passaging, the highly virulent SHIV virus is rendered safe by disrupting one or more genes, such as the rt, int, and vif genes, as well as the 3' LTR.

[52] US Class: 514044 4242081

[51] Int'l Class: A61K003921 A61K004800

[52] ECLA: C07K001416B A61K003921 A61K0039295 C07K001416D C07K001416F C12N000704A K61K0039525B K61K003953 M12N074003F

VACCINE

[71] Applicant: N/A

[75] Inventors: Ertl, Peter, Franz

[21] Application No.: NA

[22] Filed: 20060519

[43] Published: 20070222

[30] Priority: GB GB200225788A 20021105 ...

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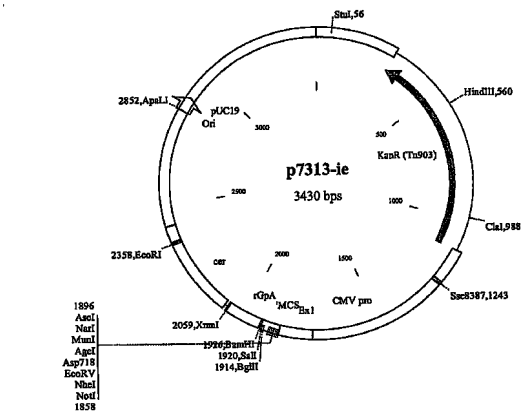
Figure 1



[57] Abstract:

The invention relates to polynucleotides for DNA vaccination which polynucleotides encode an HIV envelope protein or fragment or immunogenic derivative, which is non-glycosylated when expressed in a mammalian target cell, operably linked to a heterologous promoter. Preferably the HIV envelope molecule, such as gp120 or gp140 or gp160, lacks a functional secretion signal. It may be fused to additional HIV proteins such as Nef, Gag, RT or Tat.

[52] US Class: 514044 435005 4352351 435325 435456 530350 53602372 977802

[51] Int'l Class: C07H002102 A61K004800 C07K001416 C12N0015867 C12Q000170 A61K003900

[52] ECLA: C07K001416 C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 M07K020700 M07K031900

HIV VACCINES BASED ON ENV OF MULTIPLE CLADES OF HIV

[71] Applicant: N/A

[75] Inventors: Nabel, Gary; Chakrabarti, Bimal; Kong, Wing pui; Huang, Yue; Wang, . . .

[21] Application No.: NA

[22] Filed: 20060315

[43] Published: 20061207

[30] Priority: US US2003503509P 20030915 ...

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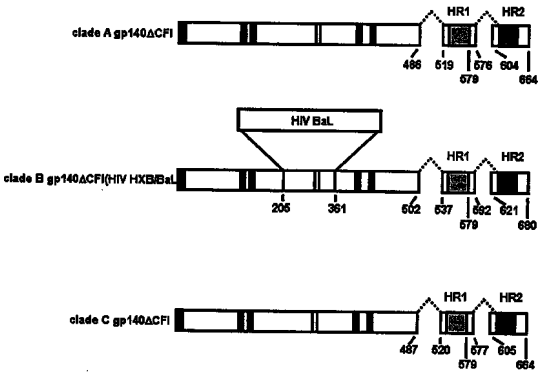

[57] Abstract:

In one embodiment, the invention provides a multiclade HIV plasmid DNA or viral vector vaccine including components from different clades of Env (optionally Env chimeras) and Gag-Pol-(optionally)Nef from a singlr clade. The vaccine of the invention may further include V1, V2, V3, or V4 deletions or combinations thereof. In another embodiment, the invention provides multiclade HIV envelope immunogens.

[52] US Class: 4353201 435006

[51] Int'l Class: C07K001416 A61K003921 C12Q000168 C12N001500

[52] ECLA: A61K003921 C07K001416B C07K001416D K61K0039525C K61K003953 M07K022104

VIRUS VACCINE

[71] Applicant: STRATHMANN AG CO

[75] Inventors: Schreiber, Michael

[21] Application No.: NA

[22] Filed: 20051114

[43] Published: 20061005

[30] Priority: DE DE19907485A 19990212 ...

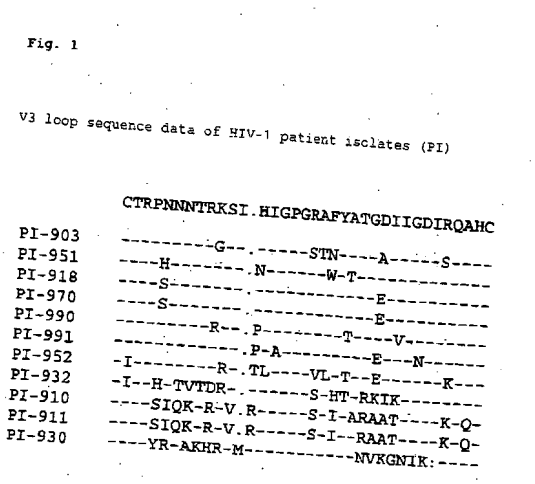

Fig. 1

V3 loop sequence data of HIV-1 patient isolates (PI)

```
                CTRPNNNTRKSI.HIGPGRAFYATGDIIGDIRQAHC
PI-903    ---------G--.-----STN----A-----S----
PI-951    ----H-------.N------W-T-------------
PI-918    ----S-------.------------E----------
PI-970    ----S-------.------------E----------
PI-990    ---------R--.P--------T----V--------
PI-991    ------------.P-A---------E---N------
PI-952    -I--------R-.TL----VL-T--E------K---
PI-932    -I--H-TVTDR-.------S-HT-RKIK--------
PI-910    ----SIQK-R-V.R-----S-I-ARAAT----K-Q-
PI-911    ----SIQK-R-V.R-----S-I--RAAT----K-Q-
PI-930    ----YR-AKHR-M----------NVKGNIK:----
```

Go to Fulltext

[57] Abstract:

The present invention relates to a pharmaceutical composition or a vaccine which comprises a mixture of viral protein molecules which are sequence variants of a single viral protein or of part of same. The invention furthermore relates inter alia to a DNA vaccine which codes for a mixture of structurally different virus proteins, the vaccine containing a mixture of sequence variants of a viral DNA molecule or of part of same which code for sequence variants of a viral protein or part. According to a preferred version of the invention, the viral proteins are sequence variants of the GP120 protein of the human immunodeficiency virus (HIV) which differ from each another in their amino acid sequence in the region of the V2 loop and/or of the V3 loop. The invention furthermore relates to the preparation of the virus vaccines including the intermediate stages or constructs, preparation processes and uses connected with them.

[52] US Class: 4242081 514044

[51] Int'l Class: C12N000510 A61P003112 A61K003576 C12N001509 A61K004800 C12N001549 A61K003921 A61K003800 C07K0014155 C12N001534 C12P002102 A61P003118 A61K003900 C07K001416 A61K003912

[52] ECLA: C07K001416D A61K003921 K61K0039505 K61K003953 M07K020700

IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

[71] Applicant: GOVT OF THE U S A
AS REPRESENT

[75] Inventors: Franchini,
Genoveffa; Hel, Zdenek;
Pavlakis, George; Tartaglia, . . .

[21] Application No.: NA

[22] Filed: 20060705

[43] Published: 20061026

[30] Priority: US US2002258570A 20021025 ...

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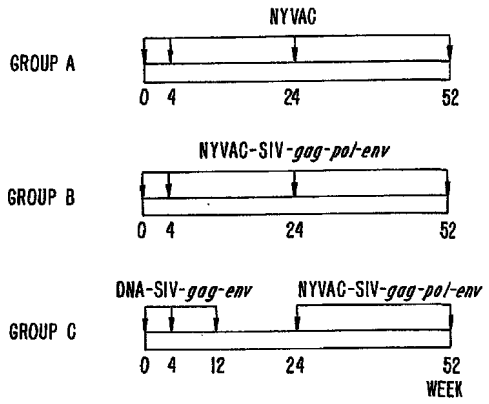


FIG. 1.

[57] Abstract:

This invention relates to improved methods of inducing an immune response for the prevention or treatment of HIV-1 infection by using a nucleic acid vaccine in conjunction with a recombinant viral vaccine, e.g., a poxvirus vaccine, to potentiate and broaden the immune response. The present invention further provides a particularly effective vaccine regimen comprising a DNA vaccine used in combination with a poxvirus virus, especially NYVAC or ALVAC.

[52] US Class: 4242081 435456

[51] Int'l Class: C12N0015867 A61K003921

[52] ECLA: C07K001416D A61K003921 C12N0015863A C12N0015863V K61K0039525C K61K003953 K61K0039545

IMMUNOGENIC HIV-1 MULTI-CLADE, MULTIVALENT CONSTRUCTS AND METHODS OF THEIR USE

[71] Applicant: N/A

[75] Inventors: Lal, Renu; Owen, Sherry

[21] Application No.: NA

[22] Filed: 20050926

[43] Published: 20060928

[30] Priority: US US2003458880P 20030328 ...

Go to Fulltext

Figure 1A

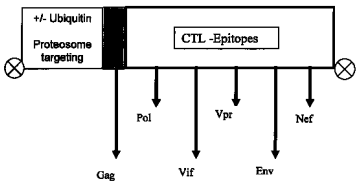
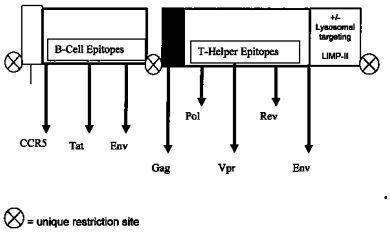


Figure 1B



[57] Abstract:

Described herein are nucleic acid molecules which encode multiple highly conserved epitopes from HIV-1 proteins, and optionally also epitopes from CCR5; usually also included sequences that encode spacers between two or more of the epitopes. Some of the provided nucleic acid molecules further include sequences that encode targeting domains, useful for targeting the encoded protein into a pathway for enhancing epitope presentation in a vertebrate immune system. Also described are multivalent proteins encoded for by these nucleic acid molecules. The disclosure also encompasses immunogenic compositions that comprise one or more of the nucleic acid molecules, and/or one or more of the proteins encoded thereby, as well as methods of inducing an immune response against HIV-1 in a subject by administering to the subject an effective amount of a composition containing one or more of these molecules. Also provided are cultured host cells containing within them one or more of the described nucleic acid molecules.

[52] US Class: 4241881 530350 4350693 435325 435456 4353201 53602372

[51] Int'l Class: C07K001416 C07H002104 A61K003921

[52] ECLA: C07K001416B A61K003921 C07K001416D C07K001416F K61K003964F M07K031906

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

[71] Applicant: N/A

[75] Inventors: Shiver, John; Perry, Helen; Casimiro, Danilo; Fu, Tong Ming

[21] Application No.: NA

[22] Filed: 20060201

[43] Published: 20060706

[30] Priority: US US1999171542P 19991222 ...

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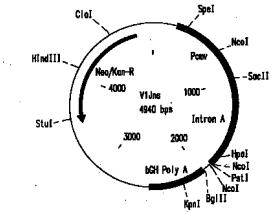

FIG.1A

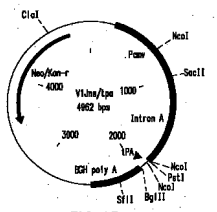

FIG.1B

[57] Abstract:

Pharmaceutical compositions which comprise HIV Pol DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The pol-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and preferably express inactivated versions of the HIV Pol protein devoid of protease, reverse transcriptase activity, RNase H activity and integrase activity, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Pol and codon optimized inactive derivatives of optimized HIV-1 Pol, including DNA molecules which encode inactive Pol proteins which comprise an amino terminal leader peptide.

[52] US Class: 514044

[51] Int'l Class: A61K004800

[52] ECLA: C07K001416B K61K003953

VACCINE

[71] Applicant: N/A

[75] Inventors: Ertl, Peter

[21] Application No.: NA

[22] Filed: 20051123

[43] Published: 20060629

[30] Priority: GB GB200225786A 20021105 ...

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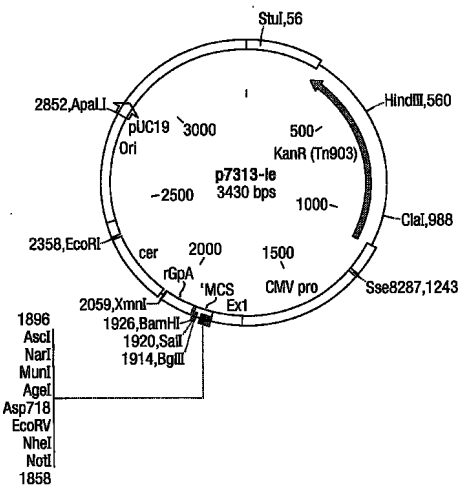
Fig.1.



[57] Abstract:

The invention relates to polynucleotides for DNA vaccination which polynucleotides encode an HIV envelope protein or fragment or immunogenic derivative fused to an additional HIV protein selected from a non-structural protein or capsid protein or fragment or immunogenic derivative thereof. Preferably the HIV envelope molecule is gp120 and preferred fusions include one or more of HIV Nef, Gag, RT or Tat. Preferably the HIV envelope molecule is non-glycosylated in mammalian cells.

[52] US Class: 514044 435005 435006 530350 53602372

[51] Int'l Class: C07H002102 A61K004800 C12Q000170 C07K001416 C12N001548 C12Q000168 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 M07K020700 M07K031900

STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

[71] Applicant: AARON DIAMOND AIDS RES CT

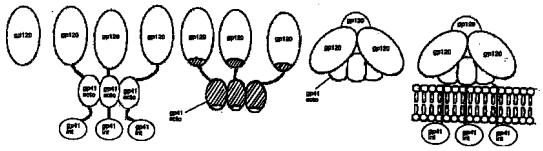
[75] Inventors: Binley, James; Schuelke, Norbert; Olson, William; Maddon, Paul; . . .

[21] Application No.: NA

[22] Filed: 20051028

[43] Published: 20060504

[30] Priority: US US1999141168P 19990625 ...



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[57] Abstract:

This invention provides an isolated nucleic acid which comprises a nucleotide segment having a sequence encoding a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention also provides a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention further provides methods of treating HIV-1 infection.

[52] US Class: 435006 435005

[51] Int'l Class: C12Q000168 C12Q000170

[52] ECLA: C07K001416D K61K003953 K61K0039545

DNA EXPRESSION VECTORS AND METHODS OF USE

[71] Applicant: EMORY UNIVERSITY A GEORGIA COR

[75] Inventors: Robinson, Harriet; Amara, Rama; Ross, Ted; Bright, Rick

[21] Application No.: NA

[22] Filed: 20041209

[43] Published: 20060309

[30] Priority: US US2000186364P 20000302 ...

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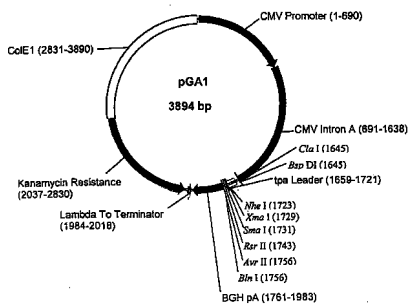


Fig. 1

[57] Abstract:

The present invention relates to novel plasmid constructs useful for the delivery of DNA vaccines. The present invention provides novel plasmids having a transcription cassette capable of directing the expression of a vaccine nucleic acid insert encoding immunogens derived from any pathogen, including fungi, bacteria and viruses. The present invention, however, is particularly useful for inducing in a patient an immune response against pathogenic viruses such as HIV, measles or influenza. Immunodeficiency virus vaccine inserts of the present invention express non-infectious HIV virus-like particles (VLP) bearing multiple viral epitopes. VLPs allow presentation of the epitopes to multiple histocompatability types, thereby reducing the possibility of the targeted virus escaping the immune response. Also described are methods for immunizing a patient by delivery of a novel plasmid of the present invention to the patient for expression of the vaccine insert therein. Optionally, the immunization protocol may include a booster vaccination that may be a live vector vaccine such as a recombinant pox virus or modified vaccinia Arbora vector. The booster live vaccine vector includes a transcription cassette expressing the same vaccine insert as the primary immunizing vector.

[52] US Class: 4350691 4352523 435472 530350 5360235

[51] Int'l Class: C12P002106 C12N001567 A61K003921 C07K001416 C12N001563 C07H002104 C12N001574 C12N001570 C07K001447 C12N001585 C12N000121 A61K003900

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001447A11 C12N001563 C12N001567 C12N001570 C12N001585 K61K003900 K61K003953 K61K0039545 M07K020700 M07K022120 M07K031900 M12N083042 M12N084010C M12N084020

INDUCING CELLULAR IMMUNE RESPONSES TO HUMAN IMMUNODEFICIENCY VIRUS-1 USING PEPTIDE AND NUCLEIC ACID COMPOSITIONS

[71] Applicant: EPIMMUNE INC

[75] Inventors: Sette, Alessandro; Sidney, John; Southwood, Scott; Livingston, Brian; . . .

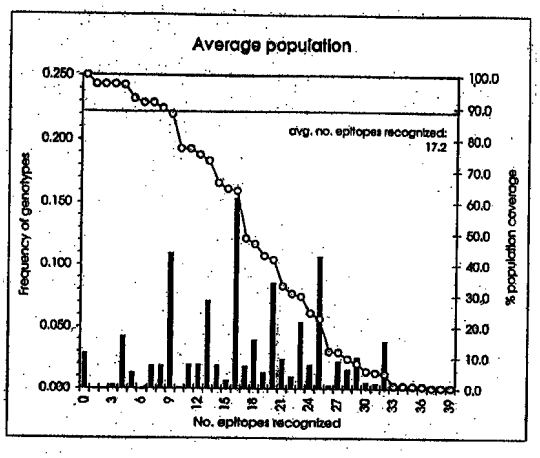
[21] Application No.: NA

[22] Filed: 20050128

[43] Published: 20051208

[30] Priority: US US199327146A 19930305 ...

Figure 1



Go to Fulltext

[57] Abstract:

This invention uses our knowledge of the mechanisms by which antigen is recognized by T cells to identify and prepare human immunodeficiency virus (HIV) epitopes, and to develop epitope-based vaccines directed towards HIV. More specifically, this application communicates our discovery of pharmaceutical compositions and methods of use in the prevention and treatment of HIV infection.

[52] US Class: 4241851 4350693 4353201 435325 530326 530327 5360235

[51] Int'l Class: C07H002104 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K0039515B K61K003953 K61K0039545 K61K0039555B5 K61K003960L M12N074003F

NOVEL USE

[71] Applicant: SMITHKLINE BEECHAM BIOLOG

[75] Inventors: Voss, Gerald

[21] Application No.: NA

[22] Filed: 20050429

[43] Published: 20051201

[30] Priority: GB GB20002200A 20000131 ...

Go to Fulltext

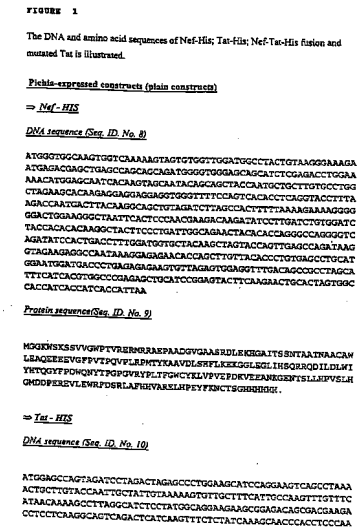


FIGURE 1

The DNA and amino acid sequences of Nef-His; Tat-His; Nef-Tat-His fusion and mutated Tat is illustrated.

Pichia-expressed constructs (plain constructs)

⇒ Nef - HIS

DNA sequence (Seq. ID. No. 8)

ATGGGTGGCAAGTGGTCAAAAAGTAGTGTGGTTGGATGGCCTACTGTAAGGGAAAGA
ATGAGACGAGCTGAGCCAGCAGCAGATGGGGTGGGAGCAGCATCTCGAGACCTGGAA
AAACATGGAGCAATCACAAGTAGCAATACAGCAGCTACCAATGCTGCTTGTGCCTGG
CTAGAAGCACAAGAGGAGGAGGTGGGTTTTCCACTCACACCTCAGGTACCTTTA
AGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTAAAAGAAAAGGGG
GGACTGGAAGGGCTAATTCACTCCCAACGAAGACAAGATATCCTTGATCTGTGGATC
TACCACACACAAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTC
AGATATCCACTGACCTTTGGATGGTGCTACAAGCTAGTACCAGTTGAGCCAGATAAG
GTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACCCTGTGAGCCTGCAT
GGAATGGATGACCCTGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCCTAGCA
TTTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCACTAGTGGC
CACCATCACCATCACCATTAA

Protein sequence(Seq. ID. No. 9)

MGGKWSKSSVVGWPTVRERMRRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAW
LEAQEEEEVGFPVTPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDLWI
YHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLVPVEPDKVEEANEGENTSLLHPVSLH
GMDDPEREVLEWRFDSRLAFHHVARELHPEYFKNCTSGHHHHGK.

⇒ Tat - HIS

DNA sequence (Seq. ID. No. 10)

ATGGAGCCAGTAGATCCTAGACTAGAGCCCTGGAAGCATCCAGGAAGTCAGCCTAAA
ACTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTCATTGCCAAGTTTGTTTC
ATAACAAAAGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGA
CCTCCTCAAGGCAGTCAGACTCATCAAGTTTCTCTATCAAAGCAACCCACCTCCCAA

[57] Abstract:

The invention provides the use of a) an HIV Tat protein or polynucleotide; or b) an HIV Nef protein or polynucleotide; or c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide (Nef-Tat); and an HIV gp120 protein or polynucleotide in the manufacture of a vaccine for the prophylactic or therapeutic immunisation of humans against HIV.

[52] US Class: 4242081 530350

[51] Int'l Class: C12N001549 A61K003912 C12N001509 C07K001416 A61K003939 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416D C07K001416F K61K003900 K61K003953 K61K0039555B7 K61K003957 M07K031900

POLYCISTRONIC HIV VECTOR CONSTRUCTS

[71] Applicant: CHIRON CORP

[75] Inventors: zur Megede, Jan;
Barnett, Susan

[21] Application No.: NA

[22] Filed: 20050505

[43] Published: 20051229

[30] Priority: US US2004568390P 20040505 ...

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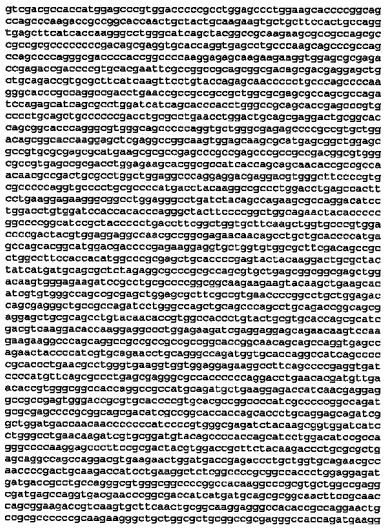

[57] Abstract:

The present disclosure relates to vectors comprising polynucleotide sequences that encode HIV polypeptides. In particular, the disclosure relates polycistronic vector constructs comprising sequences that encode HIV polypeptides as a single polyprotein. Compositions comprising these vectors and sequences along with methods of using these vectors and sequences are also disclosed.

[52] US Class: 4241991 4242041 435006

[51] Int'l Class: C12Q000168 C07K001416 A61K003912

[52] ECLA: C07K001416 K61K003953

ADJUVANT

[71] Applicant: GLAXO GROUP LTD

[75] Inventors: Braun, Ralph; Thomsen, Lindy; Van Wely, Catherine; Ertl, Peter

[21] Application No.: NA

[22] Filed: 20050509

[43] Published: 20051201

[30] Priority: US US2002102622A 20020319 ...

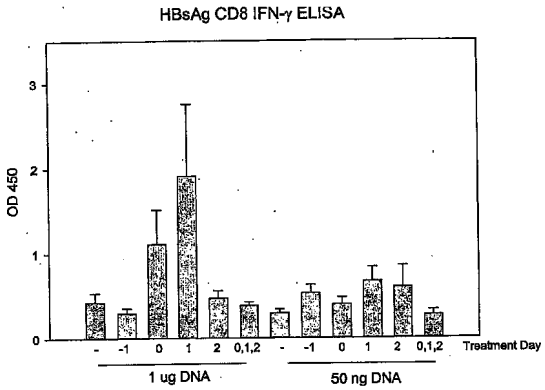

Figure 1

Go to Fulltext

[57] Abstract:

The relates to certain adjuvant compositions, and to vaccine and/or nucleic acid immunization strategies employing such compositions. The invention in particular relates to DNA vaccines that are useful in the prophylaxis and treatment of HIV infections, more particularly when administered by particle mediated delivery.

[52] US Class: 4242081 514291 514292

[51] Int'l Class: C07D047104 A61K004506 A61K000918 A61K000906 C12N001509 A61K003939 A61K00314745 A61P003118 C07K001416 A61K004800 A61K003900 A61P003704 A61K003921

[52] ECLA: A61K00314745 A61K00314745+M A61K003921 A61K003939 A61K004506 C07K001416B K61K003953 K61K003954 K61K0039555B5 M07K020700

ADJUVANT

[71] Applicant: N/A

[75] Inventors: Braun, Ralph; Thomsen, Lindy; Van Wely, Catherine; Ertl, Peter

[21] Application No.: NA

[22] Filed: 20050106

[43] Published: 20051117

[30] Priority: US US2002102622A 20020319 ...

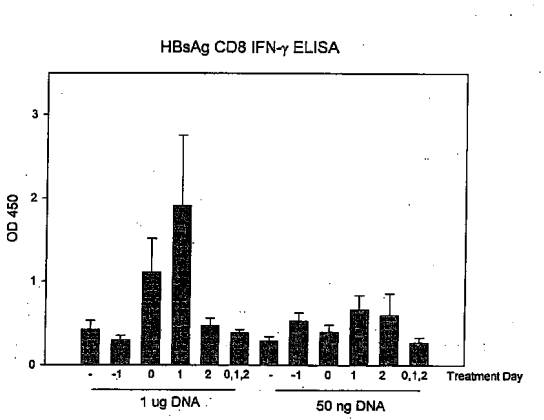

Figure 1

Go to Fulltext

[57] Abstract:

The present invention relates to the fields of vaccines, vaccine adjuvants, molecular biology and immunology, and generally adjuvants and nucleic acid immunization techniques. More specifically, the invention relates to certain adjuvant compositions, and to vaccine and/or nucleic acid immunization strategies employing such compositions. The invention in particular relates to DNA vaccines that are useful in the prophylaxis and treatment of HIV infections, more particularly when administered by particle mediated delivery.

[52] US Class: 514044 514291 514292

[51] Int'l Class: A61K003939 A61K003921 A61K00314745 A61K004506 C07K001416

[52] ECLA: A61K00314745 A61K00314745+M A61K003921 A61K003939 A61K004506 C07K001416B K61K003953 K61K003954 K61K0039555B5 M07K020700

MICROPARTICLES WITH ADSORBED POLYPEPTIDE-CONTAINING MOLECULES

[71] Applicant: N/A

[75] Inventors: O'Hagan, Derek; Singh, Manmohan; Kazzaz, Jina

[21] Application No.: NA

[22] Filed: 20050513

[43] Published: 20051006

[30] Priority: US US2002358315P 20020220 ...

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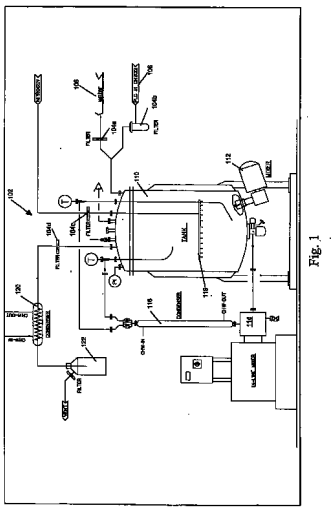

[57] Abstract:

Microparticles with absorbed polypeptide-containing molecules formed without the use of surfactant, methods of making such microparticle compositions, and uses thereof, are disclosed. The microparticles comprise a polymer, such as a poly(α-hydroxy acid), a polyhydroxy butyric acid, a polycaprolactone, a polyorthoester, a polyanhydride, and the like. Preferred polymers are poly(D,L-lactide-co-glycolides), more preferable those having a lactide/glycolide molar ratio ranging from 40:60 to 60:40 and having a molecular weight ranging from 20, 000 Daltons to 70,000 Daltons. Preferred polypeptide containing molecules are bacterial and viral antigens (including HIV antigens, meningitis B antigens, streptococcus B antigens, and Influenza A hemagglutinin antigens).

[52] US Class: 424489 4242081 4242341

[51] Int'l Class: A61K003902 A61K000916 A61K000914 A61K003912 A61K003921

[52] ECLA: A61K003912 A61K000916H6D4 A61K000916P4 A61K003902 K61K0039555B5 K61K003960Y

MUTANT VIRAL NUCLEIC ACIDS AND VACCINE CONTAINING SAME

[71] Applicant: ADVANCED BIOSCIENCE LAB INC

[75] Inventors: Cristillo, Anthony; Kalyanaraman, Vaniambadi; Pal, Ranajit

[21] Application No.: NA

[22] Filed: 20040331

[43] Published: 20051006

[30] Priority: US US2004814689A 20040331

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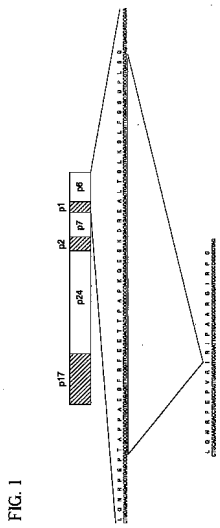

FIG. 1

[57] Abstract:

The present invention is directed to a nucleic acid comprising a deletion mutant of a PTAP (SEQ ID NO:1) motif and/or PPXY (SEQ ID NO:2) and/or YXXL (SEQ ID NO:3) motif in the late or L domain of a viral protein, where the L domain mediates the budding process. Examples of such viral proteins containing L domains are the retroviral gag proteins and the matrix proteins of rhabdoviruses and filoviruses. In addition, the present invention is directed to a vector containing (a) this nucleic acid or (b) this nucleic acid and one or more nucleic acids encoding other structural and regulatory viral proteins. The present invention is further directed to vaccines containing the nucleic acid or vector for the purpose of augmenting a cellular immune response.

[52] US Class: 4242081 435456 530350 53602372

[51] Int'l Class: A61K003921 A61K003912 C12Q000170 C07H002102 C07K0014155 C07K001416 A61K003900

[52] ECLA: C07K0014155 C07K001416B K61K003900 K61K003953

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

[71] Applicant: N/A

[75] Inventors: Shiver, John; Liang, Xiaoping; Fu, Tong Ming

[21] Application No.: NA

[22] Filed: 20050316

[43] Published: 20050929

[30] Priority: US US1999172442P 19991217 ...

