pMHC tetramer combinations directly from a human blood sample with astonishing sensitivity, although this technology is presently limited to ~100 such combinations per assay [12]. Each of these approaches has contributed valuable insights into T-cell epitopes; however, these methods are slow, labor-intensive and require a high degree of user skill.

**[0007]** The present invention addresses this need for new and improved technologies for the efficient and systematic identification of the repertoire of T-cell epitopes.

## SUMMARY

**[0007a]** In one aspect of the present disclosure, there is provided a (i) lentivirus-like particle or (ii) lentivirus, which lentivirus-like particle or a lentivirus is physically associated with an expression product via a mammalian cell membrane portion associated with the lentivirus-like particle or lentivirus and the mammalian transmembrane domain of the expression product, the expression product comprising in N-terminal to C-terminal order:

a 5 to 15 amino acid peptide, contiguous with

a first linker peptide sequence, contiguous with

a beta 2 microglobulin sequence, contiguous with

a second linker peptide sequence, contiguous with

a class I Major Histocompatibility Complex (MHC) heavy chain sequence, contiguous with

a third linker peptide sequence, contiguous with

a fluorescent protein or a sequence of an immunoglobulin Fc domain, contiguous with

a fourth linker peptide sequence, contiguous with

the mammalian transmembrane domain, contiguous with

a viral packaging sequence, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.

**[0007b]** In another aspect of the present disclosure, there is provided a plurality of isolated lentiviruses or isolated lentivirus-like particles described herein.

sequence encoding a beta 2 microglobulin sequence, contiguous with

**[0007c]** In a further aspect of the present disclosure, there is provided an isolated suspension-adapted mammalian cell expressing an expression product of a heterologous nucleic acid ~~transduced or transfected therein, or a membrane-bound portion of such cell expressing the expression product~~, which expression product comprises, in N-terminal to C-terminal order:

a 5 to 15 amino acid peptide, contiguous with

a first linker peptide sequence, contiguous with

a beta 2 microglobulin sequence, contiguous with

a second linker peptide sequence, contiguous with

a class I Major Histocompatibility Complex heavy chain sequence, contiguous with

a third linker peptide sequence, contiguous with

a fluorescent protein or a sequence of an immunoglobulin Fc domain, contiguous with

a fourth linker peptide sequence, contiguous with

a mammalian transmembrane domain, contiguous with

a viral packaging sequence, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.

**[0007d]** In another aspect, the present disclosure refers to the membrane-bound portion of the cell disclosed herein, wherein the membrane bound portion comprises the expression product.

**[0007e]** In a further aspect of the present disclosure, there is provided a plurality of the isolated suspension-adapted cells described herein, or a plurality of membrane-bound portions of such cells expressing the expression product, wherein the plurality comprises at least two different encoded 5 to 15 amino acid peptides, wherein the encoded peptide or peptides is or are presented on an extracellular surface of the cells.

**[0007f]** In another aspect of the present disclosure, there is provided a method of identifying a T-cell epitope comprising:

What is claimed is:

1. A (i) lentivirus-like particle or (ii) lentivirus, which lentivirus-like particle or a lentivirus is physically associated with an expression product via a mammalian cell membrane portion associated with the lentivirus-like particle or lentivirus and the mammalian transmembrane domain of the expression product, the expression product comprising in N-terminal to C-terminal order:

a 5 to 15 amino acid peptide, contiguous with

a first linker peptide sequence, contiguous with

a beta 2 microglobulin sequence, contiguous with

a second linker peptide sequence, contiguous with

a class I Major Histocompatibility Complex (MHC) heavy chain sequence, contiguous with a third linker peptide sequence, contiguous with

a fluorescent protein or a sequence of an immunoglobulin Fc domain, contiguous with

a fourth linker peptide sequence, contiguous with

the mammalian transmembrane domain, contiguous with

a viral packaging sequence, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.

~~2. The lentivirus-like particle or lentivirus of claim 1, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.~~

~~3~~2. The lentivirus-like particle or lentivirus of claim 1, wherein the mammalian transmembrane domain is a class I MHC heavy chain transmembrane domain.

~~4~~3. A plurality of isolated lentiviruses or isolated lentivirus-like particles of claim 1 or claim 2.

~~5~~4. The plurality of claim ~~4~~3, wherein the plurality comprises at least 100 different encoded 5 to 15 amino acid peptides.

~~6~~5. An isolated suspension-adapted mammalian cell expressing an expression product of a heterologous nucleic acid ~~transduced or transfected therein, or a membrane-bound portion of such cell expressing the expression product~~, which expression product comprises, in N-terminal to C-terminal order:

a 5 to 15 amino acid peptide, contiguous with

a first linker peptide sequence, contiguous with

a beta 2 microglobulin sequence, contiguous with

a second linker peptide sequence, contiguous with

a class I Major Histocompatibility Complex heavy chain sequence, contiguous with

a third linker peptide sequence, contiguous with

a fluorescent protein or a sequence of an immunoglobulin Fc domain, contiguous with

a fourth linker peptide sequence, contiguous with

a mammalian transmembrane domain, contiguous with

a viral packaging sequence, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.

~~7. The cell of claim 6, wherein the viral packaging sequence comprises the GP41 envelope protein residues 706-713.~~

~~8~~6. The membrane-bound portion of the cell of claim ~~6~~5, wherein the membrane-bound portion comprises the expression product.

~~9~~7. The membrane-bound portion of the cell of claim 5~~6 or 7~~ which is a microvesicle or an exosome.

~~10~~8. The isolated suspension-adapted cell, or membrane-bound portion of such cell expressing the expression product, of any one of claims ~~6-9~~5-7, wherein the cell expresses the expression product comprising the sequence of the immunoglobulin Fc domain.

~~11~~9. The isolated suspension-adapted cell, or membrane-bound portion of such cell expressing the expression product, of any one of claims ~~6-9~~5-7, wherein the cell expresses the expression product comprising the fluorescent protein.

~~12~~10. The isolated suspension-adapted cell of any of the preceding claims, or a membrane-bound portion of such cell expressing the expression product, wherein the mammalian transmembrane domain is a Major Histocompatibility Complex heavy chain transmembrane domain.

~~13~~11. A plurality of the isolated suspension-adapted cells of any one of claims ~~6-12~~5-10, or a plurality of membrane-bound portions of such cells expressing the expression product, wherein the plurality comprises at least two different encoded 5 to 15 amino acid peptides, wherein the encoded peptide or peptides is or are presented on an extracellular surface of the cells.

~~14~~12. The plurality of claim ~~13~~11, wherein the plurality comprises at least 100 different encoded 5 to 15 amino acid peptides.

~~15~~13. A method of identifying a T-cell epitope comprising:

contacting a T-cell with a plurality, comprising at least two cells, of isolated suspension-adapted cells according to any one of claims ~~6-14~~5-12, or a membrane-bound portion of such cells expressing the expression product, or with lentivirus-like particles or lentiviruses according to any one of claims 1-~~5~~4 associated with a membrane portion of such cells;

recovering T-cell(s) which have formed a conjugate with a suspension-adapted cell or membrane-bound portions;

recovering DNA from the suspension-adapted cell(s);

sequencing the recovered DNA; and

identifying the 5 to 15 amino acid peptide(s) encoded for in the DNA, so as to thereby identify a T-cell epitope.

~~16~~14. The method of claim ~~15~~13, wherein the T-cells comprise peripheral T-cells obtained from a subject, such as a human subject.