WHAT IS CLAIMED IS:

1. A tumor antigen peptide of 15 amino acids or less comprising one of the amino acid sequences set forth in SEQ ID NOs: 69, 1-68 and 701-103, or a nucleic acid encoding said tumor antigen peptide.

2. The tumor antigen peptide or nucleic acid of claim 1, wherein said tumor antigen peptide comprisesing one of the amino acid sequences set forth in SEQ ID NOs: 69, 19-68 and 70-103.

3. The tumor antigen peptide or nucleic acid of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*01:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 21, 28, 40, 41, 66 or 88.

4. The tumor antigen peptide or nucleic acid of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*0332:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 1, 19, 20, 22, 30, 31, 36, 50, 52, 60, 62, 73, 84, 85, 86 or 91.

5. The tumor antigen peptide or nucleic acid of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*11:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 69, 32, 54, 55, 67, 69, 81, 87, 90 or 102.

~~6. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*24:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 33 or 43.~~

~~7. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*25:01 molecule and comprises one of the amino acid sequences set forth in SEQ ID NO: 24.~~

~~8. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*29:02 molecule and comprises one of the amino acid sequences set forth in SEQ ID NO: 34 or 58.~~

~~9. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-A*32:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 16.~~

~~10.~~6. The tumor antigen peptide or nucleic acid of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*07:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 4, 6, 8, 9, 26, 49, 78, 92, 97 or 101.

~~11.~~7. The tumor antigen peptide or nucleic acid of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*08:01 molecule and comprises one of the amino acid sequences set forth in SEQ ID NO: 23, 35, 42, 44, 46, 59, 63, 70, 74, 76, 83 or 103.

~~12. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*14:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 53.~~

~~13. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*15:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 2, 3 or 5.~~

~~14. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*18:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 89.~~

~~15. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*39:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 47, 64, 96 or 99.~~

~~16. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*40:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 11, 12 or 13.~~

~~17. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*44:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 65.~~

~~18. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-B*44:03 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 37 or 94.~~

~~19. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*03:03 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 10, 29, 71 or 95.~~

~~20. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*04:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 6 or 15.~~

~~21. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*05:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 27.~~

~~22. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*06:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 18 or 72.~~

~~23. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*07:01 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 38, 61 or 93.~~

~~24. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*07:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 7.~~

~~25. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*12:03 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 80.~~

~~26. The tumor antigen peptide of claim 1 or 2, wherein said tumor antigen peptide binds to an HLA-C*14:02 molecule and comprises the amino acid sequence set forth in SEQ ID NO: 25, 57 or 79.~~

~~27.~~8. The tumor antigen peptide or nucleic acid of any one of claims 1-~~7~~26, wherein said tumor antigen peptide~~which~~ is encoded by a sequence located a non-protein coding region of the genome ~~and comprises the amino acid sequence set forth in any one of SEQ ID NOs: 1, 4, 6-8, 10, 13, 15-27 and 36-99, preferably SEQ ID NOs: 19-27 and 36-99~~, and wherein said non-protein coding region of the genome is:~~.~~

(a) an untranslated transcribed region (UTR), and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 1, 8, 10, 13, 15 and 19-27;

(b) an intron, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 16, 17 and 36-64;

(c) an intergenic region, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 65-84;

(d) an exon of a noncoding RNA transcript (ncRNA), and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 4 and 85-92; or

(e) an antisense strand of a gene, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 93-99.

~~28. The tumor antigen peptide of claim 27, wherein said non-protein coding region of the genome is an untranslated transcribed region (UTR), and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 1, 8, 10, 13, 15 and 19-27, preferably SEQ ID NOs: 19-27.~~

~~29. The tumor antigen peptide of claim 27, wherein said non-protein coding region of the genome is an intron, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 16, 17 and 36-64, preferably SEQ ID NOs: 36-64.~~

~~30. The tumor antigen peptide of claim 27, wherein said non-protein coding region of the genome is an intergenic region, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 65-84.~~

~~31. The tumor antigen peptide of claim 27, wherein said non-protein coding region of the genome is an exon of a noncoding RNA transcript (ncRNA), and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 4 and 85-92, preferably SEQ ID NOs: 85-92.~~

~~32. The tumor antigen peptide of claim 27, wherein said non-protein coding region of the genome is an antisense strand of a gene, and said tumor antigen peptide comprises the amino acid sequence set forth in any one of SEQ ID NOs: 93-99.~~

~~33. A nucleic acid encoding the tumor antigen peptide of any one of claims 1-32.~~

~~34.~~9. The tumor antigen peptide or nucleic acid of any one of claims ~~33~~1 to 8, wherein said nucleic acid~~which~~ is an mRNA or a viral vector.

~~35.~~10. A liposome comprising the tumor antigen peptide ~~of any one of claims 1-32~~ or ~~the~~ nucleic acid of any one of claims 1 to 9~~33 or 34~~.

~~36.~~11. A composition comprising the tumor antigen peptide or nucleic acid of any one of claims 1-~~9~~32, ~~the nucleic acid of claim 33 or 34,~~ or the liposome~~s~~ of claim 10~~35~~, and a pharmaceutically acceptable carrier.

~~37.~~12. A vaccine comprising the tumor antigen peptide or nucleic acid of any one of claims 1-~~9~~32, ~~the nucleic acid of claim 33 or 34,~~ the liposome of claim 10~~35~~, or the composition of claim 11~~36~~, and an adjuvant.