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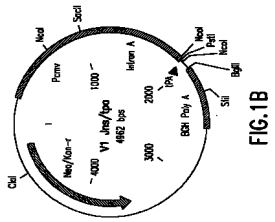

FIG.1B

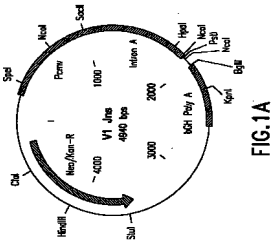

FIG.1A

[57] Abstract:

Pharmaceutical compositions which comprise HIV Nef DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The nef-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and express the HIV Nef protein or biologically relevant portions thereof, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Nef and derivatives of optimized HIV-1 Nef, including nef modifications comprising amino terminal leader peptides, removal of the amino terminal myristylation site, and/or modification of the Nef dileucine motif. These modifications may effect wild type characteristics of Nef, such as myristylation and down regulation of host CD4.

[52] US Class: 514044 530350

[51] Int'l Class: C07K001416 A61K004800

[52] ECLA: C07K001416F K61K003953

PREVENTIVE AND THERAPEUTIC AIDS VACCINES

[71] Applicant: N/A

[75] Inventors: Chen, Qun

[21] Application No.: NA

[22] Filed: 20050510

[43] Published: 20050922

[30] Priority: US US2002207346A 20020729 ...

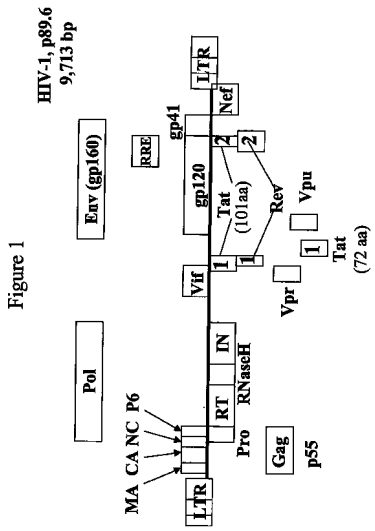

Figure 1

Go to Fulltext

[57] Abstract:

The present invention relates to prophylactic and therapeutic acquired immunodeficiency syndrome vaccines. In particular, the present invention provides methods and compositions utilizing recombinant HIV-1, HIV-2 and/or SIV genes or gene products in safe vaccination approaches.

[52] US Class: 4242081 4352351 435456

[51] Int'l Class: C07K001416 A61K003921

[52] ECLA: A61K003921 C07K001416 K61K0039525D K61K003953 K61K0039545 M07K020700 M07K022100

HIV PHARMACCINES

[71] Applicant: OXXON THERAPEUTICS LTD

[75] Inventors: Schneider, Joerg

[21] Application No.: NA

[22] Filed: 20041209

[43] Published: 20050811

[30] Priority: GB GB200322402A 20030924 ...

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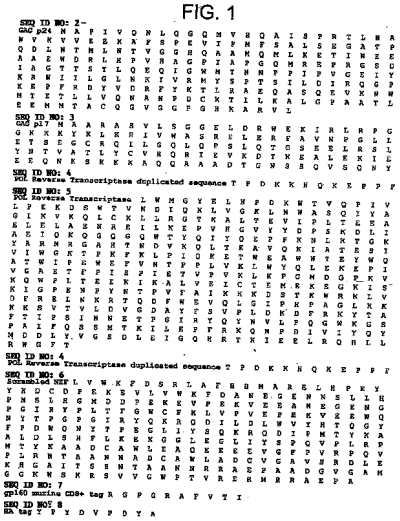
FIG. 1



[57] Abstract:

The invention relates to a recombinant polypeptide comprising amino acid sequence derived from at least one of an HIV gag gene product; an HIV pol gene product; or an HIV nef gene product, said sequence being mutated with respect to the natural sequence of said gene product, and said sequence maintaining each of the naturally occurring CD8+ T cell epitopes of said gene product as defined in p17 and p24 (gag), amino acids 1-440 of RT (pol) and nef shown in Example 8. Furthermore the invention relates to nucleic acids encoding same, and viral vectors encoding same, and to their use in medicine and in immunisation and vaccination.

[52] US Class: 4241881 435005 4350693 435325 435456 514044 530350 53602372

[51] Int'l Class: A61K004800 A61K003921 C07K001416 C12Q000170 A61K003800

[52] ECLA: C07K001416B A61K003921 C07K001416F K61K003800 K61K0039525C K61K003953 K61K0039545 M12N074003F

SYNTHETIC CONJUGATE OF CPG SINGLE-STRANDED DNA AND T-HELP/CTL FUSION PEPTIDE

[71] Applicant: HOPE CITY

[75] Inventors: Diamond, Don

[21] Application No.: NA

[22] Filed: 20041213

[43] Published: 20050721

[30] Priority: US US2003528706P 20031212 ...

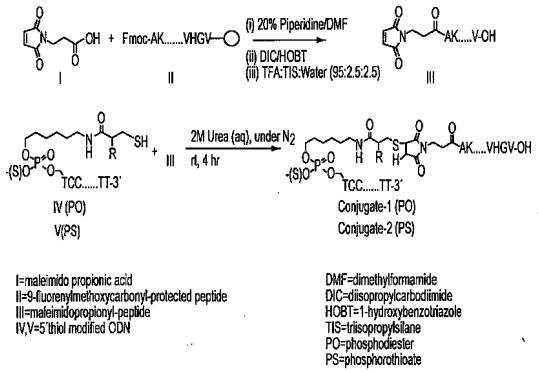


FIG. 1

Go to Fulltext

[57] Abstract:

Highly effective vaccine compositions are constructed according to the methods of this invention. The methods are amenable to use with any peptidic antigen sequence and involve covalent attachment of an immunostimulatory nucleotide sequence to an antigenic peptide sequence. Preferred antigenic peptides are fusion peptides made up of one or more CTL epitope peptides in sequence fused to a T helper peptide.

[52] US Class: 4241921 514044

[51] Int'l Class: A61K004800 A61K0039385 A61K003900

[52] ECLA: A61K0039385 A61K003939 C07K001416D K61K0039555B1 K61K0039555B7 K61K003960N K61K003960P14

DNA VACCINE COMPOSITIONS AND METHODS OF USE

[71] Applicant: N/A

[75] Inventors: Narayan, Opendra;
Liu, Zhenqian

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050526

[30] Priority: US US2003503197P 20030916 ...

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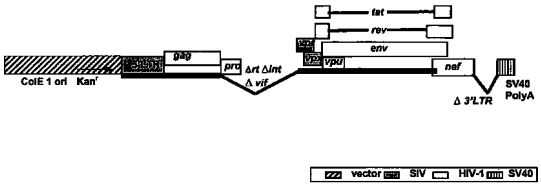
Figure 1: Schematic Diagram of Δ4-SHIVku2 DNA Construct



[57] Abstract:

The present invention is directed to a DNA vaccine for immunization against HIV. The invention comprises a DNA molecule that has a sequence encoding a plurality of viral proteins capable of stimulating an immune response against HIV. The DNA molecule is rendered safe for use as a vaccine by the disruption of genes encoding reverse transcriptase, integrase, and Vif. The DNA molecule is further rendered safe by at least a partial deletion of the 3' LTR.

[52] US Class: 4240932 514044

[51] Int'l Class: C12N001586 A61K003921 A01N006300 A01N004304 C12N001563 A61K004800 C07H002104 C12N001500

[52] ECLA: A61K003921 K61K003953 K61K0039555B2 M12N074003F

VACCINE COMPRISING GP120 AND NEF AND/OR TAT FOR THE IMMUNISATION AGAINST HIV

[71] Applicant: N/A

[75] Inventors: Ertl, Peter, Franz; Tite, John, Philip; Van Wely, Catherine, Ann; Voss, . . .

[21] Application No.: NA

[22] Filed: 20040922

[43] Published: 20050317

[30] Priority: GB GB200118367A 20010727 ...

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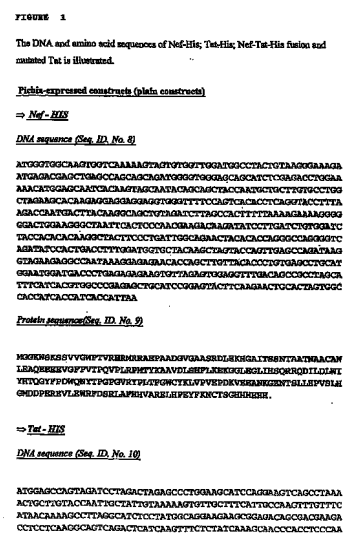

FIGURE 1

The DNA and amino acid sequences of Nef-His; Tat-His; Nef-Tat-His fusion and mutated Tat is illustrated.

Pichia-expressed constructs (plain constructs)

⇒ *Nef - HIS*

DNA sequence (Seq. ID. No. 8)

ATGGGTGGCAAGTGGTCAAAAAGTAGTGTGGTTGGATGGCCTACTGTAAGGGAAAGA
ATGAGACGAGCTGAGCCAGCAGCAGATGGGGTGGGAGCAGCATCTCGAGACCTGGAA
AACAYGGAGCAATCACAAGTAGCAATACAGCAGCTACCAATGCTGCTTGTGCCTGG
CTAGAAGCACAAGAGGAGGAGGTGGGTTTTCCAGTCACACCTCAGGTACCTTTA
AGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTAAAAGAAAAGGGG
GGACTGGAAGGGCTAATTCACTCCCAACGAAGACAAGATATCCTTGATCTGTGGATC
TACCACACACAAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTC
AGATATCCACTGACCTTTGGATGGTGCTACAAGCTAGTACCAGTTGAGCCAGATAAG
GTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACCCTGTGAGCCTGCAT
GGAATGGATGACCCTGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCCTAGCA
TTTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCTGACATAGTGGC
CACCATCACCATCACCATTAA

Protein sequence(Seq. ID. No. 9)

MGGKWSKSVVGWPTVRERMRRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAW
LEAQEEEEVGFPVTPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDLWI
YHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLVPVEPDKVEEANKGENTSLLHPVSLH
GMDDPEREVLEWRFDSRLAFHHVARELHPEYFKNCTSGHHHHHH.

⇒ *Tat - HIS*

DNA sequence (Seq. ID. No. 10)

ATGGAGCCAGTAGATCCTAGACTAGAGCCCTGGAAGCATCCAGGAAGTCAGCCTAAA
ACTGCTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTCATTGCCAAGTTTGTTTC
ATAACAAAAGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGA
CCTCCTCAAGGCAGTCAGACTCATCAAGTTTCTCTATCAAAGCAACCCACCTCCCAA

[57] Abstract:

Use of
a) an HIV Tat protein or polynucleotide; or
b) an HIV Nef protein or polynucleotide; or
c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide: and an HIV gp 120 protein or polynucleotide in the manufacture of a vaccine suitable for a prime-boost delivery for the prophylactic or therapeutic immunisation of humans against HIV, wherein the protein or polynucleotide is delivered via a bombardment approach.

[52] US Class: 4241881 4242081 424489 514044

[51] Int'l Class: A61P003704 A61K003921 A61K00317088 A61K000900 C12N001509 C12N001549 A61K003900 A61K0031711 A61K004800 C07K001416 C12N001589 A61K004702 A61K003576 A61P003118 A61K003800

[52] ECLA: A61K003921 C07K001416D C07K001416F C12N001589B K61K003953 M07K031900

MHC-I-RESTRICTED PRESENTATION OF HIV-1 VIRION ANTIGENS WITHOUT VIRAL REPLICATION. APPLICATION TO THE STIMULATION OF CTL AND VACCINATION IN

[71] Applicant: N/A

[75] Inventors: Schwartz, Olivier; Buseyne, Florence; Marsac, Delphine; Michel, Marie . . .

[21] Application No.: NA

[22] Filed: 20040526

[43] Published: 20041125

[30] Priority: US US2001271432P 20010227 ...

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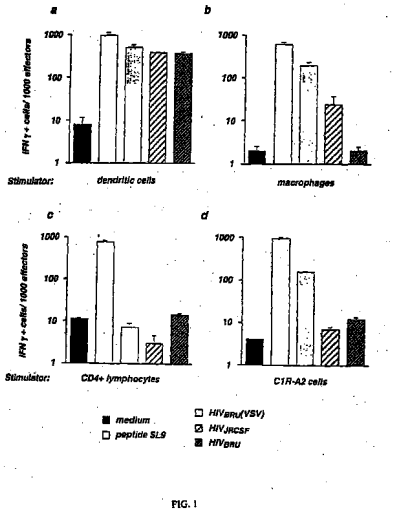

FIG. 1

[57] Abstract:

Dendritic cells and macrophages can process extracellular antigens for presentation by MHC-I molecules. HIV-1 epitopes derived from incoming virions are presented through the exogenous MHC-I pathway in primary human dendritic cells, and to a lower extent in macrophages, leading to cytotoxic T lymphocyte activation in the absence of viral protein neosynthesis. Exogenous antigen presentation required adequate virus-receptor interactions and fusion of viral and cellular membranes. These results provide new insights about how anti-HIV cytotoxic T lymphocytes can be activated and are useful for anti-HIV vaccine design.

[52] US Class: 53602372 4240932 4241871 4241881 4242071 4242081 435005 435006 4353201

[51] Int'l Class: C12N001574 A61K004800 A61K003921 A01N006300 C12N001570 C07H002104 C12Q000170 C12Q000168 C12N001509 C12N001563

[52] ECLA: C07K001416 A61K003921 K61K003957 M12N074003F

STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

[71] Applicant: PROGENICS PHARM INC; AARON DIAMOND AIDS RES CT

[75] Inventors: Binley, James, M.; Schuelke, Norbert; Olson, William, C.; Maddon, Paul, . . .

[21] Application No.: NA

[22] Filed: 20040218

[43] Published: 20041111

[30] Priority: US US1999141168P 19990625 ...

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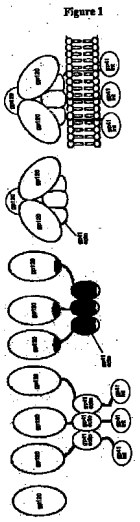

[57] Abstract:

This invention provides an isolated nucleic acid which comprises a nucleotide segment having a sequence encoding a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention also provides a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention further provides methods of treating HIV-1 infection.

[52] US Class: 435005 4350693 4352351 435366 435456 530350 53602372

[51] Int'l Class: C12N000704 C07K001416

[52] ECLA: C07K001416D C12N000704A K61K0039525D M07K020302 M07K020700 M07K021500

POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

[71] Applicant: N/A

[75] Inventors: Lu, Shan; Wang, Shixia; Pal, Ranajit; Kalyanaraman, Vaniambadi; . . .

[21] Application No.: NA

[22] Filed: 20031203

[43] Published: 20040930

[30] Priority: US US2002430732P 20021203 ...

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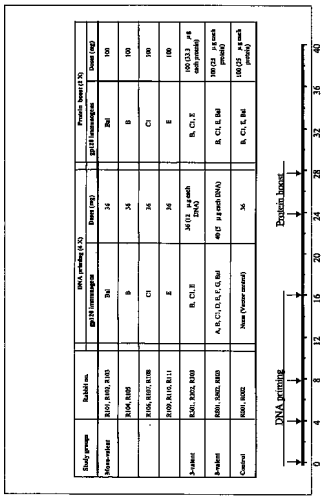

FIG. 1

[57] Abstract:

Polyvalent, primary isolate nucleic acid compositions for inducing an immune response against HIV is disclosed. The compositions and methods described herein are for the use of a DNA composition that encodes one or more different HIV envelope glycoproteins. The DNA composition can encode an HIV Gag protein. The DNAs encoding one or more HIV proteins are a combination of different nucleic acids, such as DNA plasmids, generated from primary isolate DNA of different HIV major group genetic clades and/or different proteins. HIV protein compositions for inducing an immune response against HIV are disclosed. Methods for using the protein compositions as boosts following administration of the DNA compositions are provided.

[52] US Class: 4241881 4350693 4353201 435325 530395 53602372

[51] Int'l Class: C07K001416 A61K003921 A61K003900

[52] ECLA: A61K003921 C07K001416B C07K001416D K61K003900 K61K003953

SYNTHETIC HIV GAG GENES

[71] Applicant: N/A

[75] Inventors: Shiver, John, W.; Davies, Mary, Ellen; Freed, Daniel, C.; Liu, Margaret, . . .

[21] Application No.: NA

[22] Filed: 20031005

[43] Published: 20040916

[30] Priority: US US199737854P 19970207 ...

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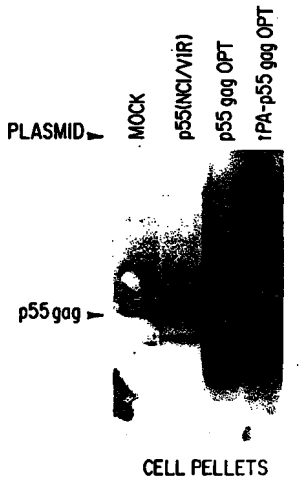

FIG. 1

[57] Abstract:

Synthetic DNA molecules encoding HIV gag and modifications of HIV gag are provided. The codons of the synthetic molecules are codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through stimulation of neutralizing antibody and cell-mediated immunity.

[52] US Class: 435005 4350693 435325 435456 530350 53602372

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416B K61K003900 M07K020300 M07K020700 M07K031902

PROCESS FOR THE SELECTION OF HIV-1 SUBTYPE C ISOLATES, SELECTED HIV-1 SUBTYPE C ISOLATES, THEIR GENES AND MODIFICATIONS AND DERIVATIVES

[71] Applicant: N/A

[75] Inventors: Johnston, Robert, Edward; Karim, Salim, Abdool; Morris, Lynn; . . .

[21] Application No.: NA

[22] Filed: 20030912

[43] Published: 20040617

[30] Priority: ZA ZA20003437A 20000710 ...

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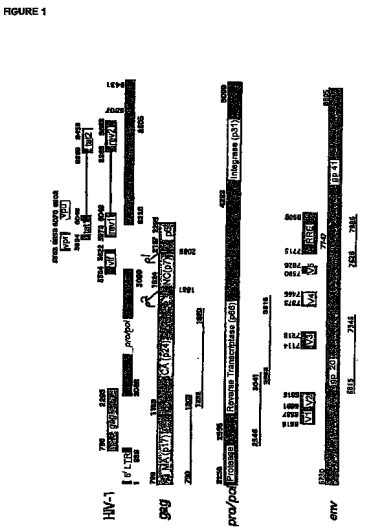

[57] Abstract:

The invention provides a process for the selection of HIV-1 subtype (clade) C isolates, selected HIV-1 subtype C isolates, their genes and modifications and derivatives thereof for use in prophylactic and therapeutic vaccines to produce proteins and polypeptides for the purpose of eliciting protection against HIV infection or disease. The process for the selection of HIV subtype isolates comprises the steps of isolating viruses from recently infected subjects; generating a consensus sequence for at least part of at least one HIV gene by identifying the most common codon or amino acid among the isolated viruses; and selecting the isolated virus or viruses with a high sequence identity to the consensus sequence. HIV-1 subtype C isolates, designated Du422, Du 151 and Du 179 (assigned Accession Numbers 01032114, 00072724 and 00072725, respectively, by the European Collection of Cell Cultures) are also provided.

[52] US Class: 530350 435005 4352351 4353201 530826 53602372

[51] Int'l Class: C07K001416 A61K003921 C12N000701 C12N000702 A61K003900

[52] ECLA: A61K003921 C07K001416B C07K001416D C12N000702 K61K003900 M07K020700 M12N074003F

HIV IMMUNOGENIC COMPLEXES

[71] Applicant: N/A

[75] Inventors: Pal, Ranajit; Markham, Phillip; Keen, Timothy; Whitney, Stephen; . . .

[21] Application No.: NA

[22] Filed: 20030702

[43] Published: 20040422

[30] Priority: US US199360926A 19930507 ...

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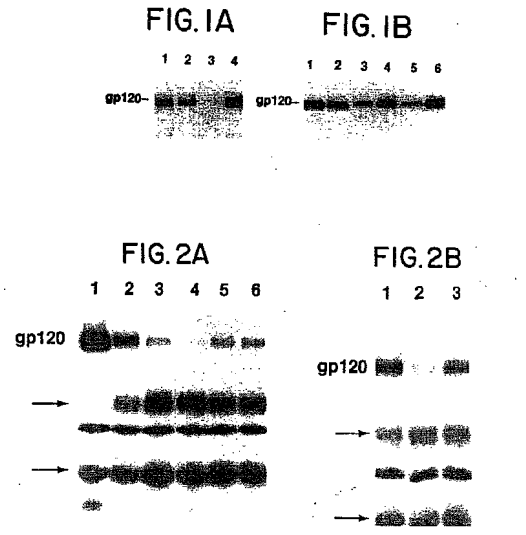

[57] Abstract:

The present invention is directed to a vaccine and method of neutralizing antibodies against HIV infection. The vaccine comprises a complex of gp120 covalently bonded to a fragment of CD4 or a CD4 equivalent molecule.

[52] US Class: 4241881 435005 4350691 4353201 4353391 530350 53038835 53602372

[51] Int'l Class: C07K001416 C07H002104 A61K003921 C07K001610 C12Q000170

[52] ECLA:

VACCINE

[71] Applicant: N/A

[75] Inventors: Toran Garcia, Jose, Luis; Martinez Alonso, Carlos

[21] Application No.: NA

[22] Filed: 20030612

[43] Published: 20040603

[30] Priority: EP EP2002380126A 20020614 ...

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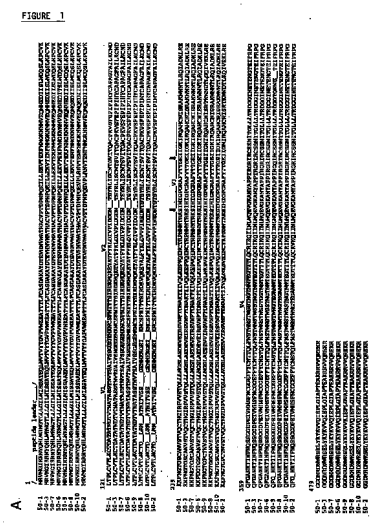

[57] Abstract:

The application relates to antibodies and fragments capable of binding HIV-1 gp120 protein, nucleic acids encoding such proteins, to the use of such proteins to identify active compounds, and to the use of the compounds as vaccines.

[52] US Class: 435005 4350691 4353201 4353391 5303883 53602353

[51] Int'l Class: C12N000115 A61P003118 A61K003800 A61K003576 C12N001509 C12N000121 A61K004800 A61K003900 C07K0014155 C12N000119 C12N001549 C12N000510 A61P003704 A61K0039395 C07K001610 A61K004500

[52] ECLA: C07K001610K1D K61K0039505 M07K020302 M07K021500 M07K0316210 M07K0316550 M07K0316565

DNA VACCINES ENCODING HIV ACCESSORY PROTEINS

[71] Applicant: N/A

[75] Inventors: Weiner, David, B.;
Ayyavoo, Velpandi

[21] Application No.: NA

[22] Filed: 20030516

[43] Published: 20040603

[30] Priority: US WO2001US41357A 20010712 ...

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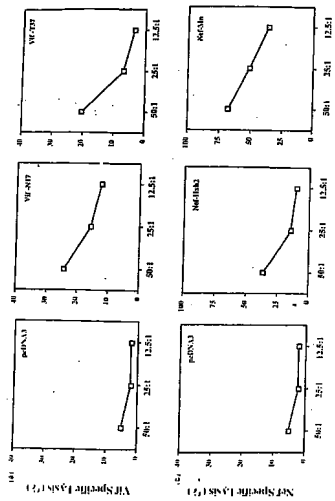
FIGURE 1A



[57] Abstract:

Improved vaccines and methods of using the same are disclosed. Immunosuppressive compositions for treating individuals who have autoimmune diseases or transplants and methods of using the same are disclosed.

[52] US Class: 435005 4350691 435219 4352351 4353201 435325 53602372

[51] Int'l Class: C12N000701 C07K001416 A61K003900 C12Q000170

[52] ECLA: C07K001416F K61K003900 K61K003953 M07K020700 M07K031950 M12Q000170B2B

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: GOVERNMENT OF THE USA AS REPRE

[75] Inventors: Pavlakis, George, N.

[21] Application No.: NA

[22] Filed: 20030819

[43] Published: 20040422

[30] Priority: US US1999173036P 19991223 ...

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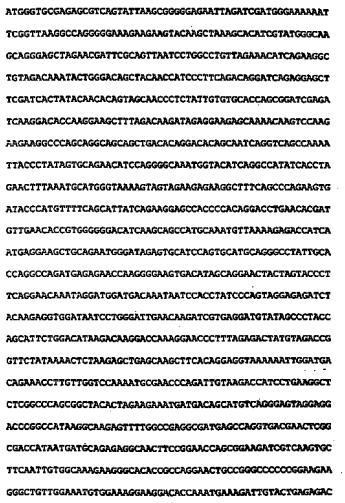

FIG. 1

[57] Abstract:

Nucleic acid constructs containing HIV-1 gag/pol and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numerous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class: 514044 43525233 4353201 435372 530350 53602372

[51] Int'l Class: C12N0015867 A61K003921 C12N000700 C07K0014155 C07K001416 C12N000508 A61K004800 A61K003900

[52] ECLA: A61K003921 C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N074003F M12N083042 M12N083048 M12N083050 M12N084010C M12N084020

IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

[71] Applicant: N/A

[75] Inventors: Franchini, Genoveffa; Hel, Zdenek; Pavlakis, George

[21] Application No.: NA

[22] Filed: 20021025

[43] Published: 20040219

[30] Priority: US US2000200444P 20000428 ...

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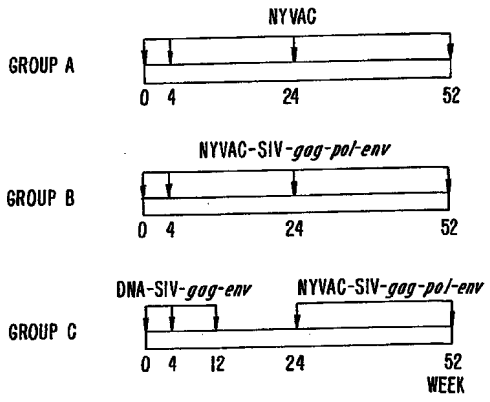

FIG. 1.

[57] Abstract:

This invention relates to improved methods of inducing an immune response for the prevention or treatment of HIV-1 infection by using a nucleic acid vaccine in conjunction with a recombinant viral vaccine, e.g. , a poxvirus vaccine, to potentiate and broaden the immune response. The present invention further provides a particularly effective vaccine regimen comprising a DNA vaccine used in combination with a poxvirus virus, especially NYVAC or ALVAC.

[52] US Class: 4241991 4240932 514044

[51] Int'l Class: A61K003921

[52] ECLA: A61K003921 K61K0039525C K61K003953

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

[71] Applicant: N/A

[75] Inventors: Shiver, John, W.; Perry, Helen, C.; Casimiro, Danilo, R.; Fu, Tong Ming

[21] Application No.: NA

[22] Filed: 20020930

[43] Published: 20040401

[30] Priority: US WO2000US34724A 20001221 ...

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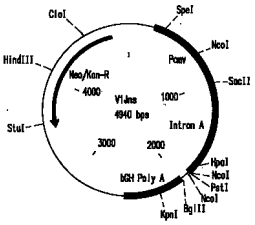

FIG.1A

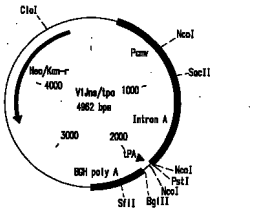

FIG.1B

[57] Abstract:

Pharmaceutical compositions which comprise HIV Pol DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The pol-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and preferably express inactivated versions of the HIV Pol protein devoid of protease, reverse transcriptase activity, RNase H activity and integrase activity, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Pol and codon optimized inactive derivatives of optimized HIV-1 Pol, including DNA molecules which encode inactive Pol proteins which comprise an amino terminal leader peptide.

[52] US Class: 514044 5360231

[51] Int'l Class: C07K001416 C07H002102

[52] ECLA: C07H002102 C07K001416B K61K003953

VACCINATION OF HIV INFECTED PERSONS FOLLOWING HIGHLY ACTIVE ANTIRETROVIAL THERAPY

[71] Applicant: N/A

[75] Inventors: Ho, David; Markowitz, Martin; KLEIN, MICHEL; HABIB, RAPHAELLE, . . .

[21] Application No.: NA

[22] Filed: 20021009

[43] Published: 20040219

[30] Priority: US WO2001US2766A 20010126 ...

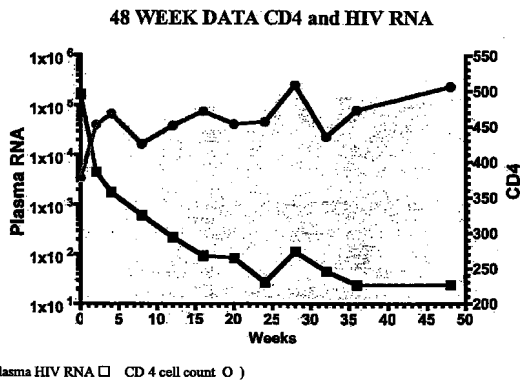

Fig. 1

Go to Fulltext

[57] Abstract:

The present invention provides a method of permitting cessation of antiviral therapy on HIV-infected subjects without virus rebound or with at least a delayed virus rebound or a decreased post rebound set-point. The method comprises the re-induction of HIV-specific immune responses using a vaccination strategy to induce both humoral and cell-mediated immunity. The present invention achieves an immunological control of persistent infectious virus after discontinuation of antiviral therapy. The vaccine strategy according to the invention is both safe and immunogenic in the subject HIV-infected patient population.

[52] US Class: 53602372 4242081 4353201

[51] Int'l Class: A61K004506 A61K003921 A61K003170 C07H002104

[52] ECLA: A61K003921 A61K003170+M A61K004506 C07H002104 K61K0039525C M12N074003F M12N079902A63

MODIFICATIONS OF HIV ENV, GAG, AND POL ENHANCE IMMUNOGENICITY FOR GENETIC IMMUNIZATION

[71] Applicant: N/A

[75] Inventors: Nabel, Gary, J.;
Chakrabarti, Bimal, K.;
Huang, Yue

[21] Application No.: NA

[22] Filed: 20030204

[43] Published: 20040219

[30] Priority: US US2000225097P 20000814 ...

