can be expanded in relation to the therapeutic strategies to deal with.

Summary

In one aspect, there is provided a expression vector comprising a polynucleotide encoding a fusion protein, said fusion protein comprising (i) human HIV-1 Nef protein with mutations 3C, 153L and 177G, fused at its C-terminus to (ii) an immunogenic antigen.

In another aspect, there is provided a use of the expression vector as described herein in the manufacture of a medicament for the prevention and treatment of diseases chosen from the group consisting of chronic infective diseases such as HBV, HCV and HIV, tuberculosis and malaria, acute infective diseases such as influenza, West Nile, Crimean-Congo hemorrhagic fever and Ebola diseases, tumors such as breast, pulmonary, prostate or bladder tumor, wherein the medicament is to be administered by intramuscular injection.

In another aspect, there is provided a vaccine composition, comprising or consisting of an expression vector comprising a polynucleotide encoding a fusion protein, said fusion protein comprising or consisting of (i) human HIV-1 Nef protein with mutations 3C, 153L and 177G, fused at its C-terminus to (ii) an immunogenic antigen.

In another aspect, there is provided a vaccine composition as described herein, for use as a vaccine.

In another aspect, there is provided an expression vector as described herein for use as a vaccine, wherein the expression vector is in a form suitable for administration by intramuscular injection.

In another aspect, there is provided a use of the vaccine composition as described herein the manufacture of a medicament for the prevention and treatment of diseases chosen from the group consisting of chronic infective diseases such as HBV, HCV and HIV, tuberculosis and malaria, acute infective diseases such as influenza, West Nile, Crimean-Congo hemorrhagic fever and Ebola diseases, tumors such as breast, pulmonary, prostate or bladder tumor, wherein the medicament is to be administered by intramuscular injection.

Detailed Description

It is therefore specific object of the present invention a nucleotide sequence expressing a fusion protein, said fusion protein comprising or consisting of the exosome-anchoring protein of sequence SEQ ID NO:1 fused at its C-terminus with an antigen, or a DNA expression vector comprising said nucleotide sequence, for use in vaccine prevention and therapy, wherein SEQ ID NO:1 is the following sequence:

MGCKWSKSSV VGWPAVRERM RRAEPAADGV GAASRDLEKH GAITSSNTAA TNADCAWLEA QEEEEVGFPV TPQVPLRPMT YKAAVDLSHF LKEKGGLEGL IHSQRRQDIL DLWIYHTQGY FPDWQNYPTG PGIRYPLTFG WCYKLVPVEP EKLEEANKGE NTSLLHPVSL HGMDDPGREV LEWRFDSRLA FHHVARELHP EYFKNC.

The nucleotide sequence or DNA expression vector according to the present invention can be administered preferably intramuscularly; other routes of administration can be aerosol administration (i.e. administration to the upper airway), intradermal, mucosal, sub-cute administration.

The antigen can be chosen from the group consisting of Human Papilloma virus antigen such as E6 and E7, HIV antigen such as Gag and Tat, Ebola virus antigen such as VP24, VP40, NP, and GP, West Nile virus antigen such as NS3, HBV antigen such as Core, HCV antigen such as Core, NS3, El and E2, Crimean-Congo virus antigen such as GP and NP, Influenza A virus antigen such as NP and M1, human melanoma antigen such as MAGE-A3 and MART-1, human tumor-associated antigens such as Her2/Neu, Hox B7.

CLAIMS

1) An expression vector comprising a polynucleotide encoding a fusion protein, said fusion protein comprising (i) human HIV-1 Nef protein with mutations 3C, 153L and 177G, fused at its C-terminus to (ii) an immunogenic antigen.

2) The expression vector according to claim 1, said fusion protein consisting of (i) human HIV-1 Nef protein with mutations 3C, 153L and 177G, fused at its C-terminus to (ii) an immunogenic antigen.

3) The expression vector according to claim 1 or 2, wherein the antigen is chosen from the group consisting of Human Papilloma virus antigen such as E6 and E7, HIV antigen such as Gag and Tat, Ebola virus antigen such as VP24, VP40, NP, and GP, West Nile virus antigen such as NS3, HBV antigen such as Core, HCV antigen such as Core, NS3, E1 and E2, Crimean-Congo virus antigen such as GP and NP, Influenza A virus antigen such as NP and M1 , human melanoma antigen such as MAGE-A3 and MART-1, human tumor-associated antigens such as Her2/Neu, Hox B7.

4) Use of the expression vector according to anyone of claims 1-3, in the manufacture of a medicament for the prevention and treatment of diseases chosen from the group consisting of chronic infective diseases such as HBV, HCV and HIV, tuberculosis and malaria, acute infective diseases such as influenza, West Nile, Crimean-Congo hemorrhagic fever and Ebola diseases, tumors such as breast, pulmonary, prostate or bladder tumor, wherein the medicament is to be administered by intramuscular injection.

5) Vaccine composition, comprising or consisting of an expression vector comprising a polynucleotide encoding a fusion protein, said fusion protein comprising or consisting of (i) human HIV-1 Nef protein with mutations 3C, 153L and 177G, fused at its C-terminus to (ii) an immunogenic antigen.

6) Vaccine composition according to claim 5, wherein the antigen is chosen from the group consisting of Human Papilloma virus antigen such as E6 and E7, HIV antigen such as Gag and Tat, Ebola virus antigen such as VP24, VP40, NP and GP,

West Nile virus antigen such as NS3, HBV antigen such as Core, HCV antigen such as Core, NS3, E1 and E2; Crimean-Congo virus antigen such as NP and GP; Influenza A virus antigen such as NP and M1 ; human melanoma antigen such as MAGE-A3 and MART-1 ; human tumor-associated antigens such as Her2/Neu, HoxB7.

7) Vaccine composition according to claims 5 or 6, wherein the vaccine composition is in a form suitable for a route of intramuscular administration.

8) Vaccine composition according to anyone of claims 5-7, wherein the adjuvant is an adjuvant of CD8+ T cells response.

9) Vaccine composition according to claims 7 or 8, for use as a vaccine.

10) Use of the vaccine composition according to any one of claims 5-9 in the manufacture of a medicament for the prevention and treatment of diseases chosen from the group consisting of chronic infective diseases such as HBV, HCV and HIV, tuberculosis and malaria, acute infective diseases such as influenza, West Nile, Crimean-Congo hemorrhagic fever and Ebola diseases, tumors such as breast, pulmonary, prostate or bladder tumor, wherein the medicament is to be administered by intramuscular injection.

11) The expression vector according to any one of claims 1-3 for use as a vaccine, wherein the expression vector is in a form suitable for administration by intramuscular injection.