~~38. An isolated major histocompatibility complex (MHC) class I molecule comprising the tumor antigen peptide of any one of claims 1-32 in its peptide binding groove.~~

~~39. The isolated MHC class I molecule of claim 38, which is in the form of a multimer.~~

~~40. The isolated MHC class I molecule of claim 39, wherein said multimer is a tetramer.~~

~~41. An isolated cell comprising (i) the tumor antigen peptide of any one of claims 1-32 or (ii) a vector comprising a nucleotide sequence encoding tumor antigen peptide of any one of claims 1-32.~~

~~42.~~13. An isolated cell expressing at its surface major histocompatibility complex (MHC) class I molecules comprising the tumor antigen peptide of any one of claims 1-~~9~~32 in their peptide binding groove.

~~43.~~14. The cell of claim 13~~42~~, which is an antigen-presenting cell (APC).

~~44.~~15. The cell of claim 14~~43~~, wherein said APC is a dendritic cell.

~~45.~~16. A T-cell receptor (TCR) that specifically recognizes ~~the isolated MHC class I molecule of any one of claims 38-40 and/or~~ MHC class I molecules expressed at the surface of the cell of any one of claims ~~42~~13-15~~44~~.

~~46.~~17. An isolated $CD8^+$ T lymphocyte expressing at its cell surface the TCR of claim 16~~45~~.

~~47.~~18. A cell population comprising at least 0.5% of $CD8^+$ T lymphocytes as defined in claim 17~~46~~.

~~48. A method of treating ovarian cancer in a subject comprising administering to the subject an effective amount of: (i) the tumor antigen peptide of any one of claims 1-32; (ii) the nucleic acid of claim 33 or 34; (iii) the liposome of claim 35; (iv) the composition of claim 36; (v) the vaccine of claim 37; (vi) the cell of any one of claims 41-45; (vii) the $CD8^+$ T lymphocytes of claim 46; or (viii) the cell population of claim 47.~~

~~49. The method of claim 48, wherein said ovarian cancer is a serous carcinoma.~~

~~50. The method of claim 49, wherein said serous carcinoma is high-grade serous carcinoma (HGSC).~~

~~51. The method of any one of claims 48-50, further comprising administering at least one additional antitumor agent or therapy to the subject.~~

~~52. The method of claim 51, wherein said at least one additional antitumor agent or therapy is a chemotherapeutic agent, immunotherapy, an immune checkpoint inhibitor, radiotherapy or surgery.~~

~~53. Use of: (i) the tumor antigen peptide of any one of claims 1-32; (ii) the nucleic acid of claim 33 or 34; (iii) the liposome of claim 35; (iv) the composition of claim 36; (v) the vaccine of claim 37; (vi) the cell of any one of claims 41-45; (vii) the CD8$^+$ T lymphocytes of claim 46; or (viii) the cell population of claim 47, for treating ovarian cancer in a subject.~~

~~54.~~19. Use of: (i) the tumor antigen peptide or nucleic acid of any one of claims 1-~~9~~32; (ii) ~~the nucleic acid of claim 33 or 34; (iii)~~ the liposome of claim 10~~35~~; (iii~~v~~) the composition of claim 11~~36~~; (iv) the vaccine of claim 12~~37~~; (v~~i~~) the cell of any one of claims 13-15~~41-45~~; (vi~~i~~) the CD8$^+$ T lymphocytes of claim 17~~46~~; or (vii~~i~~) the cell population of claim 18~~47~~, for the manufacture of a medicament for treating ovarian cancer in a subject.

~~55.~~20. The use of claim 19~~53 or 54~~, wherein said ovarian cancer is a serous carcinoma.

~~56.~~21. The use of claim 20~~55~~, wherein said serous carcinoma is high-grade serous carcinoma (HGSC).

~~57.~~22. The use of any one of claims 19-21~~53-56~~, further comprising the use of at least one additional antitumor agent or therapy.

~~58.~~23. The use of claim 22~~57~~, wherein said at least one additional antitumor agent or therapy is a chemotherapeutic agent, immunotherapy, an immune checkpoint inhibitor, radiotherapy or surgery.

~~59.~~24. The (i) ~~the~~ tumor antigen peptide or nucleic acid of any one of claims 1-~~9~~32; (ii) ~~the nucleic acid of claim 33 or 34; (iii) the~~ liposome of claim 10~~35~~; (iii~~v~~) ~~the~~ composition of claim 11~~36~~; (iv) ~~the~~ vaccine of claim 12~~37~~; (v~~i~~) ~~the~~ cell of any one of claims 13-15~~41-45~~; (vi~~i~~) ~~the~~ CD8$^+$ T lymphocytes of claim 17~~46~~; or (vii~~i~~) the cell population of claim 18~~47~~, for use in treating ovarian cancer in a subject.

~~60.~~25. The tumor antigen peptide, nucleic acid, liposome, composition, vaccine, cell, $CD8^+$ T lymphocytes, or cell population for use according to claim 24~~59~~, wherein said ovarian cancer is a serous carcinoma.

~~61.~~26. The tumor antigen peptide, nucleic acid, liposome, composition, vaccine, cell, $CD8^+$ T lymphocytes, or cell population for use according to claim 25~~60~~, wherein said serous carcinoma is high-grade serous carcinoma (HGSC).

~~62.~~27. The tumor antigen peptide, nucleic acid, liposome, composition, vaccine, cell, $CD8^+$ T lymphocytes, or cell population for use according to any one of claims 24-26~~59-61~~, wherein the tumor antigen peptide, nucleic acid, liposome, composition, vaccine, cell, $CD8^+$ T lymphocytes, or cell population is used in combination with at least one additional antitumor agent or therapy.

~~63.~~28. The tumor antigen peptide, nucleic acid, liposome, composition, vaccine, cell, $CD8^+$ T lymphocytes, or cell population for use according to claim 27~~62~~, wherein said at least one additional antitumor agent or therapy is a chemotherapeutic agent, immunotherapy, an immune checkpoint inhibitor, radiotherapy or surgery.