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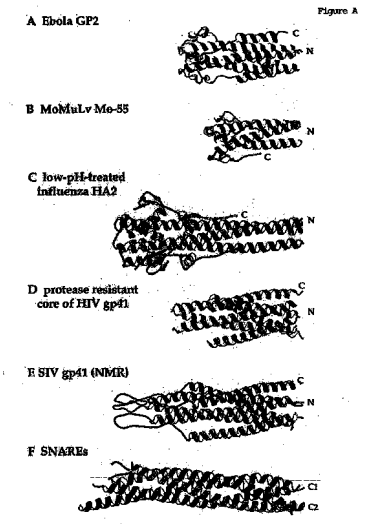

[57] Abstract:

Modified HIV Env, Gag, Pol, or Nef DNA with improved ability to elicit antibody and CTL responses to HIV antigens have been identified as prototype immunogens for the treatment and prevention of HIV infections.

[52] US Class: 435005 4350693 4352351 4353201 435325 530395 53602372

[51] Int'l Class: C12N001500 C12N000500 C12Q000170 C07H002104 C07H002102 A61K003921 C12P002102 C12N001563 C07K001700 C07K000100 C12N000700 C12N001509 C12N001574 C12N001570 C12N000502 C07K001400 C12N000701 C07K001416

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001416F K61K003953 K61K0039545 M07K031900 M12N074003F

DNA-BASED PLASMID FORMULATIONS AND VACCINES AND PROPHYLACTICS CONTAINING THE SAME

[71] Applicant: N/A

[75] Inventors: Lasher, Alfred, W.; Kittle, Joseph, D. ; Widen, Steven, G.

[21] Application No.: NA

[22] Filed: 20021104

[43] Published: 20031211

[30] Priority: US US2001337860P 20011105 ...

Go to Fulltext

Figure 1. Coding nucleotide sequence for the parental antigen for pol HTLV-IIIb fragment (wild type clade B).

GTG CTG GAG GAG ATG TCC CTG CCC GGG CGC TGG AAG CCC AAG
ATG ATC GGC GGC ATC GGC GGC TTC ATC AAG GTC CGC CAG TAC
GAC CAG ATC CTG ATC GAG ATC TGC GGC CAC AAG GCC ATC GGC
ACC GTG CTG GTG GGA CCC ACC CCC GTG AAC ATC ATC GGC CGC
AAC CTG CTG ACC CAG ATC GGC TGC ACC CTG AAC TTC CCC ATC
TCC CCC ATC GAG ACC GTG CCC GTG AAG CTG AAG CCC GGC ATG
GAC GGC CCC AAG GTG AAG CAG TGG CCC CTG ACC GAG GAG AAG
ATC AAG GCC CTG GTC GAA ATC TGC ACC GAG ATG GAG AAG GAG
GGC AAA ATC TCC AAG ATC GGC CCC GAG AAC CCC TAC AAC ACC
CCC GTG TTC GCC ATC AAG AAG AAG GAC TCC ACC AAG TGG CGC
AAG CTG GTG GAC TTC CGC GAG CTG AAC AAG CGC ACC CAG GAC
TTC TGG GAG GTC CAG CTG GGC ATC CCC CAC CCC GCC GGC CT

[57] Abstract:

The invention is a general method for improving the performance of the DNA-based vaccines. The method utilizes a complex DNA-generated profile of antigens to extend the effects of DNA-based vaccines and to broaden the immune response. This broadened immune response in turn improves the protection of the recipient from divergent (but related) strains of a pathogen. In addition, it effectively improves the efficacy of DNA-based vaccines used for treatment of viral diseases, including acquired immunity disorder (AIDS). One embodiment, where the target viral pathogen is HIV (the causative agent for aids), the method identifies an orderly set of plasmids of related sequences that may be used to prime a broad and strong immune response to HLA-restricted viral antigens. This mixture of plasmids is thus capable of priming an appropriate immune response to reduce the viral burden in HIV infected patients or to protect uninfected patients from HIV infection.

[52] US Class: 4241881 42409321 4242081

[51] Int'l Class: A61K004800 A61K003921

[52] ECLA: A61K003921 A61K004800B2 K61K003953 M07K022104

HIV VACCINE AND METHOD OF USE

[71] Applicant: N/A

[75] Inventors: Narayan, Opendra

[21] Application No.: NA

[22] Filed: 20021024

[43] Published: 20031127

[30] Priority: US US1995442010A 19950516 ...

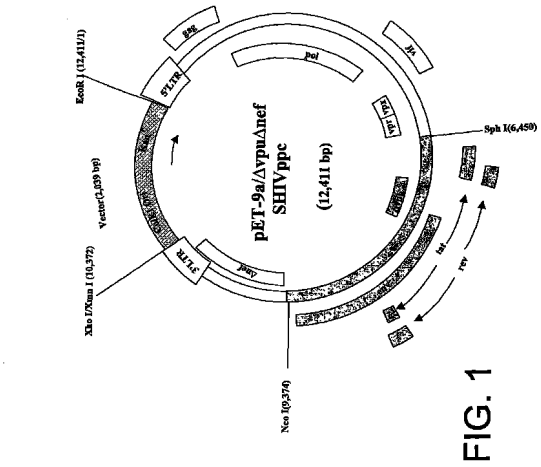

FIG. 1

Go to Fulltext

[57] Abstract:

The present invention relates to a vaccine for immunization against HIV. The vaccine has DNA sequences encoding a plurality of viral proteins, including NEF, VPU and reverse transcriptase. The vaccine is rendered nonpathogenic by the disruption of the gene(s) encoding for at least one of these proteins.

[52] US Class: 514044 4242081 435456

[51] Int'l Class: C07K0014155 A01K0067027 C07K001416 C12N000700 C12N000704 A61K003900

[52] ECLA: A01K0067027 C07K0014155 C07K001416 C12N000700 C12N000704 K61K003900 K61K003951 M07K020700 M07K031900 M12N074003F

VACCINES

[71] Applicant: SMITHKLINE BEECHAM BIOLOG

[75] Inventors: Friede, Martin; Garcon, Nathalie; Gerard, Catherine, Marie Ghislaine; . . .

[21] Application No.: NA

[22] Filed: 20030303

[43] Published: 20030828

[30] Priority: GB GB19998885A 19990419 ...

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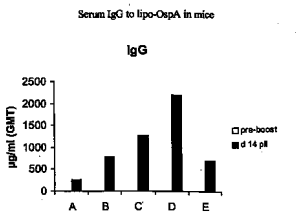

FIG. 1

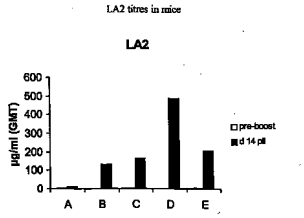

FIG. 2

[57] Abstract:

The present invention relates to adjuvant compositions which are suitable to be used in vaccines. In particular, the adjuvant compositions of the present invention comprises a saponin and an immunostimulatory oligonucleotide, optionally with a carrier. Also provided by the present invention are vaccines comprising the adjuvants of the present invention and an antigen. Further provided are methods of manufacture of the adjuvants and vaccines of the present invention and their use as medicaments. Methods of treating an individual susceptible to or suffering from a disease by the administration of the vaccines of the present invention are also provided.

[52] US Class: 4241841 4241861 4242041 4242081 4242261 4242271 4242281 4242291 4242311 4242491 4242581 4242631 4242781 4242831 424450 514025 514044

[51] Int'l Class: A61K003900

[52] ECLA: A61K003900D6 K61K0039555A K61K0039555B5 K61K0039555B7 K61K0039555B8 K61K0039555B13 K61K0039555B15 K61K003960P20

COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

[71] Applicant: N/A

[75] Inventors: Robinson, Harriet, L.; Smith, James; Hua, Jian

[21] Application No.: NA

[22] Filed: 20030103

[43] Published: 20030918

[30] Priority: US WO2001US6795A 20010302 ...

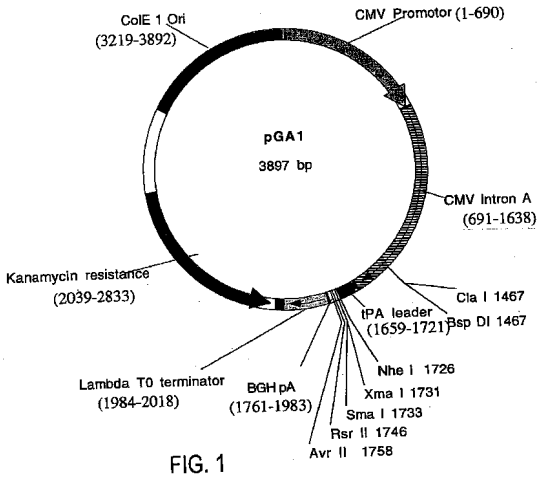

FIG. 1

Go to Fulltext

[57] Abstract:

We have developed DNA and viral vectors that can be used, alone or in combination, as a vaccine against one HIV lade, subtype, or recombinant form of HIV or against multiple HIV clades, subtypes, or recombinant forms. Moreover, the vectors can encode a variety of antigens, which may be obtained from one clade or from two or more different clades, and the antigens selected and/or the manner in which the vectors are formulated (e.g., mixed) can be manipulated to generate a protective immune response against a variety of clades (e.g. , the clades to which a patient is most likely to be exposed; with the proportions of the components of the vaccine tailored to the extent of the patient's risk to a particular dade or clades).

[52] US Class: 4241881 435456 514044

[51] Int'l Class: C12N001570 C07K001416 A61K003921 C12N001585

[52] ECLA: A61K003921 C07K001416 C12N001570 C12N001585 K61K0039525C K61K003953 M07K020700 M12N083000 M12N083015 M12N083042 M12N083060

VACCINE FOR THE PROPHYLACTIC OR THERAPEUTIC IMMUNIZATION AGAINST HIV

[71] Applicant: N/A

[75] Inventors: Voss, Gerald

[21] Application No.: NA

[22] Filed: 20020731

[43] Published: 20030821

[30] Priority: GB GB20002200A 20000131 ...

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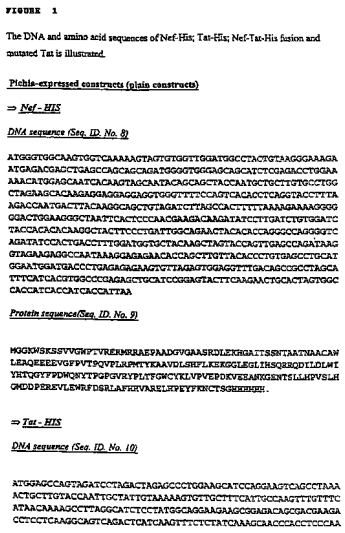

FIGURE 1

The DNA and amino acid sequences of Nef-His; Tat-His; Nef-Tat-His fusion and mutated Tat is illustrated.

Pichia-expressed constructs (plain constructs)

⇒ *Nef - HIS*

DNA sequence (Seq. ID. No. 8)

ATGGGTGGCAAGTGGTCAAAAAGTAGTGTGGTTGGATGGCCTACTGTAAGGGAAAGA
ATGAGACGAGCTGAGCCAGCAGCAGATGGGTGGGAGCAGCATCTCGAGACCTGGAA
AAACATGGAGCAATCACAAGTAGCAATACAGCAGCTACCAATGCTGCTTGTGCCTGG
CTAGAAGCACAAGAGGAGGAGGTGGGTTTTCCAGTCACACCTCAGGTACCTTTA
AGACCAATGACTTACAAGGCAGCTGTAGATCTTAGCCACTTTTTAAAAGAAAAGGGG
GGACTGGAAGGGCTAATTCACTCCCAACGAAGACAAGATATCCTTGATCTGTGGATC
TACCACACACAAGGCTACTTCCCTGATTGGCAGAACTACACACCAGGGCCAGGGGTC
AGATATCCACTGACCTTTGGATGGTGCTACAAGCTAGTACCAGTTGAGCCAGATAAG
GTAGAAGAGGCCAATAAAGGAGAGAACACCAGCTTGTTACACCCTGTGAGCCTGCAT
GGAATGGATGACCCTGAGAGAGAAGTGTTAGAGTGGAGGTTTGACAGCCGCCTAGCA
TTTCATCACGTGGCCCGAGAGCTGCATCCGGAGTACTTCAAGAACTGCACTAGTGGC
CACCATCACCATCACCATTAA

Protein sequence(Seq. ID. No. 9)

MGGKWSKSSVVGWPTVRERMRRAEPAADGVGAASRDLEKHGAITSSNTAATNAACAW
LEAQEEEEVGFPVTPQVPLRPMTYKAAVDLSHFLKEKGGLEGLIHSQRRQDILDLWI
YHTQGFFPDWQNYTPGPGVRYPLTFGWCYKLVPVEPDKVEEANKGENTSLLHPVSLH
GMDDPEREVLEWRFDSRLAFHHVARELHPEYFKNCTSGKHHHHH.

⇒ *Tat - HIS*

DNA sequence (Seq. ID. No. 10)

ATGGAGCCAGTAGATCCTAGACTAGAGCCCTGGAAGCATCCAGGAAGTCAGCCTAAA
ACTGCTTGTACCAATTGCTATTGTAAAAAGTGTTGCTTTCATTGCCAAGTTTGTTTC
ATAACAAAAGCCTTAGGCATCTCCTATGGCAGGAAGAAGCGGAGACAGCGACGAAGA
CCTCCTCAAGGCAGTCAGACTCATCAAGTTTCTCTATCAAAGCAACCCACCTCCCAA

[57] Abstract:

The invention provides the use of a) an HIV Tat protein or polynucleotide; or b) an HIV Nef protein or polynucleotide; or c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide (Nef-Tat); and an HIV gpl20 protein or polynucleotide in the manufacture of a vaccine for the prophylactic or therapeutic immunisation of humans against HIV.

[52] US Class: 514044 4241881

[51] Int'l Class: C12N001549 A61K003912 C12N001509 C07K001416 A61K003939 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416D C07K001416F K61K003900 K61K003953 K61K0039555B7 K61K003957 M07K031900

ADJUVANT

[71] Applicant: N/A

[75] Inventors: Braun, Ralph, P.; Thomsen, Lindy; Van Wely, Catherine; Ertl, Peter

[21] Application No.: NA

[22] Filed: 20020319

[43] Published: 20031009

[30] Priority: US US2002102622A 20020319

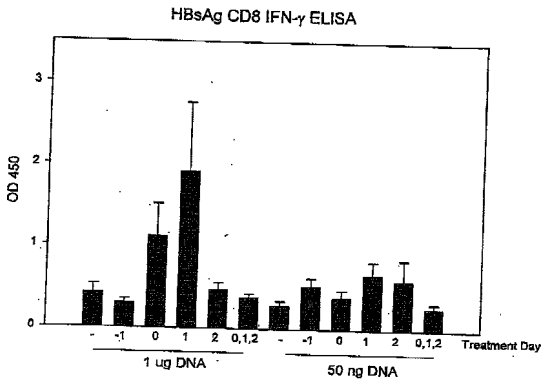

Figure 1

Go to Fulltext

[57] Abstract:

The present invention relates to the fields of vaccines, vaccine adjuvants, molecular biology and immunology, and generally adjuvants and nucleic acid immunization techniques. More specifically, the invention relates to certain adjuvant compositions, and to vaccine and/or nucleic acid immunization strategies employing such compositions. The invention in particular relates to DNA vaccines that are useful in the prophylaxis and treatment of HIV infections, more particularly when administered by particle mediated delivery.

[52] US Class: 4240932 514044 514292

[51] Int'l Class: A61K003939 A61K003921 A61K00314745 A61K004506 C07K001416

[52] ECLA: A61K00314745 A61K00314745+M A61K003921 A61K003939 A61K004506 C07K001416B K61K003953 K61K003954 K61K0039555B5 M07K020700

DNA VECTORS CONTAINING MUTATED HIV PROVIRUSES

[71] Applicant: N/A

[75] Inventors: Aldovini, Anna

[21] Application No.: NA

[22] Filed: 20011023

[43] Published: 20030821

[30] Priority: US US2000242589P 20001023 ...

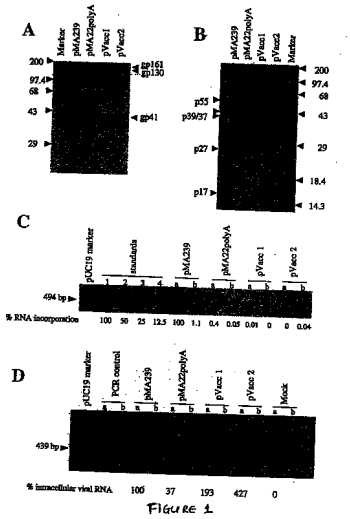

Figure 1

Go to Fulltext

[57] Abstract:

The present invention pertains to mutated, non-infectious HIV viral particles, vectors for production of such particles and vaccines employing such vectors. The non-infectious particles are obtained by introducing a number of inactivating mutations into a native viral genome. These mutations are designed so as to minimize the probability of genetic reversion to an infectious virus, while retaining the basic protein content and immunogenic properties of a wild-type virion. The altered viral genome expresses proteins that can assemble into non-infectious particles which contain immunogenic components of the virus, but which are unable to infect cells. The preferred mutations are introduced in at least one amino acid position of the NC protein in combination with at least one other mutation in an amino acid position of the RT protein or the In protein. In one embodiment, the mutations to the native HIV genome may also be made in at least one amino acid position of the NC protein, at least one position in the RT protein, and at least one position in the In protein. In another embodiment, the mutations to the native HIV genome may be introduced in clusters, where two or more mutations are made in the NC protein, the RT protein, the In protein, or any combinations thereof.

[52] US Class: 514044 4241881 4353201 435366 435456 53602372

[51] Int'l Class: C12N000508 C07K001416 A61K003921 C12N0015867

[52] ECLA: A61K003921 C07K001416B C12N0015867 K61K003953 M07K022124

NOVEL EXPRESSION VECTORS AND USES THEREOF

[71] Applicant: N/A

[75] Inventors: Krohn, Kai; Blazevic, Vesna; Tahtinen, Marja; Ustav, Mart; Toots, . . .

[21] Application No.: NA

[22] Filed: 20020503

[43] Published: 20030710

[30] Priority: FI FI2001922A 20010503 ...

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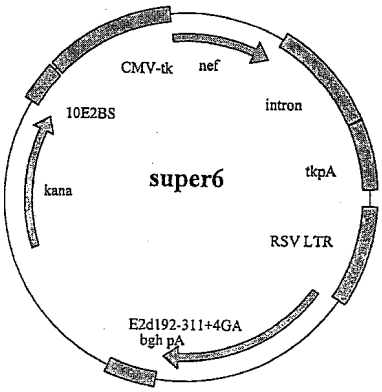

FIG. 1

[57] Abstract:

The present invention relates to novel vectors, to DNA vaccines and gene therapeutics containing said vectors, to methods for the preparation of the vectors and DNA vaccines and gene therapeutics, and to therapeutic uses of said vectors. More specifically, the present invention relates to novel vectors comprising an expression cassette of a gene of a nuclear-anchoring protein, which contains a DNA binding domain capable of binding to a specific DNA sequence and a functional domain capable of binding to a nuclear component and a multimerized DNA sequence forming a binding site for the nuclear-anchoring protein, and optionally an expression cassette of a gene, genes or a DNA sequence or DNA sequences of interest. The present invention further relates to DNA vaccines and gene therapeutics containing the novel vectors, to methods for the preparation of the novel vectors and the DNA vaccines and gene therapeutics containing the novel vectors, and to the use the vectors in therapy.

[52] US Class: 42409321 4350691 435199 4353201 435325 435456

[51] Int'l Class: C12N001585 A61K004800

[52] ECLA: C12N001585 K61K003953 K61K004800 M12N080010E M12N083042 M12N084020 M12N084020A

CHEMICALLY MODIFIED HIV ENVELOPE GLYCOPROTEIN

[71] Applicant: N/A

[75] Inventors: Boudet, Florence; Chevalier, Michel; Dubayle, Jean; El Habib, Raphaelle

[21] Application No.: NA

[22] Filed: 20021118

[43] Published: 20030529

[30] Priority: FR FR200059A 20000104 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to an envelope glycoprotein of HIV in purified form which can be obtained by a method comprising the following steps: (1) production of an envelope glycoprotein in purified form, (2) reduction of at least one disulfide bridge of the glycoprotein of step (1) , (3) alkylation of at least two free sulfhydryl groups, (4) optionally, oxidation of the remaining free sulfhydryl groups, (5) denaturation and (6) renaturation, and to its use in a vaccine against HIV which can be used for inducing antibodies which neutralize HIV in a human individual, therapeutically or prophylactically.

[52] US Class: 435005 4350693 4352351 4353201 435325 530395 53602372

[51] Int'l Class: C07K001416 A61P003118 C07K001610 A61K003900

[52] ECLA: C07K001416D C07K001610K1D K61K003900

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

[71] Applicant: N/A

[75] Inventors: Shiver, John, W; Liang, Xiaoping; Fu, Tong Ming

[21] Application No.: NA

[22] Filed: 20020613

[43] Published: 20030522

[30] Priority: US US2002149640A 20020613

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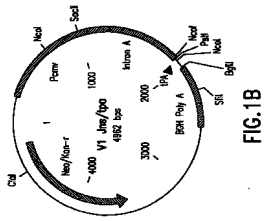

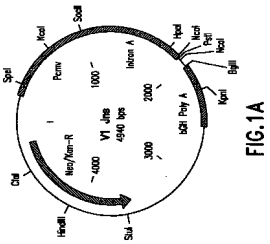

[57] Abstract:

Pharmaceutical compositions which comprise HIV Nef DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The nef-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and express the HIV Nef protein or biologically relevant portions thereof, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Nef and derivatives of optimized HIV-1 Nef, including nef modifications comprising amino terminal leader peptides, removal of the amino terminal myristylation site, and/or modification of the Nef dileucine motif. These modifications may effect wild type characteristics of Nef, such as myristylation and down regulation of host CD4.

[52] US Class: 514044 4241841

[51] Int'l Class: C07K001416

[52] ECLA: C07K001416F K61K003953

CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

[71] Applicant: UNIV PENNSYLVANIA

[75] Inventors: Hoxie, James, A.; LaBranche, Celia, C.; Doms, Robert, W.; Hoffman, . . .

[21] Application No.: NA

[22] Filed: 20020716

[43] Published: 20030515

[30] Priority: US US1999317556A 19990524 ...

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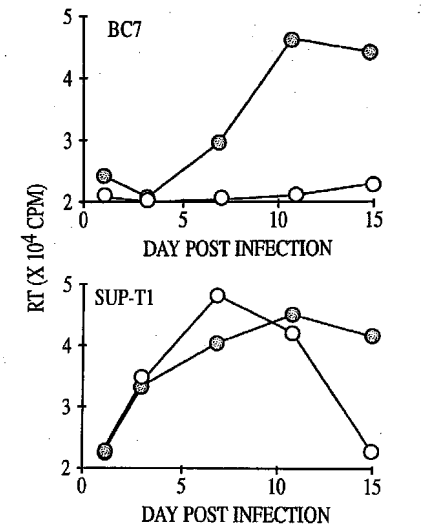

[57] Abstract:

The invention relates to novel CD4-independent HIV Envelope proteins and uses therefor.

[52] US Class: 4242081 4352351 4353201 435325

[51] Int'l Class: C12N000119 C12N001548 A61P003118 G01N0033569 C12N000701 A61K003800 C12N001563 A61K003152 C12N001500 G01N003350 C12N001570 C12N000700 C12N000500 G01N003368 G01N003315 A61K004800 A61K003821 C07K001416 C12N000121 C12N001533 C12N000510 C12N000502 C07H002102 A61K003921 C12N001574 C12N001509 C12N000115 A61K004500

[52] ECLA: C07K001416D C12N000700 M12N074003F

SYNTHETIC HIV GENES

[71] Applicant: N/A

[75] Inventors: Shiver, John, W.; Davies, Mary, Ellen; Freed, Daniel, C.; Liu, Margaret, . . .

[21] Application No.: NA

[22] Filed: 20020520

[43] Published: 20030508

[30] Priority: US US199612082P 19960222 ...

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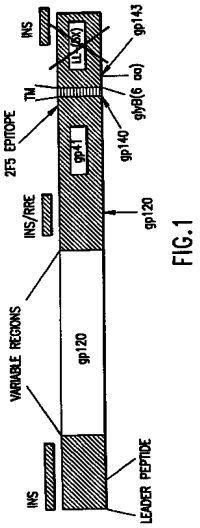

FIG. 1

[57] Abstract:

Synthetic DNA molecules encoding HIV genes and modifications of HIV genes are provided. The codons of the synthetic molecules use codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through neutralizing antibody and cell-mediated immunity.

[52] US Class: 435005 4350693 4352351 4353201 435366 530350 53602372

[51] Int'l Class: C12N000508 C07K001416

[52] ECLA: C07K001416D K61K003951 M07K020700 M07K031900

POLYPEPTIDE INDUCING ANTIBODIES NEUTRALIZING HIV

[71] Applicant: N/A

[75] Inventors: Brasseur, Robert;
Charloteaux, Benoit;
Chevalier, Michel; El Habib, . . .

[21] Application No.: NA

[22] Filed: 20020107

[43] Published: 20030501

[30] Priority: FR FR2001141A 20010105 ...

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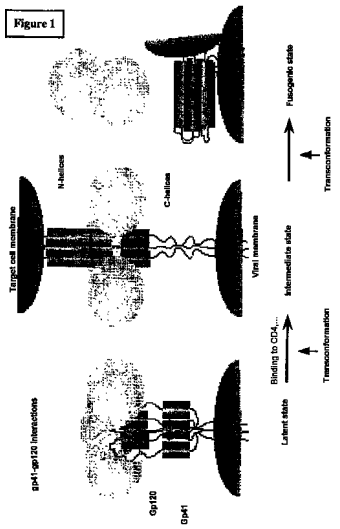

[57] Abstract:

The present invention thus provides a polypeptide capable of forming a structure corresponding to or mimicking the intermediate of gp41 as well as its use in a vaccine for treating or preventing HIV infections.

[52] US Class: 435005 4241881 4350693 435219 4353201 435325 53602372

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416D K61K003900 M07K020700 M07K031900

SYNTHETIC HIV GAG GENES

[71] Applicant: N/A

[75] Inventors: Shiver, John, W.; Freed, Daniel, C.; Davies, Mary, Ellen; Liu, Margaret, . . .

[21] Application No.: NA

[22] Filed: 20011009

[43] Published: 20030313

[30] Priority: US US199737854P 19970207 ...

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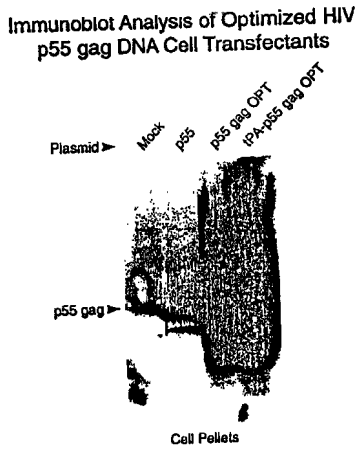
FIGURE 1



[57] Abstract:

Synthetic DNA molecules encoding HIV gag and modifications of HIV gag are provided. The codons of the synthetic molecules are codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through stimulation of neutralizing antibody and cell-mediated immunity.

[52] US Class: 53602372 435005 435006 5360237

[51] Int'l Class: C07K001416 A61K003900

[52] ECLA: C07K001416B K61K003900 M07K020300 M07K020700 M07K031902

VACCINE AGAINST INFECTIOUS AGENTS HAVING AN INTRACELLULAR PHASE, COMPOSITION FOR THE TREATMENT AND PREVENTION OF HIV INFECTIONS,

[71] Applicant: N/A

[75] Inventors: Chermann, Jean Claude; Le Contel, Carole; Galea, Pascale

[21] Application No.: NA

[22] Filed: 20010406

[43] Published: 20030130

[30] Priority: FR FR19957914A 19950630 ...

Go to Fulltext

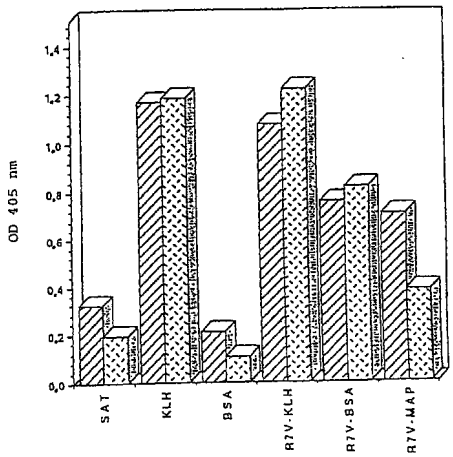


FIG.1A

[57] Abstract:

A vaccine for treating and/or preventing infectious diseases where the infectious agent has at least one intracellular phase in the host during its multiplication cycle, is disclosed. The vaccine comprises at least one cryptic epitope of a cellular element that is carried along by an intracellular infectious agent as it leaves the cell, and revealed by said infectious agent. A composition for treating and/or preventing HIV infections, antibodies to a peptide of interest, and a diagnostic method, are also disclosed.

[52] US Class: 4241881 4242021 4242081

[51] Int'l Class: C07K0014155 A61K003900

[52] ECLA: C07K0014155 K61K003900 M07K020300 M07K021500

GENETICALLY ENGINEERED CO-EXPRESSION DNA VACCINES, CONSTRUCTION METHODS AND USES THEREOF

[71] Applicant: N/A

[75] Inventors: Hone, David; Lewis, George; Fouts, Timothy; Bagley, Ken; Boyson, . . .

[21] Application No.: NA

[22] Filed: 20010910

[43] Published: 20021219

[30] Priority: US US2000231070P 20000908 ...

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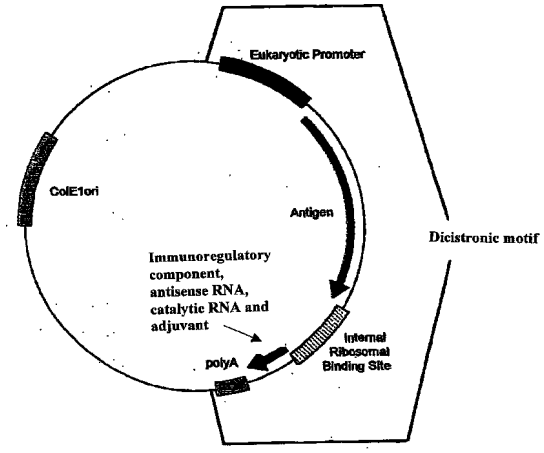
FIGURE 1



[57] Abstract:

The present invention relates to co-expression DNA vaccines and methods for vaccinating animals against viral, bacterial and parasitic pathogens. In particular, the present invention relates to DNA vaccines that co-express antigens in combination with biologically-active components, such as adjuvants, immunoregulatory agents, antisense RNAs, and/or catalytic RNAs.

[52] US Class: 514044 4241901

[51] Int'l Class: C07K001416 A61K003939 A61K003921

[52] ECLA: A61K003921 A61K003939 C07K001416B C07K001416D C07K001416F K61K003953 K61K0039555B1 K61K0039555B2 K61K0039555B2L K61K0039555B3 K61K003957

MHC-I-RESTRICTED PRESENTATION OF HIV-1 VIRION ANTIGENS WITHOUT VIRAL REPLICATION. APPLICATION TO THE STIMULATION OF CTL AND VACCINATION IN

[71] Applicant: N/A

[75] Inventors: Schwartz, Olivier; Buseyne, Florence; Marsac, Delphine; Michel, Marie . . .

[21] Application No.: NA

[22] Filed: 20020227

[43] Published: 20021121

[30] Priority: US US2001271432P 20010227 ...

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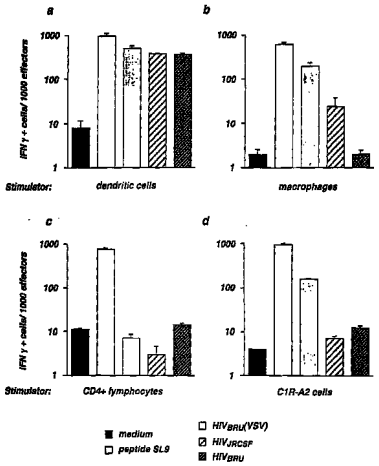

FIG. 1

[57] Abstract:

Dendritic cells and macrophages can process extracellular antigens for presentation by MHC-I molecules. HIV-1 epitopes derived from incoming virions are presented through the exogenous MHC-I pathway in primary human dendritic cells, and to a lower extent in macrophages, leading to cytotoxic T lymphocyte activation in the absence of viral protein neosynthesis. Exogenous antigen presentation required adequate virus-receptor interactions and fusion of viral and cellular membranes. These results provide new insights about how anti-HIV cytotoxic T lymphocytes can be activated and are useful for anti-HIV vaccine design.

[52] US Class: 4241861 4352351 4353201 435456

[51] Int'l Class: G01N003350 C12N000704 A61K003921

[52] ECLA: C12N000704A A61K003921 G01N003350D2F2B K61K0039525D K61K003953 K61K003957

ALPHAVIRUS VECTORS AND VIROSOMES WITH MODIFIED HIV GENES FOR USE IN VACCINES

[71] Applicant: ALPHAVAX INC

[75] Inventors: Olmsted, Robert; Keith, Paula; Dryga, Sergey; Caley, Ian; Maughan, . . .

[21] Application No.: NA

[22] Filed: 20011116

[43] Published: 20021003

[30] Priority: US US2000216995P 20000707 ...

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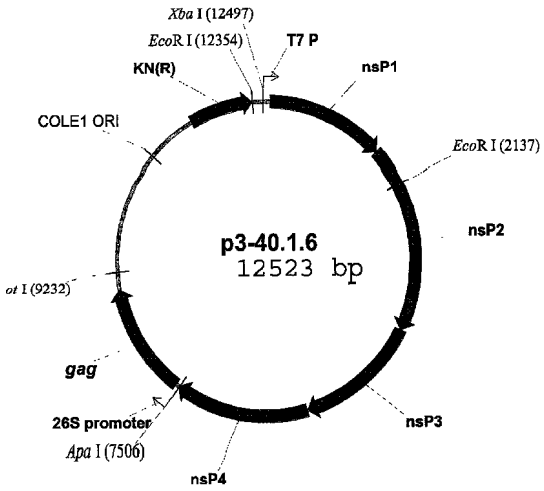

[57] Abstract:

The present invention provides methods and compositions comprising a population of alphavirus replicon particles comprising two or more isolated nucleic acids selected from 1) an isolated nucleic acid encoding an env gene product or an immunogenic fragment thereof of a human immunodeficiency virus, 2) an isolated nucleic acid encoding a gag gene product or an immunogenic fragment thereof of a human immunodeficiency virus, wherein the gag gene product or immunogenic fragment thereof is modified to inhibit formation of virus-like particles containing the gag gene product or the immunogenic fragment thereof and their release from a cell, and 3) an isolated nucleic acid encoding a pol gene product or an immunogenic fragment thereof of a human immunodeficiency virus, wherein the pol gene product or immunogenic fragment thereof is modified to inhibit protease, integrase, RNase H and/or reverse transcriptase activity, and wherein the nucleic acids are each contained within a separate alphavirus replicon particle.

[52] US Class: 4240932 4241861 4241881 530350 530826 53602372

[51] Int'l Class: C07K001416 A61K003921 C07K001418 C12N000702 A61K003900

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001418A C12N000702 K61K003900 K61K0039525C M07K020700 M07K022100 M12N077016A

HIV-1 VACCINES AND SCREENING METHODS THEREFOR

[71] Applicant: N/A

[75] Inventors: Stamatatos, Leonidas; Barnett, Susan, W. ; Srivastava, Indresh, K.

[21] Application No.: NA

[22] Filed: 20010626

[43] Published: 20020912

[30] Priority: US US2000214608P 20000627 ...

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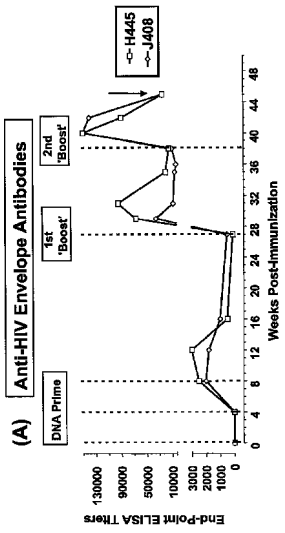

FIGURE 1

[57] Abstract:

Methods for immunizing, and immunogen pharmaceutical compositions for eliciting a heterologous immune response to HIV-1 in an animal, preferably a human, are provided, utilizing a modified HIV-1 envelope protein or fragment or DNA encoding a modified HIV-1 envelope protein or fragment, the modified protein having a HIV-1 envelope protein V2 region deletion. A humoral response against heterologous HIV-1 strains is achieved.

[52] US Class: 4241881 514044

[51] Int'l Class: C07K001416 A61K003800 A61K0031711 G01N003350 A61P003118 A61K003921 G01N003315 C12N001509 A61K0039395 G01N0033569 A61K004800

[52] ECLA: A61K003921 C07K001416D K61K0039525 K61K003953 M07K020700

ADENOVIRUS CARRYING GAG GENE HIV VACCINE

[71] Applicant: N/A

[75] Inventors: Chen, Ling; Shiver, John, W.; Bett, Andrew, J.; Casimiro, Danilo, R.; . . .

[21] Application No.: NA

[22] Filed: 20010327

[43] Published: 20020523

[30] Priority: US US1999142631P 19990706 ...

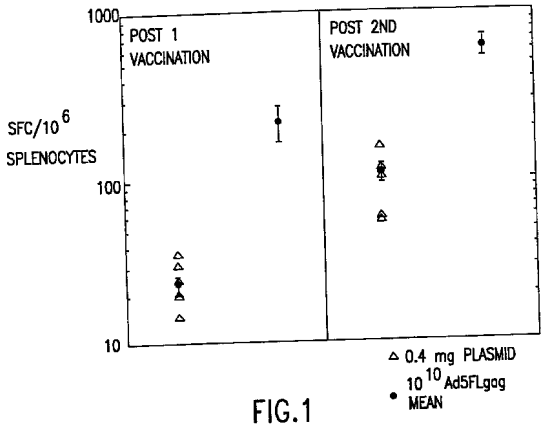

FIG.1

Go to Fulltext

[57] Abstract:

An adenoviral vector is described which carries a codon-optimized gag gene, along with a heterologous promoter and transcription terminator. This viral vaccine can effectively prevent HIV infection when administered to humans either alone or as part of a prime and boost regime also with a vaccine plasmid.

[52] US Class: 435005 4241881 4242081 4242331 4352351 4353201 435325

[51] Int'l Class: C12Q000170 C12N0015861 C07K001416

[52] ECLA: C07K001416B C12N0015861 C12Q000170B2B K61K0039525C K61K003953 M07K022104

THERAPEUTIC DNA VACCINATION

[71] Applicant: N/A

[75] Inventors: Lisziewicz, Julianna; Lori, Franco

[21] Application No.: NA

[22] Filed: 20010523

[43] Published: 20020221

[30] Priority: US US199758933P 19970915 ...

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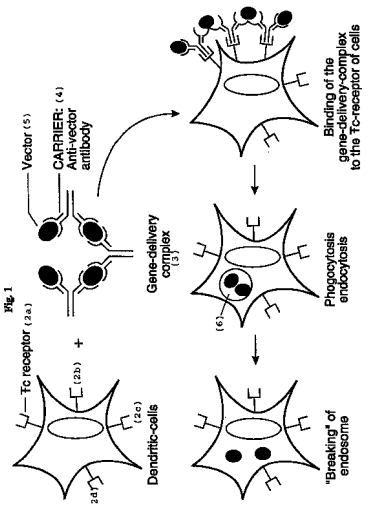

[57] Abstract:

A method for genetic immunization comprises administering a highly active antiretroviral therapy to control viral replication, and then administering a transcutaneous DNA vaccine.

[52] US Class: 4242081 514023 514044

[51] Int'l Class: A61K004506 A61K00314353 A61K0031428 A61K003117 A61K003921 A61K003147 C12N001587 A61K004748 A61K0031496 A61K003900

[52] ECLA: A61K003117+M A61K0031428+M A61K00314353+M A61K003147+M A61K0031496+M A61K003900 A61K003921 A61K004506 A61K004748R2T C12N001587 K61K0039515C K61K003953 K61K003954 K61K003954A

POSTINFECTION HUMAN IMMUNODEFICIENCY VIRUS (HIV) VACCINATION THERAPY

[71] Applicant: CHIRON CORP

[75] Inventors: Rutter, William, J. ; Penhoet, Edward, E.

[21] Application No.: NA

[22] Filed: 20010601

[43] Published: 20020207

[30] Priority: US US199624575P 19960826 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides for a postinfection HIV vaccination therapy having a therapeutic goal of eliminating HIV in the patient. The therapy directs administration of an agent to reduce the viral load of a patient with a measurable viral load of HIV, administration of an agent that induces an increase in production of the patient's CD4 T-cells, and administration of a vaccine capable of stimulating the patient to produce CTLs targeted to HIV-infected cells.

[52] US Class: 4241841 4353201 530351 5360231

[51] Int'l Class: A61K003921

[52] ECLA: A61K003921 A61K003921+M

AIDS DNA VACCINE THAT PREVENTS SIVMAC239 VIRUS INFECTION IN MONKEYS

[71] Applicant: GENECCIN CO LTD

[75] Inventors: Sung, Young Chul;
Suh, You Suk

[21] Application No.: NA

[22] Filed: 20001206

[43] Published: 20010621

[30] Priority: KR KR199955129A 19991206 ...

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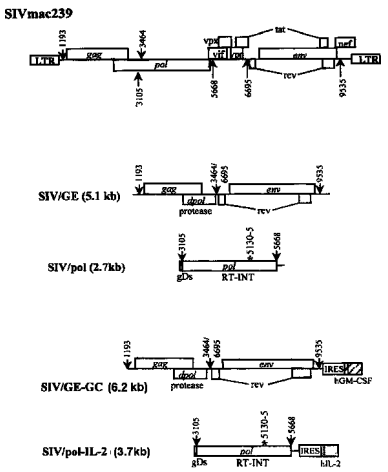
FIG. 1



[57] Abstract:

The present invention relates to a plasmid carrying simian immunodeficiency virus (SIV)-derived genes.
Particularly, the present invention relates to the plasmid pSIV/GE which carrys gag, protease, env and rev gene, all derived from SIV, but not tat and nef gene and the plasmid pSIV/pol which carrys SIV-derived pol gene; the plasmid pHIV/GE and pHIV/pol that are substituted the SIV-derived genes in the plasmid pSIV/GE and pSIV/pol by human immunodeficiency virus (HIV)-derived corresponding genes; DNA vaccine containing the plasmid pSIV/GE and pSIV/pol; and DNA vaccine containing the plasmid pHIV/GE and pHIV/pol.
The present invention offers AIDS DNA vaccines which successfully exert perfect medicinal efficacy on primates, giving a measure of success in developing effective AIDS DNA vaccines applicable to humans. The plasmid of the present invention can be effectively used for not only AIDS prevention by AIDS infection but also therapeutic agent for AIDS.

[52] US Class: 4353201 514044

[51] Int'l Class: C07K001416 C07K0014155 C07K0014035

[52] ECLA: C07K0014035 C07K0014155 C07K001416 C07K001416B M07K020700 M07K031900 M61K003953

DNA SEQUENCES ENCODING MODIFIED RETROVIRAL GAG POLYPEPTIDES AND VACCINES CONTAINING THEM OR AGGREGATES THEREOF

[71] Applicant: GENEART GMBH

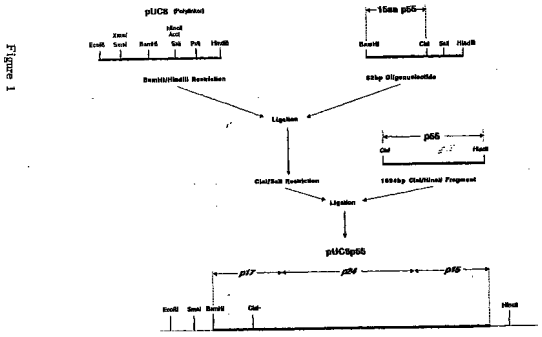
[72] Inventors: Wolf, Hans, Prof. Dr.; Fliessbach, Holger, Dipl. Biol. ; v. Brunn, . . .

[21] Application No.: NA

[22] Filed: 19910321

[43] Published: 20040825

[30] Priority: EP EP1990105319A 19900321 ...



Go to Fulltext

[57] Abstract:

Conventional HIV-1 vaccine strategies, based on the external part of the env protein gp160/120, were till now not found to induce protective immunity. In addition, enhancing antibodies may negatively influence disease progression. Due to the early appearence in infection and its particulate nature, the virus core protein p55-GAG seems to be a promising vaccine candidate. p55-core expression was assayed by recombinant vaccinia and baculo viruses. Shedding of 90-110 nm core particles into culture medium was observed in both expression systems and proven by ultrathin-section electron microscopy and sedimentation analysis. Addition of the protease coding sequence resulted in an efficient processing of the p55-precursor molecule-in the Baculo-system only. Significant protease mediated processing of the GAG precursor in the Vaccinia-system was only achievable by addition of the entire POL coding sequence. In contrast to other retroviruses (MMLV), HIV-1 protease mediated processing is not dependent on the myristylation of p55-GAG. As protease mediated processing does not complete the maturation process of the p55-precursor particles, but, in contrast, inhibits particle formation, further investigations focused on the application of premature p55-GAG-particles. To extend their immunological spectrum, a consensus sequence of the HIV-major neutralizing epitope V3 of gp120, designed in our lab, was inserted into different regions of the p55 carrier molecule. The expression of the p55/V3 chimeric proteins in E. coli and the Vaccinia expression system was proven by Western blot analysis using (i) monoclonal antibodies directed to p55 and the inserted V3 region and (ii)

[52] US Class:

[51] Int'l Class: C07K001416 C12N001548 C12N001549 A61K003900 A61K003800

[52] ECLA: C07K001416B K61K003800 K61K003900 M07K020700

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US GOVERNMENT

[72] Inventors: PAVLAKIS GEORGE N

[21] Application No.: NA

[22] Filed: 20020531

[43] Published: 20060419

[30] Priority: US US2001872733A 20010601 ...

Go to Fulltext

[No drawing]

[57] Abstract:

[52] US Class:

[51] Int'l Class: C12N000700 C07K0014155 A61K00317052 C12N001509 A61P003704 A61K003921 C12N000121 C12N0015867 C07K001416 A61K004800 C12N000510 A61P003118 A61K003900

[52] ECLA: C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N083042 M12N083048 M12N083050 M12N084010C M12N084020 K61K0039525C M12N074003F

HIV-3 RETROVIRUS STRAINS AND THEIR USE

[71] Applicant: INNOGENETICS NV

[72] Inventors: Deleys, Robert,
c/o Innogenetics N. V.;
Vanderborght, Bart, c/o . . .

[21] Application No.: NA

[22] Filed: 19880609

[43] Published: 20031210

[30] Priority: EP EP20038364A 19880609 ...

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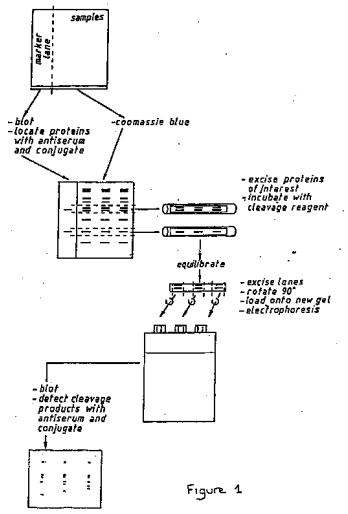


Figure 1

[57] Abstract:

Described are new HIV-3 retrovirus strains comprising in their nucleic acid sequence a contiguous R region and an U3 region sequence showing a homology of more than 70% with the nucleic acid sequence as represented in SEQ ID NO 3, and provided that said HIV-3 retrovirus strains have at least one nucleotide difference in their sequence compared to the HIV-3 (ANT 70) retrovirus strain deposited under ECACC N° V88060301. Further described are antigens obtained from the virus, particularly proteins p12, p16, p25 and glycoproteins gp41 and gp120 to be used in the diagnosis of ARC or AIDS caused by HIV-3. Immunogenic compositions to be used as vaccines contain an envelope glycoprotein of HIV-3 such as gp41 or gp120.

[52] US Class:

[51] Int'l Class: C12N000700 C07K001610 C07K001416 C12N001549

[52] ECLA: C07K001416 C07K001416D C07K001610K1 C07K001610K1B C12N000700 K61K0039505 M07K020300 M12N074003F

HIV-3 RETROVIRUS STRAINS AND THEIR USE

[71] Applicant: INNOGENETICS NV

[72] Inventors: Deleys, Robert,
c/o Innogenetics N. V.;
Vanderborght, Bart, c/o . . .

[21] Application No.: NA

[22] Filed: 19880609

[43] Published: 20040512

[30] Priority: EP EP1994110658A 19880609 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Described are new HIV-3 retrovirus strains comprising in their nucleic acid sequence a contiguous R region and an U3 region sequence showing a homology of more than 70% with the nucleic acid sequence as represented in SEQ ID NO 3, and provided that said HIV-3 retrovirus strains have at least one nucleotide difference in their sequence compared to the HIV-3 (ANT 70) retrovirus strain deposited under ECACC N° V88060301. Further described are antigens obtained from the virus, particularly proteins p12, p16, p25 and glycoproteins gp41 and gp120 to be used in the diagnosis of ARC or AIDS caused by HIV-3. Immunogenic compositions to be used as vaccines contain an envelope glycoprotein of HIV-3 such as gp41 or gp120.

[52] US Class:

[51] Int'l Class: C12N000700 C07K001610 C07K001416 C12N001549

[52] ECLA: C07K001416 C07K001416D C07K001610K1 C07K001610K1B C12N000700 K61K0039505 M07K020300 M12N074003F

USE OF HIV-1 TAT, FRAGMENTS OR DERIVATIVES THEREOF, TO TARGET OR TO ACTIVATE ANTIGEN-PRESENTING CELLS, TO DELIVER CARGO MOLECULES FOR

[71] Applicant: IST SUPERIORE SANITA

[72] Inventors: Ensoli, Barbara

[21] Application No.: NA

[22] Filed: 20010726

[43] Published: 20030129

[30] Priority: EP EP2001118114A 20010726

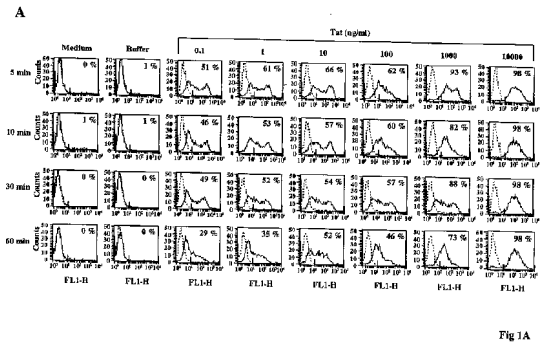


Fig 1A

Go to Fulltext

[57] Abstract:

The present invention concerns a method for prophylactic and/or therapeutic vaccination and/or treatment and/or diagnosis of HIV/AIDS, other infectious diseases, inflammatory and angiogenic diseases and tumours which utilizes a biologically active HIV-1 Tat protein, fragments or derivates thereof, as a module with one or more of the following features: antigen, adjuvant and targeting-delivery system to specific antigen-presenting cells including dendritic cells, endothelial cells and macrophages. In particular, it is claimed that Tat can be used only in its biologically active form as an antigen, alone or combined with one or more other antigens, to prime or to boost protective immune responses against itself as well as other antigens and/or to deliver these antigen(s) as well as active compounds to dendritic cells, endothelial cells and macrophages, due to its capability of targeting these APC and of activating their maturation and functions and of increasing Th-1 type immune responses as an adjuvant. Therefore, due to these characteristics and to the distribution of these cells in the body (during physiological and pathological disorders), biologically active Tat, fragments or derivates thereof containing the RGD region, can be used for preventive, therapeutic and/or diagnostic purposes for HIV/AIDS, other infectious diseases, inflammatory and angiogenic diseases and tumors.

[52] US Class:

[51] Int'l Class: A61P003112 A61P003106 A61P001500 A61K003904 A61P002500 A61P000900 A61K003574 A61K0031711 A61P000910 A61P003100 A61P000514 A61P002702 A61P001902 A61P002706 C07K001416 A61P001302 A61P000104 A61P001900 A61K0039395 A61P003104 A61P003122 A61K004500 A61P001700 C12N001509 A61P000100 A61P001706 A61P002900 A61K003902 A61P003708 A61P003300 A61K003576 A61K003939 A61K004800 A61P000310 A61P003702 A61K003912 A61K003800 A61P003116 A61P003500 A61P001100 A61K003900

MUTATED HIV ENVELOPE PROTEIN

[71] Applicant: UNIV LELAND STANFORD JUNIOR

[72] Inventors: McCune, Joseph McCrary

[21] Application No.: NA

[22] Filed: 19890328

[43] Published: 19891004

[30] Priority: US US1988174005A 19880328 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Novel DNA constructs and expression products are provided related to the HIV virus, where the gp160 encoding sequence is mutated to prevent cleavage to the mature protein product. The mutated protein and the virion containing the mutated protein may serve as vaccines to protect a host against infection and in the study of the maturation of gp160 and methods and compositions for inhibiting the maturation.

[52] US Class:

[51] Int'l Class: A61K003921 C12N000704 C12P002100 C07K001400 C07K0014155 C07K001416 C12R000191 A61K003900 C12R000192

[52] ECLA: C07K001416D K61K003900 M07K020700

METHODS AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF VIRAL INFECTION

[71] Applicant: US GOVERNMENT; YE ZHIPING; XIE HANG; LIU TERESA M; CHEN HONG

[72] Inventors: YE, Zhiping; XIE, Hang; LIU, Teresa, M.; CHEN, . . .

[21] Application No.: NA

[22] Filed: 20070327

[43] Published: 20071108

[30] Priority: US US2006786747P 20060327 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The instant invention provides nucleic acid molecules comprising a nucleic acid segment encoding a viral surface protein and a nucleic acid segment encoding a viral matrix protein for the immunization of treatment of viral infections. The invention also provides compositions and methods for treating or immunizing subjects having or at risk of having a viral infection.

[52] US Class:

[51] Int'l Class: A61K003900

[52] ECLA:

METHODS AND COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF VIRAL INFECTION

[71] Applicant: US GOVERNMENT; YE ZHIPING; XIE HANG; LIU TERESA M; CHEN HONG

[72] Inventors: YE, Zhiping; XIE, Hang; LIU, Teresa, M.; CHEN, . . .

[21] Application No.: NA

[22] Filed: 20070327

[43] Published: 20080228

[30] Priority: US US2006786747P 20060327 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The instant invention provides nucleic acid molecules comprising a nucleic acid segment encoding a viral surface protein and a nucleic acid segment encoding a viral matrix protein for the immunization of treatment of viral infections. The invention also provides compositions and methods for treating or immunizing subjects having or at risk of having a viral infection.

[52] US Class:

[51] Int'l Class: A61K0039145 C12N001544

[52] ECLA:

METHODS AND COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV AND MODELS FOR TESTING

[71] Applicant: DANA FARBER CANCER INST INC; RUPRECHT RUTH

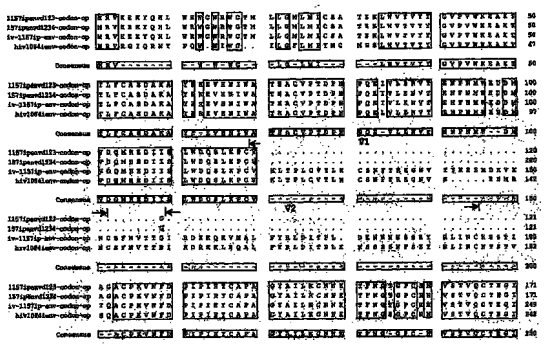
[72] Inventors: RUPRECHT, Ruth

[21] Application No.: NA

[22] Filed: 20070328

[43] Published: 20071108

[30] Priority: US US2006787270P 20060329 ...



Go to Fulltext

[57] Abstract:

The invention provides methods and compositions for raising an immune response in a subject by administering an HIV antigen. The HIV antigens include HIV clade C polynucleotides and polypeptides. The invention also provides for recombinant HIV viral particles and compositions.

[52] US Class:

[51] Int'l Class: A61K003119

[52] ECLA:

CHIMERIC HIV-1 GLYCOPROTEINS AND THEIR BIOLOGICAL APPLICATIONS

[71] Applicant: INST LA RECH POUR LE DEV IRD; COMMISSARIAT ENERGIE ATOMIQUE; . . .

[72] Inventors: VEAS, Francisco; VITA, Claudio; MARTIN, Loïc; BRAY, Dorothy; BENLHASSAN- . . .

[21] Application No.: NA

[22] Filed: 20061128

[43] Published: 20070614

[30] Priority: US US2005739936P 20051128 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to chimeric HIV-1 gp120 glycoproteins, wherein at least a part of gp120 variable region V1 and/or V2 is replaced by a CD4-derived sequence to obtain the exposition of CD4 induced epitopes or CD4i capable of inducing a specific humoral immune response. Application for the preparation of vaccinal and pharmaceutical composition.

[52] US Class:

[51] Int'l Class: IntClass::

[52] ECLA: C07K001416D A61K003921 K61K0039505 M07K031900 M07K031932 M07K031935 M12N074003F

CHIMERIC HIV-1 GP120 GLYCOPROTEINS AND THEIR BIOLOGICAL APPLICATIONS

[71] Applicant: INST LA RECH POUR LE DEV IRD; COMMISSARIAT ENERGIE ATOMIQUE; . . .

[72] Inventors: VEAS, Francisco; VITA, Claudio; MARTIN, Loïc; BRAY, Dorothy; BENLHASSAN- . . .

[21] Application No.: NA

[22] Filed: 20061128

[43] Published: 20071115

[30] Priority: US US2005739936P 20051128 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to chimeric HIV-1 gp120 glycoproteins, wherein at least a part of gp120 variable region V1 and/or V2 is replaced by a CD4-derived sequence to obtain the exposition of CD4 induced epitopes or CD4i capable of inducing a specific humoral immune response. Application for the preparation of vaccinal and pharmaceutical composition.

[52] US Class:

[51] Int'l Class: C07K001610 A61K003921 C07K001416

[52] ECLA: C07K001416D A61K003921 K61K0039505 M07K031900 M07K031932 M07K031935 M12N074003F

VIRUS COAT PROTEIN/RECEPTOR CHIMERAS AND METHODS OF USE

[71] Applicant: UNIV MARYLAND BIOTECH INST; DEVICO ANTHONY L; FOUTS TIMOTHY; . . .

[72] Inventors: DEVICO, Anthony, L. ; FOUTS, Timothy; TUSKEN, Robert, G.

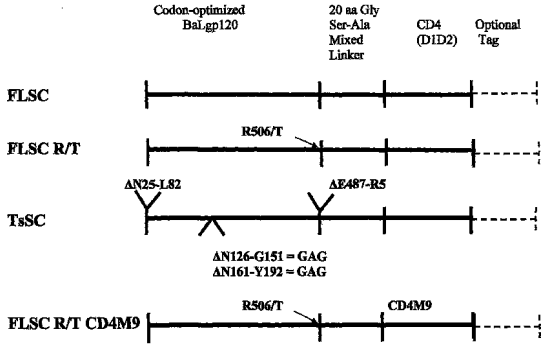
[21] Application No.: NA

[22] Filed: 20060823

[43] Published: 20070301

[30] Priority: US US2005710646P 20050823 ...

Go to Fulltext



[57] Abstract:

The invention relates to chimeric molecules comprising a virus coat sequence and a receptor sequence that can inter-act with each other to form a complex that is capable of binding a co-receptor. Such chimeric molecules therefore exhibit functional properties characteristic of a receptor-coat protein complex and are useful as agents that inhibit virus infection of cells due to occupancy of a co-receptor present on the cell. In particular aspects, the chimeric polypeptide includes an immunodeficiency virus envelope polypeptide, such as that of HIV, SIV, FIV, FeLV, FPV and herpes virus. Receptor sequences suitable for use in a chimeric polypeptide include, for example, CD4 receptors, fragments and mimetic thereof. DNA vaccines comprising nucleotide sequences encoding for such chimeric molecules is another aspect of the present invention.

[52] US Class:

[51] Int'l Class: C07H002102 A61K004800

[52] ECLA: C07K001416D C07K0014705B14 K61K003800 K61K003900 M07K031900 M07K031930 M12N074003F

HIV-1 VACCINOGENS WITH IMMUNOMODULATORS

[71] Applicant: SETH PRADEEP

[72] Inventors: SETH, Pradeep

[21] Application No.: NA

[22] Filed: 20050704

[43] Published: 20070111

[30] Priority: IN WO2005IN230A 20050704

Go to Fulltext

[No drawing]

[57] Abstract:

Vaccinagens comprise recombinant plasmid vaccine constructs NK-29692CO, NK-49426CO, NK-49587CO, NK-IND-tat-CO and NK-IND-nef-CO and recombinant viral vector vaccine constructs VV-29692CO, VV 49426CO, VV 49587CO, VV-IND-tatCO and VV-IND-nefCO.

[52] US Class:

[51] Int'l Class: A61K003921

[52] ECLA: C07K001416 K61K0039525C M12N022120

NOVEL METHODS FOR INDUCING AN IMMUNE RESPONSE AGAINST HUMAN IMMUNODEFIENCY VIRUS

[71] Applicant: WYETH CORP; CHONG SIEWYEN; EGAN MICHAEL ALBIN; ELDRIDGE JOHN HAYWARD; . . .

[72] Inventors: CHONG, SiewYen; EGAN, Michael Albin; ELDRIDGE, John Hayward; . . .

[21] Application No.: NA

[22] Filed: 20060403

[43] Published: 20061019

[30] Priority: US US2005669084P 20050407 ...

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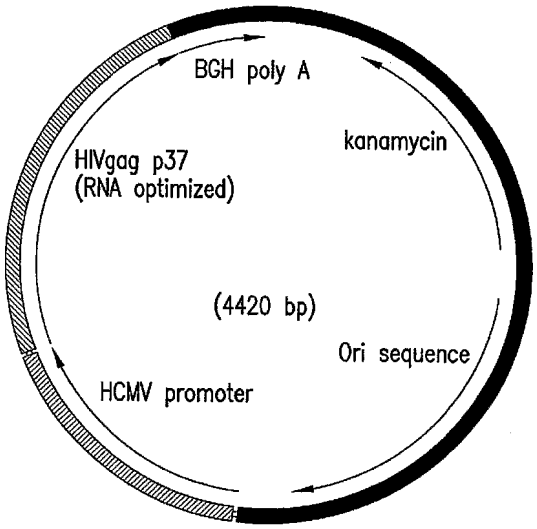

[57] Abstract:

The present invention relates to novel methods for inducing an immune response against human immunodeficiency virus. More particularly, the invention relates to the methods for inducing (or stimulating) both humoral and cellular immune response against HIV in a human subject.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003921

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 K61K0039545 K61K0039555 K61K0039555B2L12

FUSION PROTEINS COMPRISING CD4 MINIMAL MODULES AND METHODS OF USE THEREOF

[71] Applicant: CHIRON CORP; MASIGNANI VEGA; SCARSELLI MARIA; CAPECCHI BARBARA; . . .

[72] Inventors: MASIGNANI, Vega; SCARSELLI, Maria; CAPECCHI, Barbara; SHARMA, Victoria; . . .

[21] Application No.: NA

[22] Filed: 20050608

[43] Published: 20060817

[30] Priority: US US2004578211P 20040608 ...

Go to Fulltext

A (SEQ ID NO:1)

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QCRSPRGKNIQGGKTLSVSQLELQDSGTWTCTVLQNQKKVEFKIDIVVLAFQKASSIVYKKEGE
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LTLPQALPQYAGSGNLTLALEAKTGKLHQEVNLVVMRATQLQKNLTCEVWGPTSPKLMLSLKLE
NKEAKVSKREKAVWVLNPEAGMWQCLLSDSGQVLLESNIKVLPTWSTPVQPMALIVLGGVAGLL
LFIGLGIFFCVRCRHRRQAERMSQIKRLLSEKKTCQCPHRFQKTCSPI

B (SEQ ID NO:4)

TCTASQKKSIQFHWKNSNQIKILGNQGSFLTKGPSKLNDRADSRRSLWDQGNFPLIIKNLKIED
SDTYICE

[57] Abstract:

Fusion proteins comprising CD4 minimal modules that bind to HIV Env polypeptides in a non-CD4 backbone are described. Also described are complexes of these fusion proteins with Env as well as methods of diagnosis, treatment and prevention using the polynucleotides and polypeptides are also provided.

[52] US Class:

[51] Int'l Class: C12Q000170

[52] ECLA: C07K0014705B14 M07K031901

COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

[71] Applicant: CHIRON CORP; HEALTH AND HUMAN SERVICES THE; BARNETT SUSAN W; . . .

[72] Inventors: BARNETT, Susan, W.; GOMEZ ROMAN, Victor, Raul The Government Of The . . .

[21] Application No.: NA

[22] Filed: 20051101

[43] Published: 20060511

[30] Priority: US US2004624506P 20041101 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to methods, polypeptides, and polynucleotides encoding immunogenic identical or analogous HIV polypeptides derived from the same or different strains within an HIV subtype and/or different subtypes. Uses of the polynucleotides and polypeptides in combination approaches for generating immune responses are also described. The combination approaches described herein induce broad and potent immune responses against diverse HIV strains from multiple strains within a given subtype and against diverse subtypes. Formulations of compositions for generating immune responses and methods of use for such compositions are also disclosed.

[52] US Class:

[51] Int'l Class: IntClass::

[52] ECLA: A61K003921 C07K001416D K61K003900 K61K003953 M07K022100 M07K022104

COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

[71] Applicant: CHIRON CORP; REPRESENTED BY THE SECRETARY O; BARNETT SUSAN . . .

[72] Inventors: BARNETT, Susan, W.; GOMEZ ROMAN, Victor, Raul The Government Of The . . .

[21] Application No.: NA

[22] Filed: 20051101

[43] Published: 20060824

[30] Priority: US US2004624506P 20041101 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to methods, polypeptides, and polynucleotides encoding immunogenic identical or analogous HIV polypeptides derived from the same or different strains within an HIV subtype and/or different subtypes. Uses of the polynucleotides and polypeptides in combination approaches for generating immune responses are also described. The combination approaches described herein induce broad and potent immune responses against diverse HIV strains from multiple strains within a given subtype and against diverse subtypes. Formulations of compositions for generating immune responses and methods of use for such compositions are also disclosed.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003921

[52] ECLA: A61K003921 C07K001416D K61K003900 K61K003953 M07K022100 M07K022104

VACCINE CONSTRUCTS AND COMBINATIONS OF VACCINES DESIGNED TO IMPROVE THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV

[71] Applicant: US GOVERNMENT; GENVEC INC; NABEL GARY J; HUANG YUE; XU LING; . . .

[72] Inventors: NABEL, Gary, J.; HUANG, Yue; XU, Ling; CHAKRABARTI, Bimal; WU, Lan; . . .

[21] Application No.: NA

[22] Filed: 20050715

[43] Published: 20060223

[30] Priority: US US2004588378P 20040716 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present disclosure provides compositions for eliciting an immune response, including a prophylactic immune response, against human immunodeficiency virus. The composition includes nucleic acid constructs encoding HIV antigenic polypeptides of multiple clades or strains. Methods for eliciting an immune response by administering the composition to a subject are also provided.

[52] US Class:

[51] Int'l Class: A61P003100 A61K003921 C07K001416

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001416F K61K003900 K61K003953

VACCINES AGAINST AIDS COMPRISING CMV/R-NUCLEIC ACID CONSTRUCTS

[71] Applicant: US GOVERNMENT; GENVEC INC; NABEL GARY J; HUANG YUE; XU LING; . . .

[72] Inventors: NABEL, Gary, J.; HUANG, Yue; XU, Ling; CHAKRABARTI, Bimal; WU, Lan; . . .

[21] Application No.: NA

[22] Filed: 20050715

[43] Published: 20060518

[30] Priority: US US2004588378P 20040716 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present disclosure provides compositions for eliciting an immune response, including a prophylactic immune response, against human immunodeficiency virus. The composition includes nucleic acid constructs encoding HIV antigenic polypeptides of multiple clades or strains. Methods for eliciting an immune response by administering the composition to a subject are also provided.

[52] US Class:

[51] Int'l Class: A61P003100 A61K003921 C07K001416

[52] ECLA: A61K003921 C07K001416B C07K001416D C07K001416F K61K003900 K61K003953

PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

[71] Applicant: WYETH CORP; SIDHU MANINDER K; ELDRIDGE JOHN H; EGAN MICHAEL; ISRAEL . . .

[72] Inventors: SIDHU, Maninder, K. ; ELDRIDGE, John, H.; EGAN, Michael; ISRAEL, Zimra

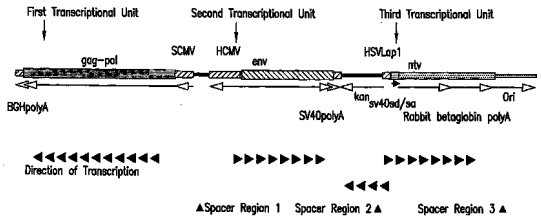
[21] Application No.: NA

[22] Filed: 20050615

[43] Published: 20060126

[30] Priority: US US2004580438P 20040617 ...

Go to Fulltext



[57] Abstract:

The invention provides a DNA plasmid comprising: (a) a first transcriptional unit comprising a nucleotide sequence that encodes a first polypeptide operably linked to regulatory elements including a first promoter and a first polyadenylation signal; (b) a second transcriptional unit comprising a nucleotide sequence that encodes a second polypeptide operably linked to regulatory elements including a second promoter and a second polyadenylation signal; (c) a third transcriptional unit comprising a nucleotide sequence that encodes a third polypeptide operably linked to regulatory elements including a third promoter and a third polyadenylation signal; and wherein said first, said second and said third promoters are each derived from different transcriptional units; and wherein said first, said second and said third polyadenylation signals are each derived from different transcriptional units. The invention further relates to immunogenic compositions for inducing an immune response to HIV comprising combinations of two, three, or four plasmids, where each plasmid is expressing a defined antigen, which may be a single antigen or a fusion of two or three antigens.

[52] US Class:

[51] Int'l Class: C12N001586 IntClass::

[52] ECLA:

PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

[71] Applicant: WYETH CORP; SIDHU MANINDER K; ELDRIDGE JOHN H; EGAN MICHAEL; ISRAEL . . .

[72] Inventors: SIDHU, Maninder, K. ; ELDRIDGE, John, H.; EGAN, Michael; ISRAEL, Zimra

[21] Application No.: NA

[22] Filed: 20050615

[43] Published: 20060511

[30] Priority: US US2004580438P 20040617 ...

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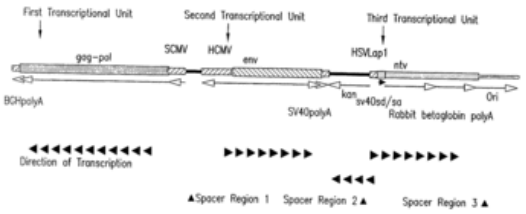


[57] Abstract:

The invention provides a DNA plasmid comprising: (a) a first transcriptional unit comprising a nucleotide sequence that encodes a first polypeptide operably linked to regulatory elements including a first promoter and a first polyadenylation signal; (b) a second transcriptional unit comprising a nucleotide sequence that encodes a second polypeptide operably linked to regulatory elements including a second promoter and a second polyadenylation signal; (c) a third transcriptional unit comprising a nucleotide sequence that encodes a third polypeptide operably linked to regulatory elements including a third promoter and a third polyadenylation signal; and wherein said first, said second and said third promoters are each derived from different transcriptional units; and wherein said first, said second and said third polyadenylation signals are each derived from different transcriptional units. The invention further relates to immunogenic compositions for inducing an immune response to HIV comprising combinations of two, three, or four plasmids, where each plasmid is expressing a defined antigen, which may be a single antigen or a fusion of two or three antigens.

[52] US Class:

[51] Int'l Class: C12N001563 IntClass::

[52] ECLA:

PLASMID HAVING THREE COMPLETE TRANSCRIPTIONAL UNITS AND IMMUNOGENIC COMPOSITIONS FOR INDUCING AN IMMUNE RESPONSE TO HIV

[71] Applicant: WYETH CORP; SIDHU MANINDER K; ELDRIDGE JOHN H; EGAN MICHAEL; ISRAEL . . .

[72] Inventors: SIDHU MANINDER K; ELDRIDGE JOHN H; EGAN MICHAEL; ISRAEL ZIMRA

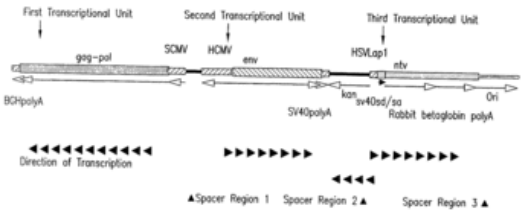
[21] Application No.: NA

[22] Filed: 20050615

[43] Published: 20060302

[30] Priority: US US2004580438P 20040617 ...

Go to Fulltext



[57] Abstract:

The invention provides a DNA plasmid comprising: (a) a first transcriptional unit comprising a nucleotide sequence that encodes a first polypeptide operably linked to regulatory elements including a first promoter and a first polyadenylation signal; (b) a second transcriptional unit comprising a nucleotide sequence that encodes a second polypeptide operably linked to regulatory elements including a second promoter and a second polyadenylation signal; (c) a third transcriptional unit comprising a nucleotide sequence that encodes a third polypeptide operably linked to regulatory elements including a third promoter and a third polyadenylation signal; and wherein said first, said second and said third promoters are each derived from different transcriptional units; and wherein said first, said second and said third polyadenylation signals are each derived from different transcriptional units. The invention further relates to immunogenic compositions for inducing an immune response to HIV comprising combinations of two, three, or four plasmids, where each plasmid is expressing a defined antigen, which may be a single antigen or a fusion of two or three antigens.

[52] US Class:

[51] Int'l Class: C12N001563 IntClass::

[52] ECLA:

DNA VACCINE COMPOSITIONS AND METHODS OF USE

[71] Applicant: UNIV KANSAS MEDICAL CT; NARAYAN OPENDRA; LIU ZHENQIAN

[72] Inventors: NARAYAN, Opendra; LIU, Zhenqian

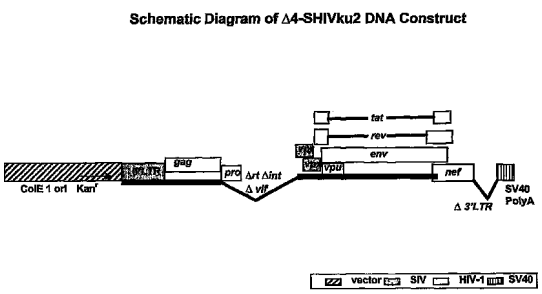
[21] Application No.: NA

[22] Filed: 20040916

[43] Published: 20050331

[30] Priority: US US2003503197P 20030916 ...

Go to Fulltext



[57] Abstract:

The present invention is directed to a DNA vaccine for immunization against HIV. The invention comprises a DNA molecule that has a sequence encoding a plurality of viral proteins capable of stimulating an immune response against HIV. The DNA molecule is rendered safe for use as a vaccine by the disruption of genes encoding reverse transcriptase, integrase, and Vif. The DNA molecule is further rendered safe by at least a partial deletion of the 3' LTR.

[52] US Class:

[51] Int'l Class: C12N001586 A61K003921 A01N006300 A01N004304 C12N001563 A61K004800 C07H002104 C12N001500

[52] ECLA: A61K003921 K61K003953 K61K0039555B2 M12N074003F

DNA VACCINE COMPOSITIONS AND METHODS OF USE

[71] Applicant: UNIV KANSAS MEDICAL CT; NARAYAN OPENDRA; LIU ZHENQIAN

[72] Inventors: NARAYAN, Opendra; LIU, Zhenqian

[21] Application No.: NA

[22] Filed: 20040916

[43] Published: 20051006

[30] Priority: US US2003503197P 20030916 ...

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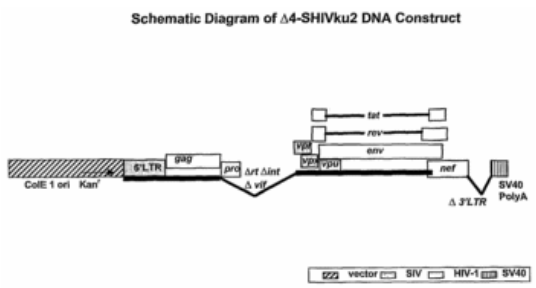

[57] Abstract:

The present invention is directed to a DNA vaccine for immunization against HIV. The invention comprises a DNA molecule that has a sequence encoding a plurality of viral proteins capable of stimulating an immune response against HIV. The DNA molecule is rendered safe for use as a vaccine by the disruption of genes encoding reverse transcriptase, integrase, and Vif. The DNA molecule is further rendered safe by at least a partial deletion of the 3' LTR.

[52] US Class:

[51] Int'l Class: C12N001586 A61K003921 A01N006300 A01N004304 C12N001563 A61K004800 C07H002104 C12N001500

[52] ECLA: A61K003921 K61K003953 K61K0039555B2 M12N074003F

COMBINATION APPROACHES FOR GENERATING IMMUNE RESPONSES

[71] Applicant: CHIRON CORP; NAT INST OF HEALTH NAT CANCER; BARNETT SUSAN W; GOMEZ- . . .

[72] Inventors: BARNETT, Susan, W.; GÓMEZ-ROMÁN, Victor, Raúl c/o National Institutes of . . .

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050331

[30] Priority: US US2003503617P 20030915 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to methods, polynucleotides, and polypeptides encoding immunogenic HIV polypeptides derived from different strains within an HIV subtype and/or immunogenic HIV polypeptides from different subtypes. Uses of the polynucleotides and polypeptides in combination approaches for generating immune responses are described. The combination approaches described herein have been shown to induce broad and potent neutralizing activity against diverse HIV strains from multiple strains within a given subtype and against diverse subtypes. Formulations of compositions for generating immune responses and methods of use for such compositions are also disclosed.

[52] US Class:

[51] Int'l Class: A61K

[52] ECLA: A61K003921 K61K003953 M12N074003F

ALPHAVIRUS VACCINES

[71] Applicant: BIOPTION AB;
LILJESTROEM PETER

[72] Inventors: LILJESTRÖM, Peter

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050324

[30] Priority: US US2003502632P 20030915 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention is directed to recombinant alphavirus vectors and expression of heterologous antigens therefrom in animal cells. Recombinant alphavirus vectors of the present invention can be used for preparing antigenic compositions which can be administered as vaccines.

[52] US Class:

[51] Int'l Class: C12N001586 C07K001418

[52] ECLA: C12N001586 C07K001416B C07K001416D C07K001416F K61K0039525C K61K003953 K61K0039545 M12N074003F M12N077016A

ALPHAVIRUS VACCINES

[71] Applicant: BIOPTION AB;
LILJESTROEM PETER

[72] Inventors: LILJESTRÖM, Peter

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050526

[30] Priority: US US2003502632P 20030915 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention is directed to recombinant alphavirus vectors and expression of heterologous antigens therefrom in animal cells. Said vectors are characterized by having inter alia an alphavirus 3’-untranslated region (3’-UTR) comprising a deletion of non-essential nucleotides, suitably a deletion of at least 525 nucleotides. Recombinant alphavirus vectors of the present invention can be used for preparing antigenic compositions which can be administered as vaccines.

[52] US Class:

[51] Int'l Class: C12N001586 C07K001418

[52] ECLA: C12N001586 C07K001416B C07K001416D C07K001416F K61K0039525C K61K003953 K61K0039545 M12N074003F M12N077016A

ALPHAVIRUS VACCINES

[71] Applicant: BIOPTION AB;
LILJESTROEM PETER

[72] Inventors: LILJESTROEM PETER

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050721

[30] Priority: US US2003502632P 20030915 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention is directed to recombinant alphavirus vectors and expression of heterologous antigens therefrom in animal cells. Said vectors are characterized by having inter alia an alphavirus 3'-untranslated region (3'-UTR) comprising a deletion of non-essential nucleotides, suitably a deletion of at least 525 nucleotides. Recombinant alphavirus vectors of the present invention can be used for preparing antigenic compositions which can be administered as vaccines.

[52] US Class:

[51] Int'l Class: C12N001586 C07K001418

[52] ECLA: C12N001586 C07K001416B C07K001416D C07K001416F K61K0039525C K61K003953 K61K0039545 M12N074003F M12N077016A

MECHANISMS FOR IMPROVING THE BREADTH OF THE IMMUNE RESPONSE TO DIVERSE STRAINS AND CLADES OF HIV

[71] Applicant: US GOVERNMENT; NABEL GARY J; CHAKRABARTI BIMAL; KONG WING-PUI; . . .

[72] Inventors: NABEL, Gary, J.; CHAKRABARTI, Bimal; KONG, Wing-pui; HUANG, Yue; YANG, . . .

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050421

[30] Priority: US US2003503509P 20030915 ...

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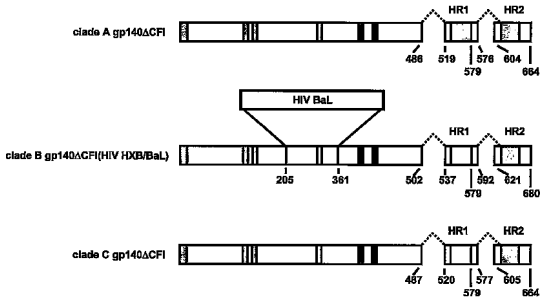

[57] Abstract:

In one embodiment, the invention provides a multiclade HIV plasmid DNA or viral vector vaccine including components from different clades fo Env (optionally Env chimeras) and Gag-Pol-(optionally)Nef from a single clade. The vaccine of the invention may further include V1, V2, V3, or V4 deletions or combinations thereof. In another embodiment, the invention provides multiclade HIV envelope immunogens.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003921

[52] ECLA: A61K003921 C07K001416B C07K001416D K61K0039525C K61K003953 M07K022104

HIV VACCINES BASED ON ENV OF MULTIPLE CLADES OF HIF

[71] Applicant: US GOVERNMENT; NABEL GARY J; CHAKRABARTI BIMAL; KONG WING-PUI; . . .

[72] Inventors: NABEL, Gary, J.; CHAKRABARTI, Bimal; KONG, Wing-pui; HUANG, Yue; YANG, . . .

[21] Application No.: NA

[22] Filed: 20040915

[43] Published: 20050909

[30] Priority: US US2003503509P 20030915 ...

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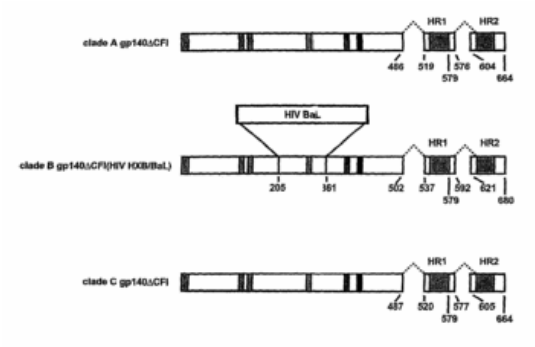

[57] Abstract:

In one embodiment, the invention provides a multiclade HIV plasmid DNA or viral vector vaccine including components from different clades fo Env (optionally Env chimeras) and Gag-Pol-(optionally)Nef from a single clade. The vaccine of the invention may further include V1, V2, V3, or V4 deletions or combinations thereof. In another embodiment, the invention provides multiclade HIV envelope immunogens.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003921

[52] ECLA: A61K003921 C07K001416B C07K001416D K61K0039525C K61K003953 M07K022104

AN IMMUNODEFICIENCY VIRUS (HIV) DNA VACCINE AND TO THE PROCESS OF PREPARATION THEREOF

[71] Applicant: ALL INDIA INST MED;
SETH PRADEEP

[72] Inventors: SETH, Pradeep

[21] Application No.: NA

[22] Filed: 20030818

[43] Published: 20050224

[30] Priority: IN WO2003IN274A 20030818

Go to Fulltext

[No drawing]

[57] Abstract:

An immunodeficiency virus (HIV) DNA vaccine to cambat Indian subtype C of HIV-1 comprising a vector and gene of virus subtype C of HIV-1 said gene being mounted on the vector.

[52] US Class:

[51] Int'l Class: C07K001416

[52] ECLA: C07K001416 K61K003953 K61K0039545 M07K022120

POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

[71] Applicant: UNIV MASSACHUSETTS; ADVANCED BIOSCIENCE LAB INC; LU SHAN; WANG SHIXIA; . . .

[72] Inventors: LU, Shan; WANG, Shixia; PAL, Ranajit; KALYANARAMAN, V., S.; . . .

[21] Application No.: NA

[22] Filed: 20031203

[43] Published: 20040617

[30] Priority: US US2002430732P 20021203 ...

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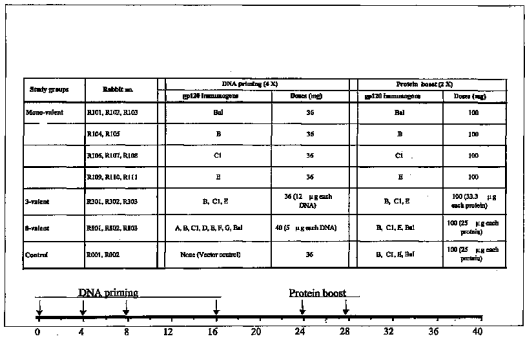

[57] Abstract:

Polyvalent, primary isolate nucleic acid compositions for inducing an immune response against HIV is disclosed. The compositions and methods described herein are for the use of a DNA composition that encodes one or more different HIV envelope glycoproteins. The DNA composition can encode an HIV Gag protein. The DNAs encoding one or more HIV proteins are a combination of different nucleic acids, such as DNA plasmids, generated from primary isolate DNA of different HIV major group genetic clades and/or different proteins. HIV protein compositions for inducing an immune response against HIV are disclosed. Methods for using the protein compositions as boosts following administration of the DNA compositions are provided.

[52] US Class:

[51] Int'l Class: C07K001416 A61K0039295 A61K003900

[52] ECLA: A61K0039295 C07K001416B C07K001416D K61K003900 K61K003953

POLYVALENT, PRIMARY HIV-1 GLYCOPROTEIN DNA VACCINES AND VACCINATION METHODS

[71] Applicant: UNIV MASSACHUSETTS; ADVANCED BIOSCIENCE LAB INC; LU SHAN; WANG SHIXIA; . . .

[72] Inventors: LU, Shan; WANG, Shixia; PAL, Ranajit; KALYANARAMAN, V., S.; . . .

[21] Application No.: NA

[22] Filed: 20031203

[43] Published: 20050324

[30] Priority: US US2002430732P 20021203 ...

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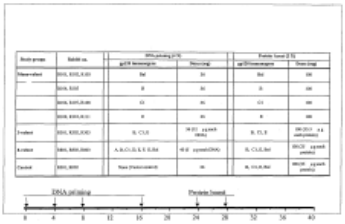

[57] Abstract:

Polyvalent, primary isolate nucleic acid compositions for inducing an immune response against HIV is disclosed. The compositions and methods described herein are for the use of a DNA composition that encodes one or more different HIV envelope glycoproteins. The DNA composition can encode an HIV Gag protein. The DNAs encoding one or more HIV proteins are a combination of different nucleic acids, such as DNA plasmids, generated from primary isolate DNA of different HIV major group genetic clades and/or different proteins. HIV protein compositions for inducing an immune response against HIV are disclosed. Methods for using the protein compositions as boosts following administration of the DNA compositions are provided.

[52] US Class:

[51] Int'l Class: C07K001416 A61K0039295 A61K003900

[52] ECLA: A61K0039295 C07K001416B C07K001416D K61K003900 K61K003953

DNA VACCINE COMPOSITION WITH ENHANCED IMMUNOGENICITY

[71] Applicant: UNIV POHANG; GENEXINE CO LTD; PARK KI-SEOK; PARK SU-HYUNG; YANG . . .

[72] Inventors: PARK, Ki-Seok; PARK, Su-Hyung; YANG, Se-Hwan; LEE, Chang-Geun; CHOI, . . .

[21] Application No.: NA

[22] Filed: 20040130

[43] Published: 20040812

[30] Priority: KR KR20036393A 20030130 ...

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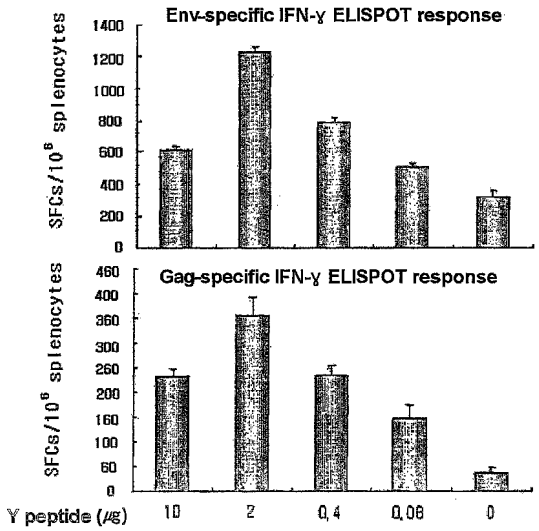

[57] Abstract:

Disclosed is a vaccine composition that includes a peptide adjuvant, and a DNA vaccine encoding an immunogenic protein. Also, the present invention discloses a method of enhancing immune responses, which is based on the administration of the vaccine composition.

[52] US Class:

[51] Int'l Class: A61K003939

[52] ECLA: A61K003939 C07K001411 C07K001416 K61K003953 K61K0039555B1

HIV ENVELOPE-CD4 COMPLEXES AND HYBRIDS

[71] Applicant: CHIRON CORP; BARNETT SUSAN W; SRIVASTAVA INDRESH

[72] Inventors: BARNETT, Susan, W.; SRIVASTAVA, Indresh

[21] Application No.: NA

[22] Filed: 20030507

[43] Published: 20040506

[30] Priority: US US2002378543P 20020507 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Env-CD4 complexes and hybrids are disclosed that expose cryptic epitopes that are important in virus neutralization. Methods of diagnosis, treatment and prevention using the polynucleotides and polypeptides are also provided.

[52] US Class:

[51] Int'l Class: C07K001700 C07H002104 A61K003921 C07K001628 C07K001416 C12N000502 C07K001473 C07K001610 A61K003900

[52] ECLA: C07K001416D A61K003921 C07K0014705B14 C07K001610K1D C07K001628A14 K61K003900 K61K003953 M07K0316600 M07K0316960 M07K031932 K61K003960P M12N074003F M12N079902A M12N079902A67 M12N080010D1

HIV ENVELOPE-CD4 COMPLEXES AND HYBRIDS

[71] Applicant: CHIRON CORP; BARNETT SUSAN W; SRIVASTAVA INDRESH

[72] Inventors: BARNETT, Susan, W.; SRIVASTAVA, Indresh

[21] Application No.: NA

[22] Filed: 20030507

[43] Published: 20040923

[30] Priority: US US2002378543P 20020507 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Env-CD4 complexes and hybrids are disclosed that expose cryptic epitopes that are important in virus neutralization. Methods of diagnosis, treatment and prevention using the polynucleotides and polypeptides are also provided.

[52] US Class:

[51] Int'l Class: C07K001700 C07H002104 A61K003921 C07K001628 C07K001416 C12N000502 C07K001473 C07K001610 A61K003900

[52] ECLA: C07K001416D A61K003921 C07K0014705B14 C07K001610K1D C07K001628A14 K61K003900 K61K003953 M07K0316600 M07K0316960 M07K031932 K61K003960P M12N074003F M12N079902A M12N079902A67 M12N080010D1

HIV VACCINE FORMULATIONS

[71] Applicant: CHIRON CORP; DONNELLY JOHN; BARNETT SUSAN; O'HAGAN DEREK

[72] Inventors: DONNELLY, John; BARNETT, Susan; O'HAGAN, Derek

[21] Application No.: NA

[22] Filed: 20031007

[43] Published: 20040422

[30] Priority: US US2002416573P 20021007 ...

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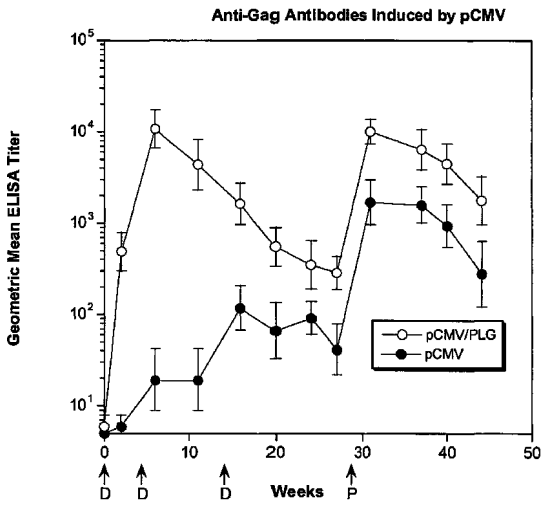

[57] Abstract:

Provided herein are HIV vaccines comprising HIV polypeptide-encoding DNA adsorbed to PLG and/or HIV proteins. Also provided are methods of using these vaccines to generate immune responses in a subject.

[52] US Class:

[51] Int'l Class: C12Q000170 C07H002104 A61K004800 A61K003921 C12P002106 C07K001416 C12N001500 C12N001587

[52] ECLA: A61K003921 A61K004800B4B A61K004800D A61K004800H C07K001416 C07K001416B C07K001416D C12N001587 K61K003953 K61K0039555B8 M07K020700

HIV VACCINE FORMULATIONS

[71] Applicant: CHIRON CORP; DONNELLY JOHN; BARNETT SUSAN; O'HAGAN DEREK

[72] Inventors: DONNELLY, John; BARNETT, Susan; O'HAGAN, Derek

[21] Application No.: NA

[22] Filed: 20031007

[43] Published: 20040812

[30] Priority: US US2002416573P 20021007 ...

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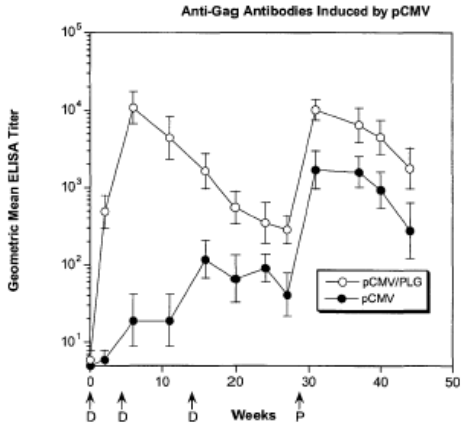


[57] Abstract:

Provided herein are HIV vaccines comprising HIV polypeptide-encoding DNA adsorbed to PLG and/or HIV proteins. Also provided are methods of using these vaccines to generate immune responses in a subject.

[52] US Class:

[51] Int'l Class: C12Q000170 C07H002104 A61K004800 A61K003921 C12P002106 C07K001416 C12N001500 C12N001587

[52] ECLA: A61K003921 A61K004800B4B A61K004800D A61K004800H C07K001416 C07K001416B C07K001416D C12N001587 K61K003953 K61K0039555B8 M07K020700

VACCINE

[71] Applicant: GLAXO GROUP LTD;
ERTL PETER FRANZ

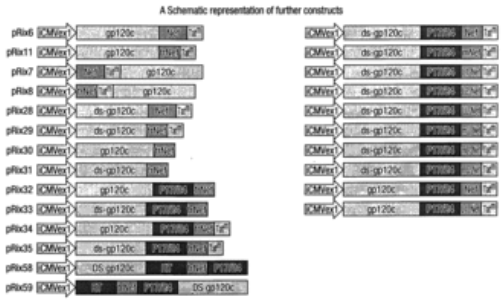
[72] Inventors: ERTL, Peter, Franz

[21] Application No.: NA

[22] Filed: 20031103

[43] Published: 20040521

[30] Priority: GB GB200225786A 20021105 ...



Go to Fulltext

[57] Abstract:

The invention relates to polynucleotides for DNA vaccination which polynucleotides encode an HIV envelope protein or fragment or immunogenic derivative fused to an additional HIV protein selected from a non-structural protein or capsid protein or fragment or immunogenic derivative thereof. Preferably the HIV envelope molecule is gp120 and preferred fusions include one or more of HIV Nef, Gag, RT or Tat. Preferably the HIV envelope molecule is non-glycosylated in mammalian cells.

[52] US Class:

[51] Int'l Class: C12N001548 C07K001416 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 M07K020700 M07K031900

VACCINE

[71] Applicant: GLAXO GROUP LTD;
ERTL PETER FRANZ

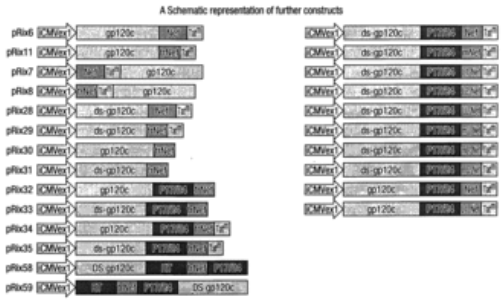
[72] Inventors: ERTL, Peter, Franz

[21] Application No.: NA

[22] Filed: 20031103

[43] Published: 20050317

[30] Priority: GB GB200225786A 20021105 ...



Go to Fulltext

[57] Abstract:

The invention relates to polynucleotides for DNA vaccination which polynucleotides encode an HIV envelope protein or fragment or immunogenic derivative fused to an additional HIV protein selected from a non-structural protein or capsid protein or fragment or immunogenic derivative thereof. Preferably the HIV envelope molecule is gp120 and preferred fusions include one or more of HIV Nef, Gag, RT or Tat. Preferably the HIV envelope molecule is non-glycosylated in mammalian cells.

[52] US Class:

[51] Int'l Class: C12N001548 C07K001416 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 K61K003953 M07K020700 M07K031900

METHODS AND COMPOSITIONS FOR IMMUNIZATION AGAINST HIV

[71] Applicant: AARON DIAMOND AIDS RES CT; HUANG YAOXING; HO DAVID D; CHEN ZHIWEI

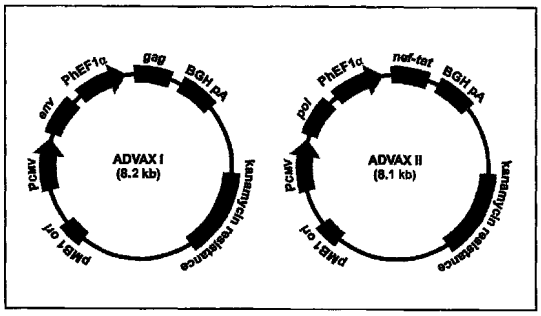
[72] Inventors: HUANG, Yaoxing; HO, David, D.; CHEN, Zhiwei

[21] Application No.: NA

[22] Filed: 20031017

[43] Published: 20040429

[30] Priority: US US2002419465P 20021018 ...



Go to Fulltext

[57] Abstract:

The present invention relates to nucleic acid and attenuated vaccinia vectors for prophylactic use against HIV infection, as well as methods of eliciting immune responses in subjects susceptible to HIV infection. The prophylactic vaccine regimen of the invention involves immunological priming with an inoculum comprising two novel DNA vectors, followed by boosting with a Modified Vaccinia Ankara (MVA) recombinant viral vector expressing the corresponding HIV proteins.

[52] US Class:

[51] Int'l Class: C12N001563 A61K0039285 A61K00317088 A01N004304 C12N001500 A61K004748 C12P002106 A61K004800 C12N000500

[52] ECLA: C07K001416 A61K003921 C12N0015863V K61K003953 K61K0039545 M07K031900 M12N071013 M12N071013A M12N074003F M12N079902A63 M12N079904

METHODS AND COMPOSITIONS FOR IMMUNIZATION AGAINST HIV

[71] Applicant: AARON DIAMOND AIDS RES CT; HUANG YAOXING; HO DAVID D; CHEN ZHIWEI

[72] Inventors: HUANG, Yaoxing; HO, David, D.; CHEN, Zhiwei

[21] Application No.: NA

[22] Filed: 20031017

[43] Published: 20050616

[30] Priority: US US2002419465P 20021018 ...

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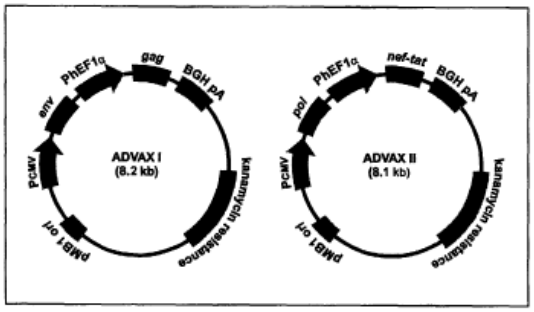


[57] Abstract:

The present invention relates to nucleic acid and attenuated vaccinia vectors for prophylactic use against HIV infection, as well as methods of eliciting immune responses in subjects susceptible to HIV infection. The prophylactic vaccine regimen of the invention involves immunological priming with an inoculum comprising two novel DNA vectors, followed by boosting with a Modified Vaccinia Ankara (MVA) recombinant viral vector expressing the corresponding HIV proteins.

[52] US Class:

[51] Int'l Class: C12N001563 A61K0039285 A61K00317088 A01N004304 C12N001500 A61K004748 C12P002106 A61K004800 C12N000500

[52] ECLA: C07K001416 A61K003921 C12N0015863V K61K003953 K61K0039545 M07K031900 M12N071013 M12N071013A M12N074003F M12N079902A63 M12N079904

ADJUVANT

[71] Applicant: POWDERJECT RES LTD; GLAXO GROUP LTD; BRAUN RALPH PATRICK; THOMSEN . . .

[72] Inventors: BRAUN, Ralph, Patrick; THOMSEN, Lindy; VAN-WELY, Catherine; ERTL, . . .

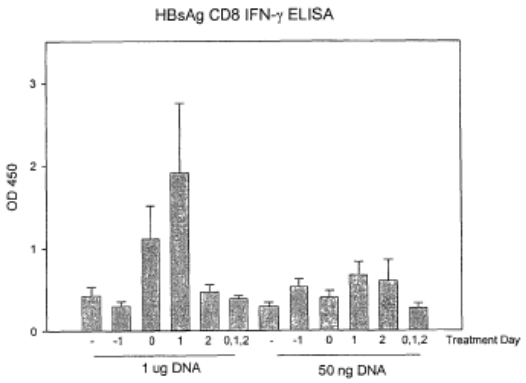
[21] Application No.: NA

[22] Filed: 20030319

[43] Published: 20031002

[30] Priority: US US2002102622A 20020319 ...

Go to Fulltext



[57] Abstract:

The relates to certain adjuvant compositions, and to vaccine and/or nucleic acid immunization strategies employing such compositions. The invention in particular relates to DNA vaccines that are useful in the prophylaxis and treatment of HIV infections, more particularly when administered by particle mediated delivery.

[52] US Class:

[51] Int'l Class: A61K004506 A61K000918 A61K000906 A61P003704 C07D047104 C12N001509 A61K003939 A61K00314745 A61P003118 C07K001416 A61K004800 A61K003900 A61K003921

[52] ECLA: A61K00314745 A61K00314745+M A61K003921 A61K003939 A61K004506 C07K001416B K61K003953 K61K003954 K61K0039555B5 M07K020700

IMIDAZOQUINOLINEAMINES AS ADJUVANTS IN HIV DNA VACCINATION

[71] Applicant: POWDERJECT RES LTD; GLAXO GROUP LTD; BRAUN RALPH PATRICK; THOMSEN . . .

[72] Inventors: BRAUN, Ralph, Patrick; THOMSEN, Lindy; VAN WELY, Catherine; ERTL, . . .

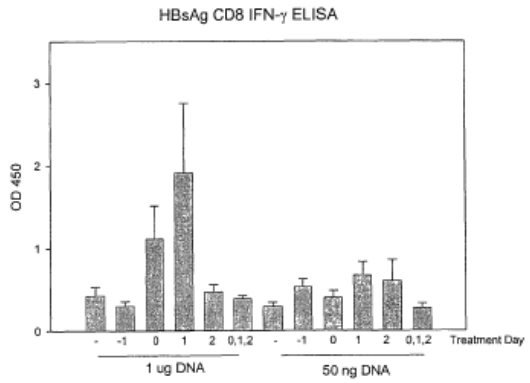
[21] Application No.: NA

[22] Filed: 20030319

[43] Published: 20031106

[30] Priority: US US2002102622A 20020319 ...

Go to Fulltext



[57] Abstract:

The relates to certain adjuvant compositions, and to vaccine and/or nucleic acid immunization strategies employing such compositions. The invention in particular relates to DNA vaccines that are useful in the prophylaxis and treatment of HIV infections, more particularly when administered by particle mediated delivery.

[52] US Class:

[51] Int'l Class: A61K004506 A61K000918 A61K000906 A61P003704 C07D047104 C12N001509 A61K003939 A61K00314745 A61P003118 C07K001416 A61K004800 A61K003900 A61K003921

[52] ECLA: A61K00314745 A61K00314745+M A61K003921 A61K003939 A61K004506 C07K001416B K61K003953 K61K003954 K61K0039555B5 M07K020700

COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

[71] Applicant: UNIV EMORY; NASA; ROBINSON HARRIET L; SMITH JAMES; HUA JIAN; MOSS . . .

[72] Inventors: ROBINSON, Harriet, L.; SMITH, James; HUA, Jian; MOSS, Bernard

[21] Application No.: NA

[22] Filed: 20030310

[43] Published: 20030918

[30] Priority: US US200293953A 20020308 ...

Go to Fulltext

[No drawing]

[57] Abstract:

We have developed DNA and viral vectors that can be used, alone or in combination, as a vaccine against one HIV clade, subtype, or recombinant form of HIV or against multiple HIV clades, subtypes, or recombinant forms. Moreover, the vectors can encode a variety of antigens, which may be obtained from one clade or from two or more different clades, and the antigens selected and/or the manner in which the vectors are formulated (e.g., mixed) can be manipulated to generate a protective immune response against a variety of clades (e.g., the clades to which a patient is most likely to be exposed; with the proportions of the components of the vaccine tailored to the extent of the patient's risk to a particular clade or clades).

[52] US Class:

[51] Int'l Class: C12N0015863 A61K003921 A61K003576 C12N001509 C12N000704 A61K004800 A61P003118 C07K001416

[52] ECLA: C07K001416 C12N0015863V K61K0039525C

COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

[71] Applicant: UNIV EMORY; NASA; ROBINSON HARRIET L; SMITH JAMES; HUA JIAN; MOSS . . .

[72] Inventors: ROBINSON, Harriet, L.; SMITH, James; HUA, Jian; MOSS, Bernard

[21] Application No.: NA

[22] Filed: 20030310

[43] Published: 20040325

[30] Priority: US US200293953A 20020308 ...

Go to Fulltext

[No drawing]

[57] Abstract:

We have developed DNA and viral vectors that can be used, alone or in combination, as a vaccine against one HIV clade, subtype, or recombinant form of HIV or against multiple HIV clades, subtypes, or recombinant forms. Moreover, the vectors can encode a variety of antigens, which may be obtained from one clade or from two or more different clades, and the antigens selected and/or the manner in which the vectors are formulated (e.g., mixed) can be manipulated to generate a protective immune response against a variety of clades (e.g., the clades to which a patient is most likely to be exposed; with the proportions of the components of the vaccine tailored to the extent of the patient's risk to a particular clade or clades).

[52] US Class:

[51] Int'l Class: C12N0015863 A61K003921 A61K003576 C12N001509 C12N000704 A61K004800 A61P003118 C07K001416

[52] ECLA: C07K001416 C12N0015863V K61K0039525C

COMPOSITIONS AND METHODS FOR GENERATING AN IMMUNE RESPONSE

[71] Applicant: UNIV EMORY; NASA; ROBINSON HARRIET L; SMITH JAMES; HUA JIAN; MOSS . . .

[72] Inventors: ROBINSON HARRIET L; SMITH JAMES; HUA JIAN; MOSS BERNARD

[21] Application No.: NA

[22] Filed: 20030310

[43] Published: 20041118

[30] Priority: US US200293953A 20020308 ...

Go to Fulltext

[No drawing]

[57] Abstract:

We have developed DNA and viral vectors that can be used, alone or in combination, as a vaccine against one HIV clade, subtype, or recombinant form of HIV or against multiple HIV clades, subtypes, or recombinant forms. Moreover, the vectors can encode a variety of antigens, which may be obtained from one clade or from two or more different clades, and the antigens selected and/or the manner in which the vectors are formulated (e.g., mixed) can be manipulated to generate a protective immune response against a variety of clades (e.g., the clades to which a patient is most likely to be exposed; with the proportions of the components of the vaccine tailored to the extent of the patient's risk to a particular clade or clades).

[52] US Class:

[51] Int'l Class: C12N0015863 A61K003921 A61K003576 C12N001509 C12N000704 A61K004800 A61P003118 C07K001416

[52] ECLA: C07K001416 C12N0015863V K61K0039525C

MUTABLE VACCINES

[71] Applicant: MAYO FOUNDATION; CASCALHO MARILIA I; PLATT JEFFREY L

[72] Inventors: CASCALHO, Marilia, I.; PLATT, Jeffrey, L.

[21] Application No.: NA

[22] Filed: 20020924

[43] Published: 20030605

[30] Priority: US US2001325041P 20010926 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to methods and materials useful for targeting antigenic determinants of mutable pathogens for somatic hypermutation. These methods and materials can be used to induce an immune response against antigenic variants of mutable pathogens.

[52] US Class:

[51] Int'l Class: C12N000502 C07K001610 C07K001600 C12N001585

[52] ECLA: C07K001600 C07K001610D C12N001585 K61K003953 M12N081085G M12N083000 M12N083042

MUTABLE VACCINES

[71] Applicant: MAYO FOUNDATION; CASCALHO MARILIA I; PLATT JEFFREY L

[72] Inventors: CASCALHO, Marilia, I.; PLATT, Jeffrey, L.

[21] Application No.: NA

[22] Filed: 20020924

[43] Published: 20030821

[30] Priority: US US2001325041P 20010926 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to methods and materials useful for targeting antigenic determinants of mutable pathogens for somatic hypermutation. These methods and materials can be used to induce an immune response against antigenic variants of mutable pathogens.

[52] US Class:

[51] Int'l Class: C12N000502 C07K001610 C07K001600 C12N001585

[52] ECLA: C07K001600 C07K001610D C12N001585 K61K003953 M12N081085G M12N083000 M12N083042

VACCINES

[71] Applicant: GLAXO GROUP LTD; BEATON ANDREW; ERTL PETER FRANZ; GOUGH GERALD WAYNE; . . .

[72] Inventors: BEATON, Andrew; ERTL, Peter, Franz; GOUGH, Gerald, Wayne; LEAR, . . .

[21] Application No.: NA

[22] Filed: 20020918

[43] Published: 20030327

[30] Priority: GB WO2001GB4207A 20010920 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides a nucleotide sequence that encodes an HIV-1 gag protein or fragment thereof containing a gag epitope and a second HIV antigen or a fragment encoding an epitope of said second HIV antigen, operably linked to a heterologous promoter. Preferred polynucleotide sequences further encodes nef or a fragment thereof and RT or a fragment thereof.

[52] US Class:

[51] Int'l Class: C12N001549 A61K003939 A61K003900 C12N001509 C12N001548 A61K004800 A61P003118 C07K001416

[52] ECLA: C07K001416B C07K001416F K61K003953 M07K020700 M07K031900

HIV-GAG CODON-OPTIMISED DNA VACCINES

[71] Applicant: GLAXO GROUP LTD; BEATON ANDREW; ERTL PETER FRANZ; GOUGH GERALD WAYNE; . . .

[72] Inventors: BEATON, Andrew; ERTL, Peter, Franz; GOUGH, Gerald, Wayne; LEAR, . . .

[21] Application No.: NA

[22] Filed: 20020918

[43] Published: 20031204

[30] Priority: GB WO2001GB4207A 20010920 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides a nucleotide sequence that encodes an HIV-1 gag protein or fragment thereof containing a gag epitope and a second HIV antigen or a fragment encoding an epitope of said second HIV antigen, operably linked to a heterologous promoter. Preferred polynucleotide sequences further encodes nef or a fragment thereof and RT or a fragment thereof.

[52] US Class:

[51] Int'l Class: C12N001549 A61K003939 A61K003900 C12N001509 C12N001548 A61K004800 A61P003118 C07K001416

[52] ECLA: C07K001416B C07K001416F K61K003953 M07K020700 M07K031900

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE B AND/OR TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP; ZUR MEGEDE JAN; BARNETT SUSAN W; LIAN YING

[72] Inventors: ZUR MEGEDE, Jan; BARNETT, Susan, W.; LIAN, Ying

[21] Application No.: NA

[22] Filed: 20020705

[43] Published: 20030116

[30] Priority: US US2001303192P 20010705 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV polypeptides. Uses of the polynucleotides in applications including immunization, generation of packaging cell lines, and production of HIV polypeptides are also described. Polynucleotides encoding antigenic HIV polypeptides are described, as are uses of these polynucleotides and polypeptide products therefrom, including formulations of immunogenic compositions and uses thereof.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003800 A61K003576 C12N000510 C12N0015867 C12N001509 A61P003702 C12N000121 C12P002102 C12N000119 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416 C12N0015867P K61K003900 K61K003953 M07K020700 M07K022124 M12N080010E M12N083042 M12N084020A

HIV-1 SUBTYPE ISOLATE REGULATORY/ACCESSORY GENES, AND MODIFICATIONS AND DERIVATIVES THEREOF

[71] Applicant: SOUTH AFRICAN MEDICAL RES COUN; UNIV CAPE TOWN; WILLIAMSON CAROLYN; . . .

[72] Inventors: WILLIAMSON, Carolyn; VAN HARMELEN, Joanne, Heidi; GRAY, Clive, . . .

[21] Application No.: NA

[22] Filed: 20021031

[43] Published: 20030508

[30] Priority: ZA ZA20018978A 20011031 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention describes HIV-1 subtype isolate regulatory/accessory genes, and modifications and derivatives thereof. The genes which are described are the tat, nef and rev genes. Consensus amino acid sequences are also disclosed. The invention also relates to a vaccine including two or more of the nucleotide sequences, and nucleotide sequences from the pol and/or gag genes of HIV-1.

[52] US Class:

[51] Int'l Class: C12N001549 C07K001416 A61K003900

[52] ECLA: C07K001416B C07K001416F K61K003900 K61K003953 M07K020700

HIV-1 SUBTYPE ISOLATE REGULATORY/ACCESSORY GENES, AND MODIFICATIONS AND DERIVATIVES THEREOF

[71] Applicant: SOUTH AFRICAN MEDICAL RES COUN; UNIV CAPE TOWN; WILLIAMSON CAROLYN; . . .

[72] Inventors: WILLIAMSON, Carolyn; VAN HARMELEN, Joanne, Heidi; GRAY, Clive, . . .

[21] Application No.: NA

[22] Filed: 20021031

[43] Published: 20040122

[30] Priority: ZA ZA20018978A 20011031 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention describes HIV-1 subtype isolate regulatory/accessory genes, and modifications and derivatives thereof. The genes which are described are the tat, nef and rev genes. Consensus amino acid sequences are also disclosed. The invention also relates to a vaccine including two or more of the nucleotide sequences, and nucleotide sequences from the pol and/or gag genes of HIV-1.

[52] US Class:

[51] Int'l Class: C12N001549 C07K001416 A61K003900

[52] ECLA: C07K001416B C07K001416F K61K003900 K61K003953 M07K020700

VACCINE COMPRISING GP120 AND NEF AND/OR TAT FOR THE IMMUNISATION AGAINST HIV

[71] Applicant: GLAXOSMITHKLINE BIOLOG SA; GLAXO GROUP LTD; ERTL PETER FRANZ; TITE . . .

[72] Inventors: ERTL, Peter, Franz; TITE, John, Philip; VAN WELY, Catherine, Ann; VOSS, . . .

[21] Application No.: NA

[22] Filed: 20020726

[43] Published: 20030213

[30] Priority: GB GB200118367A 20010727 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Use of a) an HIV Tat protein or polynucleotide; or b) an HIV Nef protein or polynucleotide; or c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide; and an HIV gp 120 protein or polynucleotide in the manufacture of a vaccine suitable for a prime-boost delivery for the prophylactic or therapeutic immunisation of humans against HIV, wherein the protein or polynucleotide is delivered via a bombardment approach.

[52] US Class:

[51] Int'l Class: A61K003921 A61K00317088 A61K000900 C12N001589 A61P003118 A61P003704 C12N001509 C12N001549 A61K003900 A61K0031711 A61K004800 C07K001416 A61K004702 A61K003576 A61K003800

[52] ECLA: A61K003921 C07K001416D C07K001416F C12N001589B K61K003953 M07K031900

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US GOVERNMENT;
PAVLAKIS GEORGE N

[72] Inventors: PAVLAKIS, George,
N.

[21] Application No.: NA

[22] Filed: 20020531

[43] Published: 20021212

[30] Priority: US US2001872733A 20010601 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Nucleic acid constructs containing HIV-1 gag/pol and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numerous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class:

[51] Int'l Class: C07K0014155 A61K00317052 C12N000510 C12N000700 C12N001509 A61P003704 A61K003921 C12N000121 C12N0015867 C07K001416 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N083042 M12N083048 M12N083050 M12N084010C M12N084020 K61K0039525C M12N074003F

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP; UNIV STELLENBOSCH; ZUR MEGEDE JAN; BARNETT SUSAN W; . . .

[72] Inventors: ZUR MEGEDE, Jan; BARNETT, Susan, W.; ENGELBRECHT, Susan; VAN . . .

[21] Application No.: NA

[22] Filed: 20010705

[43] Published: 20020117

[30] Priority: US US2000610313A 20000705 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV type C polypeptides. Uses of the polynucleotides in applications including DNA immunization, generation of packaging cell lines, and production of HIV Type C proteins are also described.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003800 A61K003576 C12N000121 C12N000510 C12N001509 A61P003118 A61K003900 C12N000119 C12N000115 A61K004800 A61P003112

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 M07K020700

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP; UNIV STELLENBOSCH; ZUR MEGEDE JAN; BARNETT SUSAN W; . . .

[72] Inventors: ZUR MEGEDE, Jan; BARNETT, Susan, W.; ENGELBRECHT, Susan; VAN . . .

[21] Application No.: NA

[22] Filed: 20010705

[43] Published: 20030626

[30] Priority: US US2000610313A 20000705 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV type C polypeptides. Uses of the polynucleotides in applications including DNA immunization, generation of packaging cell lines, and production of HIV Type C proteins are also described.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003800 A61K003576 C12N000121 C12N000510 C12N001509 A61P003118 A61K003900 C12N000119 C12N000115 A61K004800 A61P003112

[52] ECLA: C07K001416B C07K001416D C07K001416F K61K003900 M07K020700

NOVEL USE

[71] Applicant: SMITHKLINE BEECHAM BIOLOG; VOSS GERALD

[72] Inventors: VOSS, Gerald

[21] Application No.: NA

[22] Filed: 20010129

[43] Published: 20010802

[30] Priority: GB GB20002200A 20000131 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides the use of a) an HIV Tat protein or polynucleotide; or b) an HIV Nef protein or polynucleotide; or c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide (Nef-Tat); and an HIV gp120 protein or polynucleotide in the manufacture of a vaccine for the prophylactic or therapeutic immunisation of humans against HIV.

[52] US Class:

[51] Int'l Class: C12N001549 A61K003912 C12N001509 C07K001416 A61K003939 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416D C07K001416F K61K003900 K61K003953 K61K0039555B7 K61K003957 M07K031900

VACCINE FOR THE PROPHYLACTIC OR THERAPEUTIC IMMUNIZATION AGAINST HIV

[71] Applicant: SMITHKLINE BEECHAM BIOLOG; VOSS GERALD

[72] Inventors: VOSS, Gerald

[21] Application No.: NA

[22] Filed: 20010129

[43] Published: 20011220

[30] Priority: GB GB20002200A 20000131 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention provides the use of a) an HIV Tat protein or polynucleotide; or b) an HIV Nef protein or polynucleotide; or c) an HIV Tat protein or polynucleotide linked to an HIV Nef protein or polynucleotide (Nef-Tat); and an HIV gp120 protein or polynucleotide in the manufacture of a vaccine for the prophylactic or therapeutic immunisation of humans against HIV.

[52] US Class:

[51] Int'l Class: C12N001549 A61K003912 C12N001509 C07K001416 A61K003939 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416D C07K001416F K61K003900 K61K003953 K61K0039555B7 K61K003957 M07K031900

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 POL AND MODIFIED HIV-1 POL

[71] Applicant: MERCK CO INC; SHIVER JOHN W; PERRY HELEN C; CASIMIRO DANILO R; FU . . .

[72] Inventors: SHIVER, John, W.; PERRY, Helen, C.; CASIMIRO, Danilo, R.; FU, Tong-Ming

[21] Application No.: NA

[22] Filed: 20001221

[43] Published: 20010628

[30] Priority: US US1999171542P 19991222 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Pharmaceutical compositions which comprise HIV Pol DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The pol-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and preferably express inactivated versions of the HIV Pol protein devoid of protease, reverse transcriptase activity, RNase H activity and integrase activity, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Pol and codon optimized inactive derivatives of optimized HIV-1 Pol, including DNA molecules which encode inactive Pol proteins which comprise an amino terminal leader peptide.

[52] US Class:

[51] Int'l Class: A61K004800 A61K003900 C12N001509 A61P003118 C07K001416

[52] ECLA: C07K001416B K61K0039525C

IMPROVED IMMUNOGENICITY USING A COMBINATION OF DNA AND VACCINIA VIRUS VECTOR VACCINES

[71] Applicant: US HEALTH; FRANCHINI GENOVEFFA; HEL ZDENEK; PAVLAKIS GEORGE; . . .

[72] Inventors: FRANCHINI, Genoveffa; HEL, Zdenek; PAVLAKIS, George; TARTAGLIA, . . .

[21] Application No.: NA

[22] Filed: 20010430

[43] Published: 20011108

[30] Priority: US US2000200444P 20000428 ...

Go to Fulltext

[No drawing]

[57] Abstract:

This invention relates to improved methods of inducing an immune response for the prevention or treatment of HIV-1 infection by using a nucleic acid vaccine in conjunction with a recombinant viral vaccine, e.g. , a poxvirus vaccine, to potentiate and broaden the immune response. The present invention further provides a particularly effective vaccine regimen comprising a DNA vaccine used in combination with a poxvirus virus, especially NYVAC or ALVAC.

[52] US Class:

[51] Int'l Class: A61K003921 A61K003900 C12N001509 A61K0039275 A61K003939 A61P003118

[52] ECLA: A61K003921 K61K0039525C K61K003953 K61K0039545

IMMUNIZING AGAINST HIV INFECTION

[71] Applicant: AVENTIS PASTEUR; ROVINSKI BENJAMIN; TARTAGLIA JAMES; CAO SHI . . .

[72] Inventors: ROVINSKI, Benjamin; TARTAGLIA, James; CAO, Shi-Xian; PERSSON, Roy; KLEIN, . . .

[21] Application No.: NA

[22] Filed: 20010425

[43] Published: 20011108

[30] Priority: US US2000200011P 20000427 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A virus neutralizing level of antibodies to a primary HIV isolate is generated in a host by a prime-boost administration of antigents. The primary antigen is a DNA molecule encoding an envelop glycoprotein of a primary isolate of HIV-1 while the boosting antigen is either a non-infectious, non-replicating HIV-like particle having the envelope glycoprotein of a primary isolate of HIV-1 or an attenuated viral vector expressing an envelope glycoprotein of a primary isolate of HIV-1.

[52] US Class:

[51] Int'l Class: C07K001416 A61P003118 A61K003921

[52] ECLA: A61K003921 C07K001416D K61K0039555A M07K022120

IMMUNIZING AGAINST HIV INFECTION

[71] Applicant: AVENTIS PASTEUR; ROVINSKI BENJAMIN; TARTAGLIA JAMES; CAO SHI . . .

[72] Inventors: ROVINSKI, Benjamin; TARTAGLIA, James; CAO, Shi-Xian; PERSSON, Roy; KLEIN, . . .

[21] Application No.: NA

[22] Filed: 20010425

[43] Published: 20020321

[30] Priority: US US2000200011P 20000427 ...

Go to Fulltext

[No drawing]

[57] Abstract:

A virus neutralizing level of antibodies to a primary HIV isolate is generated in a host by a prime-boost administration of antigents. The primary antigen is a DNA molecule encoding an envelop glycoprotein of a primary isolate of HIV-1 while the boosting antigen is either a non-infectious, non-replicating HIV-like particle having the envelope glycoprotein of a primary isolate of HIV-1 or an attenuated viral vector expressing an envelope glycoprotein of a primary isolate of HIV-1.

[52] US Class:

[51] Int'l Class: C07K001416 A61P003118 A61K003921

[52] ECLA: A61K003921 C07K001416D K61K0039555A M07K022120

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US HEALTH;
PAVLAKIS GEORGE N

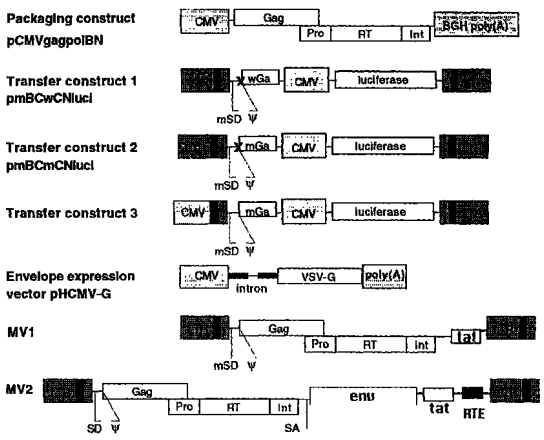
[72] Inventors: PAVLAKIS, George, N.

[21] Application No.: NA

[22] Filed: 20001222

[43] Published: 20010628

[30] Priority: US US1999173036P 19991223 ...



Go to Fulltext

[57] Abstract:

Nucleic acid constructs containing HIV-1 GAG/POL and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numberous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003900 A61K00317088 C12N0015867 C12N000121 C12N000510 C12N001509 C12N000700 C07K0014155 A61K003921 C12N000119 C12N000522 C12N000115 A61P003118 A61K004800

[52] ECLA: A61K003921 C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N074003F

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US HEALTH;
PAVLAKIS GEORGE N

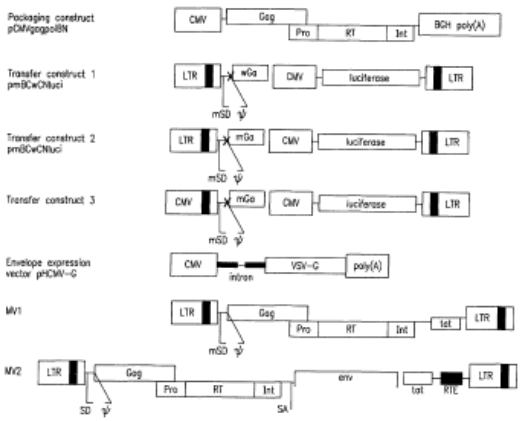
[72] Inventors: PAVLAKIS, George, N.

[21] Application No.: NA

[22] Filed: 20001222

[43] Published: 20011213

[30] Priority: US US1999173036P 19991223 ...



Go to Fulltext

[57] Abstract:

Nucleic acid constructs containing HIV-1 GAG/POL and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numberous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003900 A61K00317088 C12N0015867 C12N000121 C12N000510 C12N001509 C12N000700 C07K0014155 A61K003921 C12N000119 C12N000522 C12N000115 A61P003118 A61K004800

[52] ECLA: A61K003921 C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N074003F

MOLECULAR CLONES WITH MUTATED HIV GAG/POL, SIV GAG AND SIV ENV GENES

[71] Applicant: US GOVERNMENT;
PAVLAKIS GEORGE N

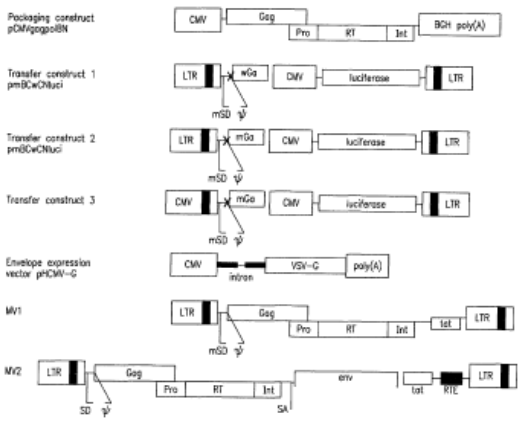
[72] Inventors: PAVLAKIS GEORGE N

[21] Application No.: NA

[22] Filed: 20001222

[43] Published: 20021107

[30] Priority: US US1999173036P 19991223 ...



Go to Fulltext

[57] Abstract:

Nucleic acid constructs containing HIV-1 GAG/POL and SIV gag or SIV env genes which have been mutated to remove or reduce inhibitory/instability sequences are disclosed. Viral particles and host cells containing these constructs and/or viral particles are also disclosed. The exemplified constructs and viral particles of the invention may be useful in gene therapy for numberous disorders, including HIV infection, or as a vaccine for HIV-1 immunotherapy and immunoprophylaxis.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003900 A61K00317088 C12N0015867 C12N000121 C12N000510 C12N001509 C12N000700 C07K0014155 A61K003921 C12N000119 C12N000522 C12N000115 A61P003118 A61K004800

[52] ECLA: A61K003921 C07K0014155 C07K001416B C12N000700 C12N0015867 K61K003900 K61K003953 K61K004800 M07K020700 M12N074003F

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

[71] Applicant: MERCK CO INC; SHIVER JOHN W; LIANG XIAOPING; FU TONG MING

[72] Inventors: SHIVER, John, W.; LIANG, Xiaoping; FU, Tong-Ming

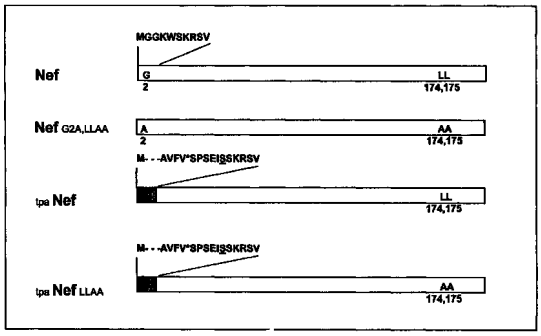
[21] Application No.: NA

[22] Filed: 20001215

[43] Published: 20010621

[30] Priority: US US1999172442P 19991217 ...

Go to Fulltext



[57] Abstract:

Pharmaceutical compositions which comprise HIV Nef DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The nef-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and express the HIV Nef protein or biologically relevant portions thereof, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Nef and derivatives of optimized HIV-1 Nef, including nef modifications comprising amino terminal leader peptides, removal of the amino terminal myristylation site, and/or modification of the Nef dileucine motif. These modifications may effect wild type characteristics of Nef, such as myristylation and down regulation of host CD4.

[52] US Class:

[51] Int'l Class: A61K003939 A61K003900 C12N001509 A61P003118 C07K001416

[52] ECLA: C07K001416F K61K003953 K61K0039555B K61K003957

POLYNUCLEOTIDE VACCINES EXPRESSING CODON OPTIMIZED HIV-1 NEF AND MODIFIED HIV-1 NEF

[71] Applicant: MERCK CO INC; SHIVER JOHN W; LIANG XIAOPING; FU TONG MING

[72] Inventors: SHIVER, John, W.; LIANG, Xiaoping; FU, Tong-Ming

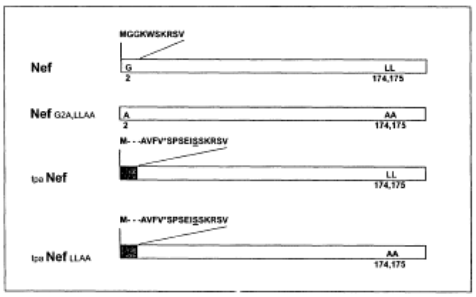
[21] Application No.: NA

[22] Filed: 20001215

[43] Published: 20020221

[30] Priority: US US1999172442P 19991217 ...

Go to Fulltext



[57] Abstract:

Pharmaceutical compositions which comprise HIV Nef DNA vaccines are disclosed, along with the production and use of these DNA vaccines. The nef-based DNA vaccines of the invention are administered directly introduced into living vertebrate tissue, preferably humans, and express the HIV Nef protein or biologically relevant portions thereof, inducing a cellular immune response which specifically recognizes human immunodeficiency virus-1 (HIV-1). The DNA molecules which comprise the open reading frame of these DNA vaccines are synthetic DNA molecules encoding codon optimized HIV-1 Nef and derivatives of optimized HIV-1 Nef, including nef modifications comprising amino terminal leader peptides, removal of the amino terminal myristylation site, and/or modification of the Nef dileucine motif. These modifications may effect wild type characteristics of Nef, such as myristylation and down regulation of host CD4.

[52] US Class:

[51] Int'l Class: A61K003939 A61K003900 C12N001509 A61P003118 C07K001416

[52] ECLA: C07K001416F K61K003953 K61K0039555B K61K003957

DNA VACCINES ENCODING ANTIGEN LINKED TO A DOMAIN THAT BINDS CD40

[71] Applicant: LEDBETTER JEFFREY A; HAYDEN LEDBETTER MARTHA S

[72] Inventors: HAYDEN-LEDBETTER, Martha, S.; LEDBETTER, Jeffrey, A.

[21] Application No.: NA

[22] Filed: 20001013

[43] Published: 20010419

[30] Priority: US US1999159690P 19991014 ...

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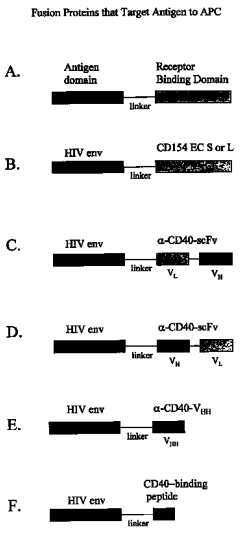


[57] Abstract:

Vaccines that target one or more antigens to a cell surface receptor improve the antigen-specific humoral and cellular immune response. Antigen(s) linked to a domain that binds to a cell surface receptor are internalized, carrying antigen(s) into an intracellular compartment where the antigen(s) are digested into peptides and loaded onto MHC molecules. T cells specific for the peptide antigens are activated, leading to an enhanced immune response. The vaccine may comprise antigen(s) linked to a domain that binds at least one receptor or a DNA plasmid encoding antigen(s) linked to a domain that binds at least one receptor. A preferred embodiment of the invention targets HIV-1 env antigen to the CD40 receptor, resulting in delivery of antigen to CD40 positive cells, and selective activation of the CD40 receptor on cells presenting HIV-1 env antigens to T cells.

[52] US Class:

[51] Int'l Class: C12P002104 A61K0039385 A61K003921 C12N001552 C07K001416 C07K001646 C07K001900 A61K003900

[52] ECLA: A61K003921 C07K001416D K61K003953 K61K003957 K61K003960P M07K020700 M07K031900

DNA VACCINES ENCODING ANTIGEN LINKED TO A DOMAIN THAT BINDS CD40

[71] Applicant: LEDBETTER JEFFREY A; HAYDEN LEDBETTER MARTHA S

[72] Inventors: LEDBETTER, Jeffrey, A.; HAYDEN- LEDBETTER, Martha, S.

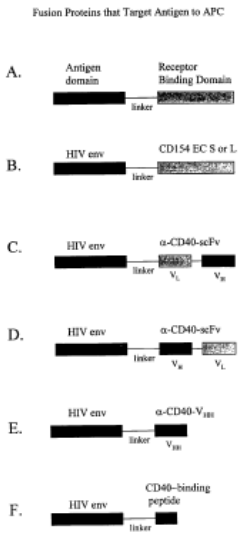
[21] Application No.: NA

[22] Filed: 20001013

[43] Published: 20011018

[30] Priority: US US1999159690P 19991014 ...

Go to Fulltext



[57] Abstract:

Vaccines that target one or more antigens to a cell surface receptor improve the antigen-specific humoral and cellular immune response. Antigen(s) linked to a domain that binds to a cell surface receptor are internalized, carrying antigen(s) into an intracellular compartment where the antigen(s) are digested into peptides and loaded onto MHC molecules. T cells specific for the peptide antigens are activated, leading to an enhanced immune response. The vaccine may comprise antigen(s) linked to a domain that binds at least one receptor or a DNA plasmid encoding antigen(s) linked to a domain that binds at least one receptor. A preferred embodiment of the invention targets HIV-1 env antigen to the CD40 receptor, resulting in delivery of antigen to CD40 positive cells, and selective activation of the CD40 receptor on cells presenting HIV-1 env antigens to T cells.

[52] US Class:

[51] Int'l Class: C12P002104 A61K0039385 A61K003921 C12N001552 C07K001416 C07K001646 C07K001900 A61K003900

[52] ECLA: A61K003921 C07K001416D K61K003953 K61K003957 K61K003960P M07K020700 M07K031900

STABILIZED VIRAL ENVELOPE PROTEINS AND USES THEREOF

[71] Applicant: PROGENICS PHARM INC; AARON DIAMOND AIDS RES CT

[72] Inventors: BINLEY, James, M.; SCHUELKE, Norbert; OLSON, William, C.; MADDON, Paul, . . .

[21] Application No.: NA

[22] Filed: 20000623

[43] Published: 20010104

[30] Priority: US US1999340992A 19990625 ...

Go to Fulltext

[No drawing]

[57] Abstract:

This invention provides an isolated nucleic acid which comprises a nucleotide segment having a sequence encoding a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention also provide a viral envelope protein comprising a viral surface protein and a corresponding viral transmembrane protein wherein the viral envelope protein contains one or more mutations in amino acid sequence that enhance the stability of the complex formed between the viral surface protein and transmembrane protein. This invention further provides methods of treating HIV-1 infection.

[52] US Class:

[51] Int'l Class: C07K001610 A61K0031711 C12P002108 C12N000119 C12N000121 C12N001509 C12N000700 C07K001416 A61K0039395 C12N000115 C12N000510 C07K001900 A61K004500 A61P003118 A61K003900

[52] ECLA: C07K001610K1D K61K003900 K61K003953 M07K020302

STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

[71] Applicant: DANA FARBER CANCER INST INC; UNIV COLUMBIA; SODROSKI JOSEPH G; WYATT . . .

[72] Inventors: SODROSKI, Joseph, G.; WYATT, Richard; YANG, Xinzhen; FARZAN, Michael; . . .

[21] Application No.: NA

[22] Filed: 20000918

[43] Published: 20010322

[30] Priority: US US1999154677P 19990917 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present application is directed to stabilize HIV envelope glycoprotein trimers. The trimers are stabilized by introducing trimeric motifs, preferably the GCN4 coiled coil or the fibritin trimeric domain, at certain sites, for example in the gp41 ectodomain. These stabilized trimers or DNA molecules encoding such trimers can be used to generate an immunogenic reaction. The trimers can also be used in assays to screen for molecules that interact with them - and to identify molecules that interact with specific sites.

[52] US Class:

[51] Int'l Class: C07K001416 C07K001401 C07K001447 A61K003900

[52] ECLA: C07K001401 C07K001416D C07K001447A1B K61K003900 K61K003964 M07K020300 M07K020700 M07K031935 M07K031973

STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

[71] Applicant: DANA FARBER CANCER INST INC; UNIV COLUMBIA; SODROSKI JOSEPH G; WYATT . . .

[72] Inventors: SODROSKI, Joseph, G.; WYATT, Richard; YANG, Xinzhen; FARZAN, Michael; . . .

[21] Application No.: NA

[22] Filed: 20000918

[43] Published: 20011108

[30] Priority: US US1999154677P 19990917 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present application is directed to stabilize HIV envelope glycoprotein trimers. The trimers are stabilized by introducing trimeric motifs, preferably the GCN4 coiled coil or the fibritin trimeric domain, at certain sites, for example in the gp41 ectodomain. These stabilized trimers or DNA molecules encoding such trimers can be used to generate an immunogenic reaction. The trimers can also be used in assays to screen for molecules that interact with them-and to identify molecules that interact with specific sites.

[52] US Class:

[51] Int'l Class: C07K001416 C07K001401 C07K001447 A61K003900

[52] ECLA: C07K001401 C07K001416D C07K001447A1B K61K003900 K61K003964 M07K020300 M07K020700 M07K031935 M07K031973

STABILIZED SOLUBLE GLYCOPROTEIN TRIMERS

[71] Applicant: DANA FARBER CANCER INST INC; UNIV COLUMBIA; SODROSKI JOSEPH G; WYATT . . .

[72] Inventors: SODROSKI JOSEPH G; WYATT RICHARD; YANG XINZHEN; FARZAN MICHAEL; KWONG . . .

[21] Application No.: NA

[22] Filed: 20000918

[43] Published: 20021205

[30] Priority: US US1999154677P 19990917 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present application is directed to stabilize HIV envelope glycoprotein trimers. The trimers are stabilized by introducing trimeric motifs, preferably the GCN4 coiled coil or the fibritin trimeric domain, at certain sites, for example in the gp41 ectodomain. These stabilized trimers or DNA molecules encoding such trimers can be used to generate an immunogenic reaction. The trimers can also be used in assays to screen for molecules that interact with them - and to identify molecules that interact with specific sites.

[52] US Class:

[51] Int'l Class: C07K001416 C07K001401 C07K001447 A61K003900

[52] ECLA: C07K001401 C07K001416D C07K001447A1B K61K003900 K61K003964 M07K020300 M07K020700 M07K031935 M07K031973

ADENOVIRUS CARRYING GAG GENE HIV VACCINE

[71] Applicant: MERCK CO INC;
CHEN LING; SHIVER JOHN;
BETT ANDREW J; CASIMIRO . . .

[72] Inventors: CHEN, Ling; SHIVER, John; BETT, Andrew, J.; CASIMIRO, Danilo, Riguera; . . .

[21] Application No.: NA

[22] Filed: 20000703

[43] Published: 20010111

[30] Priority: US US1999142631P 19990706 ...

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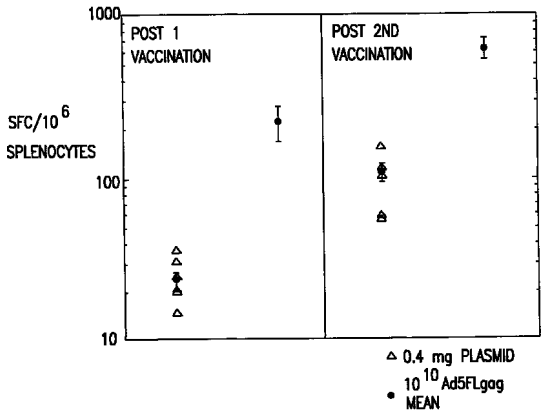

[57] Abstract:

An adenoviral vector is described which carries a codon-optimized gag gene, along with a heterologous promoter and transcription terminator. This viral vaccine can effectively prevent HIV infection when administered to humans either alone or as part of a prime and boost regime also with a vaccine plasmid.

[52] US Class:

[51] Int'l Class: C12N0015861 A61K003921 A61K003576 C12N001509 C12N000510 A61K004800 C12Q000170 C12P002104 A61P003118 C07K001416

[52] ECLA: C07K001416B C12N0015861 C12Q000170B2B K61K0039525C K61K003953 M07K022104

CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

[71] Applicant: UNIV PENNSYLVANIA

[72] Inventors: HOFFMAN, Trevor, L.

[21] Application No.: NA

[22] Filed: 20000516

[43] Published: 20001130

[30] Priority: US US1999317556A 19990524 ...

[No drawing]

Go to Fulltext

[57] Abstract:

The invention relates to novel CD4-independent HIV Envelope proteins and uses therefor.

[52] US Class:

[51] Int'l Class: C12N001548 A61P003118 G01N0033569 C12N000701 A61K003800 A61K003152 C12N001500 C12N000700 G01N003368 G01N003315 C12N001533 C12N000502 C12N001574 C12N000115 C12N000119 C12N001563 G01N003350 C12N001570 C12N000500 A61K004800 A61K003821 C07K001416 C12N000121 C12N000510 C07H002102 A61K003921 C12N001509 A61K004500

[52] ECLA: C07K001416D C12N000700 M12N074003F

CD4-INDEPENDENT HIV ENVELOPE PROTEINS AS VACCINES AND THERAPEUTICS

[71] Applicant: TRUSTEES OF THE UNIVERSITY OF

[72] Inventors: HOXIE JAMES A; LABRANCHE CELIA C; DOMS ROBERT W; HOFFMAN TREVOR L

[21] Application No.: NA

[22] Filed: 20000516

[43] Published: 20020627

[30] Priority: US US1999317556A 19990524 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The invention relates to novel CD4-independent HIV Envelope proteins and uses therefor.

[52] US Class:

[51] Int'l Class: C12N001548 A61P003118 G01N0033569 C12N000701 A61K003800 A61K003152 C12N001500 C12N000700 G01N003368 G01N003315 C12N001533 C12N000502 C12N001574 C12N000115 C12N000119 C12N001563 G01N003350 C12N001570 C12N000500 A61K004800 A61K003821 C07K001416 C12N000121 C12N000510 C07H002102 A61K003921 C12N001509 A61K004500

[52] ECLA: C07K001416D C12N000700 M12N074003F

MODIFIED HIV ENV POLYPEPTIDES

[71] Applicant: CHIRON CORP

[72] Inventors: BARNETT, Susan; HARTOG, Karin; MARTIN, Eric

[21] Application No.: NA

[22] Filed: 19991230

[43] Published: 20000706

[30] Priority: US US1998114495P 19981231 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Polynucleotide encoding modified HIV Env polypeptides are disclosed. The Env polypeptides are modified so as to expose at least part of the CD4 binding region. Methods of diagnosis, treatment and prevention using the polynucleotides and polypeptides are also provided.

[52] US Class:

[51] Int'l Class: C07K0014155 A61K003912 C12N000704 C12N001549 C12N001509 A61P003702 A61K003942 C07K001418 C12N0015867 C07K001416 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F C07K001418F4 C12N000704A C12N0015867P K61K003900 K61K0039515C K61K0039525C K61K0039525D K61K003953 K61K003954 K61K004800 M07K020300 M07K020700 M07K021500

MODIFIED HIV ENV POLYPEPTIDES

[71] Applicant: CHIRON CORP

[72] Inventors: BARNETT SUSAN; HARTOG KARIN; MARTIN ERIC

[21] Application No.: NA

[22] Filed: 19991230

[43] Published: 20000921

[30] Priority: US US1998114495P 19981231 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Polynucleotide encoding modified HIV Env polypeptides are disclosed. The Env polypeptides are modified so as to expose at least part of the CD4 binding region. Methods of diagnosis, treatment and prevention using the polynucleotides and polypeptides are also provided.

[52] US Class:

[51] Int'l Class: C07K0014155 A61K003912 C12N000704 C12N001549 C12N001509 A61P003702 A61K003942 C07K001418 C12N0015867 C07K001416 A61K004800 A61P003118 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F C07K001418F4 C12N000704A C12N0015867P K61K003900 K61K0039515C K61K0039525C K61K0039525D K61K003953 K61K003954 K61K004800 M07K020300 M07K020700 M07K021500

VIRAL VACCINE

[71] Applicant: STRATHMANN AG CO; SCHREIBER MICHAEL

[72] Inventors: SCHREIBER, Michael

[21] Application No.: NA

[22] Filed: 19991203

[43] Published: 20000817

[30] Priority: DE DE19907485A 19990212 ...

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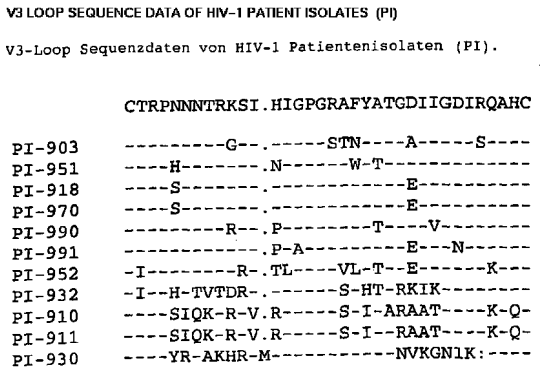


V3 LOOP SEQUENCE DATA OF HIV-1 PATIENT ISOLATES (PI)

V3-Loop Sequenzdaten von HIV-1 Patientenisolaten (PI).

```
          CTRPNNNTRKSI.HIGPGRAFYATGDIIGDIRQAHC

PI-903    ---------G--.-----STN----A-----S----
PI-951    ----H--------.N------W-T-------------
PI-918    ----S--------.------------E----------
PI-970    ----S--------.------------E----------
PI-990    ---------R--.P---------T----V--------
PI-991    ------------.P-A---------E---N-------
PI-952    -I--------R-.TL----VL-T--E------K---
PI-932    -I--H-TVTDR-.------S-HT-RKIK--------
PI-910    ----SIQK-R-V.R-----S-I-ARAAT----K-Q-
PI-911    ----SIQK-R-V.R-----S-I--RAAT----K-Q-
PI-930    ----YR-AKHR-M----------NVKGN1K:----
```

[57] Abstract:

The invention relates to a pharmaceutical composition or vaccine containing a mixture of viral protein molecules which are sequence variants of a single viral protein or of part of such a protein. The invention also relates to a DNA vaccine coding for a mixture of structurally different virus proteins. Said vaccine contains a mixture of sequence variants of a viral DNA molecule or of a part thereof which code for sequence variants of a viral protein or of a part thereof. According to a preferred embodiment of the invention the viral proteins are sequence variants of the GP120 protein of the human immunodeficiency virus (HIV) which differ from each other in terms of the amino acid sequence in the area of the V2-loop and/or the V3-loop, preferably both the V2-and V3-loop. The invention also relates to the production of said viral vaccines, including the related intermediate stages and constructs, as well as to their methods of production and their uses.

[52] US Class:

[51] Int'l Class: A61P003112 A61K003800 A61K003576 C12P002102 C07K001416 C12N000510 C12N001509 C12N001549 A61K004800 A61K003900 C07K0014155 C12N001534 A61P003118 A61K003912 A61K003921

[52] ECLA: C07K001416D A61K003921 K61K0039505 K61K003953 M07K020700

VIRAL VACCINE

[71] Applicant: STRATHMANN AG CO; SCHREIBER MICHAEL

[72] Inventors: SCHREIBER MICHAEL

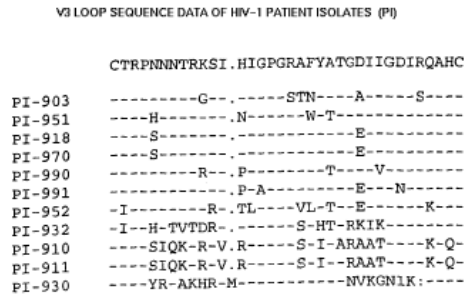
[21] Application No.: NA

[22] Filed: 19991203

[43] Published: 20001116

[30] Priority: DE DE19907485A 19990212 ...

Go to Fulltext



V3 LOOP SEQUENCE DATA OF HIV-1 PATIENT ISOLATES (PI)

	CTRPNNNTRKSI.HIGPGRAFYATGDIIGDIRQAHC
PI-903	---------G--.-----STN----A-----S----
PI-951	----H--------.N------W-T------------
PI-918	----S--------.------------E----------
PI-970	----S--------.------------E----------
PI-990	---------R--.P--------T----V--------
PI-991	------------.P-A---------E---N------
PI-952	-I---------R-.TL----VL-T--E------K---
PI-932	-I--H-TVTDR-.------S-HT-RKIK--------
PI-910	----SIQK-R-V.R-----S-I-ARAAT----K-Q-
PI-911	----SIQK-R-V.R-----S-I--RAAT----K-Q-
PI-930	----YR-AKHR-M----------NVKGN1K:----

[57] Abstract:

The invention relates to a pharmaceutical composition or vaccine containing a mixture of viral protein molecules which are sequence variants of a single viral protein or of part of such a protein. The invention also relates to a DNA vaccine coding for a mixture of structurally different virus proteins. Said vaccine contains a mixture of sequence variants of a viral DNA molecule or of a part thereof which code for sequence variants of a viral protein or of a part thereof. According to a preferred embodiment of the invention the viral proteins are sequence variants of the GP120 protein of the human immunodeficiency virus (HIV) which differ from each other in terms of the amino acid sequence in the area of the V2-loop and/or the V3-loop, preferably both the V2- and V3-loop. The invention also relates to the production of said viral vaccines, including the related intermediate stages and constructs, as well as to their methods of production and their uses.

[52] US Class:

[51] Int'l Class: A61P003112 A61K003800 A61K003576 C12P002102 C07K001416 C12N000510 C12N001509 C12N001549 A61K004800 A61K003900 C07K0014155 C12N001534 A61P003118 A61K003912 A61K003921

[52] ECLA: C07K001416D A61K003921 K61K0039505 K61K003953 M07K020700

A RECOMBINANT VECTOR EXPRESSING MULTIPLE COSTIMULATORY MOLECULES AND USES THEREOF

[71] Applicant: US HEALTH; THERION BIOLOG CORP; SCHLOM JEFFREY; HODGE JAMES; PANICALI . . .

[72] Inventors: SCHLOM, Jeffrey; HODGE, James; PANICALI, Dennis

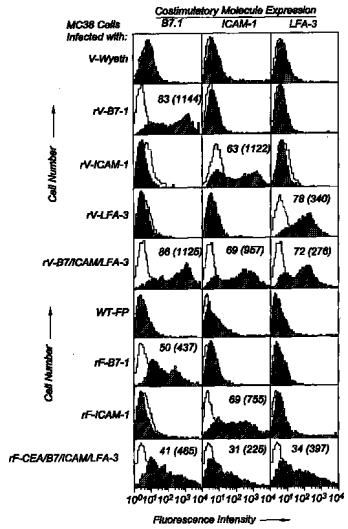
[21] Application No.: NA

[22] Filed: 19991112

[43] Published: 20000615

[30] Priority: US US1998111582P 19981209 ...

Go to Fulltext



[57] Abstract:

The present invention is a recombinant vector encoding and expressing at least three or more costimulatory molecules. The recombinant vector may additionally contain a gene encoding one or more target antigens or immunological epitope thereof. The synergistic effect of these costimulatory molecules on the enhanced activation of T cells is demonstrated. The degree of T-cell activation using recombinant vectors containing genes encoding three costimulatory molecules was far greater than the sum of recombinant vector constructs containing one costimulatory molecule and greater than the use of two costimulatory molecules. Results employing the triple costimulatory vectors were most dramatic under conditions of either low levels of first signal or low stimulator to T-cell ratios. This phenomenon was observed with both isolated $CD4^+$ and $CD8^+$ T cells. The recombinant vectors of the present invention are useful as immunogenes and vaccines against cancer and pathogenic micro-organisms, and in providing host cells, including dendritic cells and splenocytes with enhanced antigen-presenting functions.

[52] US Class:

[51] Int'l Class: C07K0014705 A61K0039125 C12N000700 A61P003112 A61K003574 A61K003512 A61P003500 A61P003110 C12N001502 C12N000510 C12N0015863 A61P003706 A61P000104 C12N000121 A61K0039245 A61K0039275 C12N000115 G01N003353 C12N000119 A61K004800 C12Q000102 A61K003912 A61K003576 A61K0039235 A61K003929 A61P003104 A61K003921 A61K003800 A61P003702 A61K003900

[52] ECLA: C07K0014705B C07K0014705B20 C07K0014705B22 C07K0014705B24 C12N0015863 K61K003512 K61K003900 K61K003957 K61K004800 M07K020700 M07K022100

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP

[72] Inventors: BARNETT, Susan;
ZUR MEGEDE, Jan

[21] Application No.: NA

[22] Filed: 19991230

[43] Published: 20000706

[30] Priority: US US1998114495P 19981231 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV type C Gag- and/or Env-containing polypeptides. Uses of the polynucleotides in applications including DNA immunization, generation of packaging cell lines, and production of Gag- and/or Env-containing proteins are also described.

[52] US Class:

[51] Int'l Class: A61P003118 A61K003576 A61K0009127 C12N0015867 C07K001418 C12N000510 C12N001509 C12N001549 A61K004800 A61K003800 C07K001416 C12N000704 C12P002102 A61P003702 A61K003939 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F C07K001418F4 C12N000704A C12N0015867P K61K003900 K61K0039515C K61K0039525C K61K0039525D K61K003953 K61K003954 K61K004800 M07K020300 M07K020700 M07K021500 M12N080010E M12N084020A

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP

[72] Inventors: BARNETT, Susan;
ZUR MEGEDE, Jan

[21] Application No.: NA

[22] Filed: 19991230

[43] Published: 20010118

[30] Priority: US US1998114495P 19981231 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV type C Gag-and/or Env-containing polypeptides. Uses of the polynucleotides in applications including DNA immunization, generation of packaging cell lines, and production of Gag-and/or Env-containing proteins are also described.

[52] US Class:

[51] Int'l Class: A61P003118 A61K003576 A61K0009127 C12N0015867 C07K001418 C12N000510 C12N001509 C12N001549 A61K004800 A61K003800 C07K001416 C12N000704 C12P002102 A61P003702 A61K003939 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F C07K001418F4 C12N000704A C12N0015867P K61K003900 K61K0039515C K61K0039525C K61K0039525D K61K003953 K61K003954 K61K004800 M07K020300 M07K020700 M07K021500 M12N080010E M12N084020A

POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

[71] Applicant: CHIRON CORP

[72] Inventors: BARNETT SUSAN; ZUR MEGEDE JAN

[21] Application No.: NA

[22] Filed: 19991230

[43] Published: 20001207

[30] Priority: US US1998114495P 19981231 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to polynucleotides encoding immunogenic HIV type C Gag- and/or Env-containing polypeptides. Uses of the polynucleotides in applications including DNA immunization, generation of packaging cell lines, and production of Gag- and/or Env-containing proteins are also described.

[52] US Class:

[51] Int'l Class: A61P003118 A61K003576 A61K0009127 C12N0015867 C07K001418 C12N000510 C12N001509 C12N001549 A61K004800 A61K003800 C07K001416 C12N000704 C12P002102 A61P003702 A61K003939 A61K003900

[52] ECLA: C07K001416B C07K001416D C07K001416F C07K001418F4 C12N000704A C12N0015867P K61K003900 K61K0039515C K61K0039525C K61K0039525D K61K003953 K61K003954 K61K004800 M07K020300 M07K020700 M07K021500 M12N080010E M12N084020A

METHOD FOR PRODUCING A NUCLEOTIDE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND

[71] Applicant: STATENS SERUMINSTITUT; FOMSGAARD ANDERS

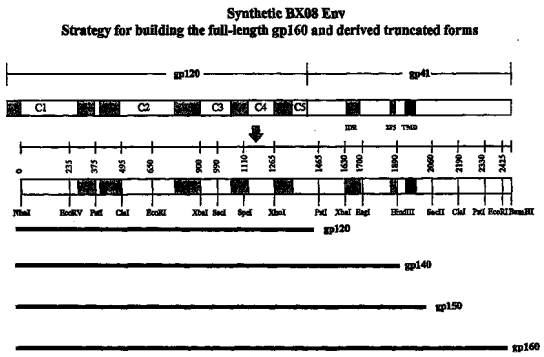
[72] Inventors: FOMSGAARD, Anders

[21] Application No.: NA

[22] Filed: 20000327

[43] Published: 20000525

[30] Priority: DK DK1999427A 19990329 ...



Go to Fulltext

[57] Abstract:

The present invention relates to a method for producing a nucleotide sequence construct with optimized codons for an HIV genetic vaccine based on a primary, early HIV isolate. Specific such nucleotide sequence construct are the synthetic envelope BX08 constructs. The invention further relates to the medical use of such constructs for the treatment and prophylaxis of HIV through DNA vaccine and for diagnostics.

[52] US Class:

[51] Int'l Class: C12N001549 C07K001416

[52] ECLA: C07K001416D K61K0039525 M07K020500 M07K020700

NUCLEOTIDE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV ISOLATE AND SYNTHETIC ENVELOPE

[71] Applicant: STATENS SERUMINSTITUT; FOMSGAARD ANDERS

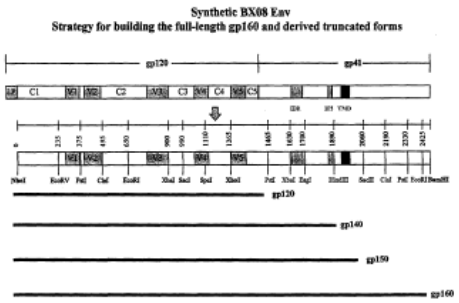
[72] Inventors: FOMSGAARD, Anders

[21] Application No.: NA

[22] Filed: 20000327

[43] Published: 20000817

[30] Priority: DK DK1999427A 19990329 ...



Go to Fulltext

[57] Abstract:

The present invention relates to a method for producing a nucleotide sequence construct with optimized codons for an HIV genetic vaccine based on a primary, early HIV isolate. Specific such nucleotide sequence construct are the synthetic envelope BX08 constructs. The invention further relates to the medical use of such constructs for the treatment and prophylaxis of HIV through DNA vaccine and for diagnostics.

[52] US Class:

[51] Int'l Class: C12N001549 C07K001416

[52] ECLA: C07K001416D K61K0039525 M07K020500 M07K020700

METHOD FOR PRODUCING A NUCLEOTIDE SEQUENCE CONSTRUCT WITH OPTIMISED CODONS FOR AN HIV GENETIC VACCINE BASED ON A PRIMARY, EARLY HIV

[71] Applicant: STATENS SERUMINSTITUT; FOMSGAARD ANDERS

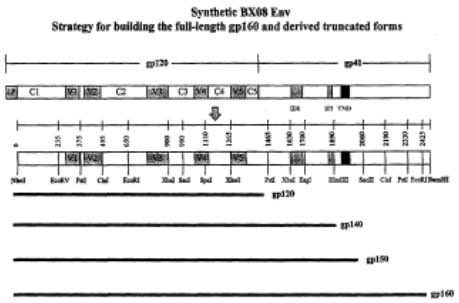
[72] Inventors: FOMSGAARD ANDERS

[21] Application No.: NA

[22] Filed: 20000327

[43] Published: 20000817

[30] Priority: DK DK1999427A 19990329 ...



Go to Fulltext

[57] Abstract:

The present invention relates to a method for producing a nucleotide sequence construct with optimized codons for an HIV genetic vaccine based on a primary, early HIV isolate. Specific such nucleotide sequence construct are the synthetic envelope BX08 constructs. The invention further relates to the medical use of such constructs for the treatment and prophylaxis of HIV through DNA vaccine and for diagnostics.

[52] US Class:

[51] Int'l Class: C12N001549 C07K001416

[52] ECLA: C07K001416D K61K0039525 M07K020500 M07K020700

POLYNUCLEOTIDE VACCINE FORMULATIONS

[71] Applicant: MERCK CO INC; VOLKIN DAVID B; EVANS ROBERT K; ULMER JEFFREY B; . . .

[72] Inventors: VOLKIN, David, B.; EVANS, Robert, K.; ULMER, Jeffrey, B.; CAULFIELD, . . .

[21] Application No.: NA

[22] Filed: 19990708

[43] Published: 20000120

[30] Priority: US US1998112655A 19980709 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to a novel vaccine formulation comprising nucleic acid molecules and a mineral-based adjuvant provided in a biologically effective concentration so as to improve induction of an immune response subsequent to vaccination which correlates to expression of one or more specific antigens encoded by the nucleic acid molecule.

[52] US Class:

[51] Int'l Class: A61K003921 A61K0039145 A61K004800 A61K0039245 A61K003929 A61K003939

[52] ECLA: A61K0039145 A61K003921 A61K0039245 A61K003929B A61K003939 K61K003953 K61K0039555A

HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

[71] Applicant: IST SUPERIORE SANITA; ENSOLI BARBARA

[72] Inventors: ENSOLI, Barbara

[21] Application No.: NA

[22] Filed: 19981130

[43] Published: 19990610

[30] Priority: IT ITRM970743A 19971201 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention refers to Tat as the active principale for a prophylactic and/or therapeutic vaccine against HIV infection, the progression towards AIDS and the development of tumors and other syndromes and symptoms in subjects infected by HIV. Tat is in biologically active form either as recombinant protein or peptide or as DNA. More particularly, the invention refers to a vaccine based on HIV-1 Tat as immunogen, inoculated as DNA and/or recombinant protein or as peptides, alone or in combination with other genes or viral gene products (Nef, Rev, Gag) or parts thereof, or in combination with various immuno modulant cytokines (IL-12, IL-15) or with the gene coding for an immuno modulant cytokine or part thereof. Tat, Nef, Rev, Gag and the immuno modulant cytokines are administrated both as a mixture of recombinant proteins, peptides or fusion proteins (Tat/Nef, Tat/Rev, Tat/Gag, Tat/IL-12, Tat/IL-15) or as plasmid DNA.

[52] US Class:

[51] Int'l Class: A61P003704 A61K003900 A61K003800 C12Q000168 C12N000510 C12N001549 C12N001509 C12P002108 A61P003500 A61K003921 C07K001416 C12P002102 C07K000708 A61K004800 A61P003118 C12R000191

[52] ECLA: A61K003921 C07K001416F K61K003800 K61K003900 K61K0039525 M07K020700 M12N022100

HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

[71] Applicant: IST SUPERIORE SANITA; ENSOLI BARBARA

[72] Inventors: ENSOLI BARBARA

[21] Application No.: NA

[22] Filed: 19981130

[43] Published: 19990722

[30] Priority: IT ITRM970743A 19971201 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention refers to Tat as the active principale for a prophylactic and/or therapeutic vaccine against HIV infection, the progression towards AIDS and the development of tumors and other syndromes and symptoms in subjects infected by HIV. Tat is in biologically active form either as recombinant protein or peptide or as DNA. More particularly, the invention refers to a vaccine based on HIV-1 Tat as immunogen, inoculated as DNA and/or recombinant protein or as peptides, alone or in combination with other genes or viral gene products (Nef, Rev, Gag) or parts thereof, or in combination with various immuno modulant cytokines (IL-12, IL-15) or with the gene coding for an immuno modulant cytokine or part thereof. Tat, Nef, Rev, Gag and the immuno modulant cytokines are administrated both as a mixture of recombinant proteins, peptides or fusion proteins (Tat/Nef, Tat/Rev, Tat/Gag, Tat/IL-12, Tat/IL-15) or as plasmid DNA.

[52] US Class:

[51] Int'l Class: A61P003704 A61K003900 A61K003800 C12Q000168 C12N000510 C12N001549 C12N001509 C12P002108 A61P003500 A61K003921 C07K001416 C12P002102 C07K000708 A61K004800 A61P003118 C12R000191

[52] ECLA: A61K003921 C07K001416F K61K003800 K61K003900 K61K0039525 M07K020700 M12N022100

HIV-1 TAT, OR DERIVATIVES THEREOF FOR PROPHYLACTIC AND THERAPEUTIC VACCINATION

[71] Applicant: IST SUPERIORE SANITA; ENSOLI BARBARA

[72] Inventors: ENSOLI BARBARA

[21] Application No.: NA

[22] Filed: 19981130

[43] Published: 19990910

[30] Priority: IT ITRM970743A 19971201 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention refers to Tat as the active principale for a prophylactic and/or therapeutic vaccine against HIV infection, the progression towards AIDS and the development of tumors and other syndromes and symptoms in subjects infected by HIV. Tat is in biologically active form either as recombinant protein or peptide or as DNA. More particularly, the invention refers to a vaccine based on HIV-1 Tat as immunogen, inoculated as DNA and/or recombinant protein or as peptides, alone or in combination with other genes or viral gene products (Nef, Rev, Gag) or parts thereof, or in combination with various immuno modulant cytokines (IL-12, IL-15) or with the gene coding for an immuno modulant cytokine or part thereof. Tat, Nef, Rev, Gag and the immuno modulant cytokines are administrated both as a mixture of recombinant proteins, peptides or fusion proteins (Tat/Nef, Tat/Rev, Tat/Gag, Tat/IL-12, Tat/IL-15) or as plasmid DNA.

[52] US Class:

[51] Int'l Class: A61P003704 A61K003900 A61K003800 C12Q000168 C12N000510 C12N001549 C12N001509 C12P002108 A61P003500 A61K003921 C07K001416 C12P002102 C07K000708 A61K004800 A61P003118 C12R000191

[52] ECLA: A61K003921 C07K001416F K61K003800 K61K003900 K61K0039525 M07K020700 M12N022100

POLYNUCLEOTIDE VACCINE FORMULATIONS

[71] Applicant: MERCK CO INC; VOLKIN DAVID B; EVANS ROBERT K; ULMER JEFFREY B; . . .

[72] Inventors: VOLKIN, David, B.; EVANS, Robert, K.; ULMER, Jeffrey, B.; CAULFIELD, . . .

[21] Application No.: NA

[22] Filed: 19980213

[43] Published: 19980820

[30] Priority: US US199738194P 19970214 ...

Go to Fulltext

[No drawing]

[57] Abstract:

The present invention relates to a novel vaccine formulation comprising nucleic acid molecules and a mineral-based adjuvant provided in a biologically effective concentration so as to improve induction of an immune response subsequent to vaccination which correlates to expression of one or more specific antigens encoded by the nucleic acid molecule.

[52] US Class:

[51] Int'l Class: A61K004800 A61K0039145 A61K0039102 A61P003702 A61K004702 A61K003939 A61K003921 A61P003500 A61P003112 A61K0039245 A61K003929

[52] ECLA: A61K0039102 A61K0039145 A61K003921 A61K0039245 A61K003929B A61K003939 K61K003953 K61K0039555A K61K004800

SYNTHETIC HIV

[71] Applicant: MERCK CO INC; SHIVER JOHN W JR; DAVIES MARY ELLEN M; FREED DANIEL . . .

[72] Inventors: SHIVER, John, W., Jr.; DAVIES, Mary- Ellen, M.; FREED, Daniel, C.; LIU, . . .

[21] Application No.: NA

[22] Filed: 19980203

[43] Published: 19980813

[30] Priority: US US199737854P 19970207 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Synthetic DNA molecules encoding HIV gag and modifications of HIV gag are provided. The codons of the synthetic molecules are codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through stimulation of neutralizing antibody and cell-mediated immunity.

[52] US Class:

[51] Int'l Class: C07K001416 A61K003900 A61K003800 C12N001509 A61P004300 A61K004800 C12N000704 A61P003118 A61P003704 C12R000192

[52] ECLA: C07K001416B K61K003900 M07K020300 M07K020700 M07K031902

SYNTHETIC HIV GAG GENES

[71] Applicant: MERCK CO INC; SHIVER JOHN W JR; DAVIES MARY ELLEN M; FREED DANIEL . . .

[72] Inventors: SHIVER JOHN W JR; DAVIES MARY-ELLEN M; FREED DANIEL C; LIU MARGARET A; . . .

[21] Application No.: NA

[22] Filed: 19980203

[43] Published: 19981119

[30] Priority: US US199737854P 19970207 ...

Go to Fulltext

[No drawing]

[57] Abstract:

[52] US Class:

[51] Int'l Class: C07K001416 A61K003900 A61K003800 C12N001509 A61P004300 A61K004800 C12N000704 A61P003118 A61P003704 C12R000192

[52] ECLA: C07K001416B K61K003900 M07K020300 M07K020700 M07K031902

VACCINES COMPRISING SYNTHETIC GENES

[71] Applicant: MERCK CO INC; SHIVER JOHN W; DAVIES MARY ELLEN; FREED DANIEL C; LIU . . .

[72] Inventors: SHIVER, John, W.; DAVIES, Mary, Ellen; FREED, Daniel, C.; LIU, Margaret, . . .

[21] Application No.: NA

[22] Filed: 19970617

[43] Published: 19971224

[30] Priority: US US199620166P 19960621 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Synthetic polynucleotides comprising a DNA sequence encoding a peptide or protein are provided. The DNA sequence of the synthetic polynucleotides comprise codons optimized for expression in a nonhomologous host. The invention is exemplified by synthetic DNA molecules encoding HIV envas well as modifications of HIV env. The codons of the synthetic molecules include the projected host cell's preferred codons. The synthetic molecules provide preferred forms of foreign genetic material. The synthetic molecules may be used as a polynucleotide vaccine which provides immunoprophylaxis against HIV infection through neutralizing antibody and cell-mediated immunity. This invention provides polynucleotides which, when directly introduced into a vertebrate in vivo, including mammals such as primates and humans, induces the expression of encoded proteins within the animal.

[52] US Class:

[51] Int'l Class: C12N000510 A61K003921 A61K003800 C12N001509 C12N000506 A61P003704 C12P002102 C12N001567 C07K0014155 C07K001416

[52] ECLA: C07K001416D C12N001567 K61K003951 M07K020700 M07K031900

VACCINES COMPRISING SYNTHETIC GENES

[71] Applicant: MERCK CO INC; SHIVER JOHN W; DAVIES MARY ELLEN; FREED DANIEL C; LIU . . .

[72] Inventors: SHIVER JOHN W; DAVIES MARY ELLEN; FREED DANIEL C; LIU MARGARET A; . . .

[21] Application No.: NA

[22] Filed: 19970617

[43] Published: 19980326

[30] Priority: US US199620165P 19960621 ...

Go to Fulltext

[No drawing]

[57] Abstract:

[52] US Class:

[51] Int'l Class: C12N000510 A61K003921 A61K003800 C12N001509 C12N000506 A61P003704 C12P002102 C12N001567 C07K0014155 C07K001416

[52] ECLA: C07K001416D C12N001567 K61K003951 M07K020700 M07K031900

SYNTHETIC HIV GENES

[71] Applicant: MERCK CO INC; SHIVER JOHN W; DAVIES MARY ELLEN; FREED DANIEL C; LIU . . .

[72] Inventors: SHIVER, John, W.; DAVIES, Mary-Ellen; FREED, Daniel, C.; LIU, Margaret, . . .

[21] Application No.: NA

[22] Filed: 19970218

[43] Published: 19970828

[30] Priority: US US199612082P 19960222 ...

Go to Fulltext

[No drawing]

[57] Abstract:

Synthetic DNA molecules encoding HIV genes and modifications of HIV genes are provided. The codons of the synthetic molecules use codons preferred by the projected host cell. The synthetic molecules may be used as a polynucleotide vaccine which provides effective immunoprophylaxis against HIV infection through neutralizing antibody and cell-mediated immunity.

[52] US Class:

[51] Int'l Class: A61P003100 A61K003170 A61K003100 C12N000510 C12N001500 C12N001509 C12Q000168 A61K004800 A61K00317088 C07K001416 C12N001549 A61P003118 A61K0031711 A61K003921 C12R000192

[52] ECLA: C07K001416D K61K003951 M07K020700 M07K031900

SYNTHETIC HIV GENES

[71] Applicant: MERCK CO INC; SHIVER JOHN W; DAVIES MARY ELLEN; FREED DANIEL C; LIU . . .

[72] Inventors: SHIVER JOHN W; DAVIES MARY-ELLEN; FREED DANIEL C; LIU MARGARET A; . . .

[21] Application No.: NA

[22] Filed: 19970218

[43] Published: 19971009

[30] Priority: US US199612082P 19960222 ...

Go to Fulltext

[No drawing]

[57] Abstract:

[52] US Class:

[51] Int'l Class: A61P003100 A61K003170 A61K003100 C12N000510 C12N001500 C12N001509 C12Q000168 A61K004800 A61K00317088 C07K001416 C12N001549 A61P003118 A61K0031711 A61K003921 C12R000192

[52] ECLA: C07K001416D K61K003951 M07K020700 M07K031900

IMMUNIZATION BY INOCULATION OF DNA TRANSCRIPTION UNIT

[71] Applicant: UNIV MASSACHUSETTS MEDICAL; ST JUDE CHILDRENS RES HOSPITAL

[72] Inventors: ROBINSON, HARRIET, L., US; FLYNAN, ELLEN, F., US; WEBSTER, ROBERT, G. , . . .

[21] Application No.: NA

[22] Filed: 19950125

[43] Published: 19950803

[30] Priority: US US1994187879A 19940127 ...

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[No drawing]

[57] Abstract:

This invention relates to a method of immunizing a vertebrate, comprising introducing into the vertebrate a DNA transcription unit which comprises DNA encoding a desired antigen or antigens. The uptake of the DNA transcription unit by a host vertebrate results in the expression of the desired antigen or antigens, thereby eliciting humoral or cell-mediated immune responses or both humoral and cell-mediated responses. The elicited humoral and cell-mediated response can provide protection against infection by pathogenic agents, provide an anti-tumor response, or provide contraception. The host can be any vertebrate, avian or mammal, including humans.

[52] US Class:

[51] Int'l Class: A61K003915 C07K001416 A61K003170 A61K000916 C12N001544 C07K0014155 C07K001411 A61P003112 A61P003500 C12N001509 C07H002104 A61K0039145 A61K003576 A61K004800 A61P003704 C07K001414 A61K003921 A61K003800 C12P002102 A61K003900 C12R000191

[52] ECLA: A61K000916H6F A61K0039145 A61K003915 A61K003921 C07K001411 C07K001414 C07K0014155 C07K001416 K61K003900 K61K003953 K61K004800 M07K020700

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[71] Applicant: UNIV MASSACHUSETTS MEDICAL; ST JUDE CHILDRENS RES HOSPITAL

[72] Inventors: ROBINSON, Harriet, L.; FLYNAN, Ellen, F.; WEBSTER, Robert, G.; LU, . . .

[21] Application No.: NA

[22] Filed: 19950125

[43] Published: 19951221

[30] Priority: US US1994187879A 19940127 ...

Go to Fulltext

[No drawing]

[57] Abstract:

This invention relates to a method of immunizing a vertebrate, comprising introducing into the vertebrate a DNA transcription unit which comprises DNA encoding a desired antigen or antigens. The uptake of the DNA transcription unit by a host vertebrate results in the expression of the desired antigen or antigens, thereby eliciting humoral or cell-mediated immune responses or both humoral and cell-mediated responses. The elicited humoral and cell- mediated response can provide protection against infection by pathogenic agents, provide an anti-tumor response, or provide contraception. The host can be any vertebrate, avian or mammal, including humans.

[52] US Class:

[51] Int'l Class: A61K003915 C07K001416 A61K003170 A61K000916 C12N001544 C07K0014155 C07K001411 A61P003112 A61P003500 C12N001509 C07H002104 A61K0039145 A61K003576 A61K004800 A61P003704 C07K001414 A61K003921 A61K003800 C12P002102 A61K003900 C12R000191

[52] ECLA: A61K000916H6F A61K0039145 A61K003915 A61K003921 C07K001411 C07K001414 C07K0014155 C07K001416 K61K003900 K61K003953 K61K004800 M07K020700

HIV-1 VACCINES, ANTIBODY COMPOSITIONS RELATED THERETO, AND THERAPEUTIC AND PROPHYLACTIC USES THEREOF

[71] Applicant: PROGENICS PHARM INC; HASEL KARL W; MADDON PAUL J

[72] Inventors: HASEL, Karl, W.; MADDON, Paul, J.

[21] Application No.: NA

[22] Filed: 19940325

[43] Published: 19941013

[30] Priority: US US199337816A 19930326 ...

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[No drawing]

[57] Abstract:

The invention provides a recombinant nucleic acid molecule which encodes a mutant HIV-1 gp120 envelope glycoprotein, vaccines comprising the mutant HIV-1 envelope glycoprotein, antibodies and methods of treating individuals.

[52] US Class:

[51] Int'l Class: A61P003118 C07K001416 C12N000121 C12N001549 A61K003900 A61K003800

[52] ECLA: C07K001416D K61K003800 K61K003900 M07K020700 M07K021500

MULTIPLE-GENE MUTANTS OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) FOR VACCINE USE

[71] Applicant: UNIV CALIFORNIA

[72] Inventors: LOONEY, David, J.;
WONG-STAAL, Flossie

[21] Application No.: NA

[22] Filed: 19931213

[43] Published: 19940818

[30] Priority: US US199314318A 19930205 ...

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[No drawing]

[57] Abstract:

The invention disclosed includes a method for the production of attenuated human immunodeficiency viruses (HIV). This method includes the production of a plasmid having a proviral HIV genome including the env, nef, vif, and vpr genes, and deleting from the plasmid significant portions of at least three, and preferably all four genes, such that the resulting plasmid encodes an attenuated virus that exhibits cell-free infectivity and reduced syncytium formation ability. Also disclosed is a method for the prophylactic prevention of infection of a person by HIV which comprises the administration of a prophylactically effective amount of attenuated virus, a vaccine for such prophylactic prevention, a method of therapeutic treatment comprising the administration of a therapeutically effective amount of attenuated virus and a vaccine for therapeutic treatment.

[52] US Class:

[51] Int'l Class: C12N000704 C07K001416 A61K003900

[52] ECLA: C07K001416D C07K001416F C12N000704 K61K003900 M07K020700 M12N074003F

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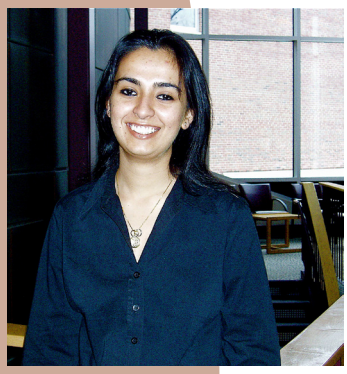

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