CLAIM(S):

1. An isolated or purified T cell receptor (TCR) having antigenic specificity for a human $p53^{R273C}$ or human $p53^{Y220C}$ amino acid sequence, wherein the TCR comprises the amino acid sequences of:

(1) all of SEQ ID NOs: 2-7;

(2) all of SEQ ID NOs: 21-26;

(3) all of SEQ ID NOs: 40-45;

(4) all of SEQ ID NOs: 59-64; or

(5) all of SEQ ID NOs: 78-83.

2. The TCR of claim 1, wherein the TCR comprises :

(1) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(2) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 10 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(3) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(4) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(5) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(6) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 122;

(7) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(8) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(9) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(10) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(11) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 29 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(12) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(13) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(14) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(15) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 126;

(16) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(17) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(18) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(19) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(20) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 48 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(21) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(22) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(23) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(24) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 130;

(25) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(26) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(27) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(28) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(29) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 67 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(30) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(31) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(32) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(33) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 134;

(34) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(35) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(36) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(37) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85;

(38) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 86 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(39) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(40) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(41) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(42) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 138;

(43) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136;

(44) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85; or

(45) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136.

3. The TCR of claim 1, wherein the TCR comprises the amino acid sequences of:

(1) both of SEQ ID NOs: 8 and 9;

(2) both of SEQ ID NOs: 10 and 11;

(3) both of SEQ ID NOs: 12 and 13;

(4) both of SEQ ID NOs: 12 and 11;

(5) both of SEQ ID NOs: 121 and 13;

(6) both of SEQ ID NOs: 121 and 122;

(7) both of SEQ ID NOs: 8 and 120;

(8) both of SEQ ID NOs: 119 and 9;

(9) both of SEQ ID NOs: 119 and 120;

(10) both of SEQ ID NOs: 27 and 28;

(11) both of SEQ ID NOs: 29 and 30;

(12) both of SEQ ID NOs: 31 and 32;

(13) both of SEQ ID NOs: 31 and 30;

(14) both of SEQ ID NOs: 125 and 32;

(15) both of SEQ ID NOs: 125 and 126;

(16) both of SEQ ID NOs: 27 and 124;

(17) both of SEQ ID NOs: 123 and 28;

(18) both of SEQ ID NOs: 123 and 124;

(19) both of SEQ ID NOs: 46 and 47;

(20) both of SEQ ID NOs: 48 and 49;

(21) both of SEQ ID NOs: 50 and 51;

(22) both of SEQ ID NOs: 50 and 49;

(23) both of SEQ ID NOs: 129 and 51;

(24) both of SEQ ID NOs: 129 and 130;

(25) both of SEQ ID NOs: 46 and 128;

(26) both of SEQ ID NOs: 127 and 47;

(27) both of SEQ ID NOs: 127 and 128;

(28) both of SEQ ID NOs: 65 and 66;

(29) both of SEQ ID NOs: 67 and 68;

(30) both of SEQ ID NOs: 69 and 70;

(31) both of SEQ ID NOs: 69 and 68;

(32) both of SEQ ID NOs: 133 and 70;

(33) both of SEQ ID NOs: 133 and 134;

(34) both of SEQ ID NOs: 65 and 132;

(35) both of SEQ ID NOs: 131 and 66;

(36) both of SEQ ID NOs: 131 and 132;

(37) both of SEQ ID NOs: 84 and 85;

(38) both of SEQ ID NOs: 86 and 87;

(39) both of SEQ ID NOs: 88 and 89;

(40) both of SEQ ID NOs: 88 and 87;

(41) both of SEQ ID NOs: 137 and 89;

(42) both of SEQ ID NOs: 137 and 138;

(43) both of SEQ ID NOs: 84 and 136;

(44) both of SEQ ID NOs: 135 and 85; or

(45) both of SEQ ID NOs: 135 and 136.

4. The TCR of any one of claims 1-3, further comprising:

(a) an α chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the α chain constant region comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 97 or 145;

(b) a β chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the β chain constant region comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 99 or 140; or

(c) both (a) and (b).

5. The TCR of any one of claims 1-3, further comprising:

(a) an α chain constant region comprising the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the α chain constant region comprises the amino acid sequence of SEQ ID NO: 97 or 145;

(b) a β chain constant region comprising the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the β chain constant region comprises the amino acid sequence of SEQ ID NO: 99 or 140; or

(c) both (a) and (b).

6. The TCR of any one of claims 1-5, wherein the TCR comprises:

(1) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 14 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 15;

(2) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 16 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 17;

(3) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 18 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 19;

(4) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 33 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 34;

(5) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 35 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 36;

(6) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 37 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 38;

(7) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 52 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 53;

(8) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 54 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 55;

(9) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 56 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 57;

(10) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 71 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 72;

(11) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 73 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 74;

(12) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 75 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 76;

(13) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 90 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 91;

(14) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 92 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 93; or

(15) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 94 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 95.

7. The TCR of any one of claims 1-5, wherein the TCR comprises the amino acid sequences of:

(1) both of SEQ ID NOs: 14 and 15;

(2) both of SEQ ID NOs: 16 and 17;

(3) both of SEQ ID NOs: 18 and 19;

(4) both of SEQ ID NOs: 33 and 34;

(5) both of SEQ ID NOs: 35 and 36;

(6) both of SEQ ID NOs: 37 and 38;

(7) both of SEQ ID NOs: 52 and 53;

(8) both of SEQ ID NOs: 54 and 55;

(9) both of SEQ ID NOs: 56 and 57;

(10) both of SEQ ID NOs: 71 and 72;

(11) both of SEQ ID NOs: 73 and 74;

(12) both of SEQ ID NOs: 75 and 76;

(13) both of SEQ ID NOs: 90 and 91;

(14) both of SEQ ID NOs: 92 and 93; or

(15) both of SEQ ID NOs: 94 and 95.

8. The TCR of any one of claims 1-7, wherein the human $p53^{R273C}$ amino acid sequence is SGNLLGRNSFEV**C**VCACPGRDRRTE (SEQ ID NO: 117).

9. The TCR of any one of claims 1-7, wherein the human $p53^{Y220C}$ amino acid sequence is DRNTFRHSVVVP**C**EPPEVGSDCTTI (SEQ ID NO: 115).

10. The TCR of any one of claims 1-8, wherein the TCR does not have antigenic specificity for the wild-type human p53 amino acid sequence of SGNLLGRNSFEV**R**VCACPGRDRRTE (SEQ ID NO: 116).

11. The TCR of any one of claims 1-7 and 9, wherein the TCR does not have antigenic specificity for the wild-type human p53 amino acid sequence of DRNTFRHSVVVP**Y**EPPEVGSDCTTI (SEQ ID NO: 114).

12. An isolated or purified polypeptide comprising a functional portion of the TCR of any one of claims 1-11, wherein the polypeptide comprises the amino acid sequences of:

(1) all of SEQ ID NOs: 2-7;

(2) all of SEQ ID NOs: 21-26;

(3) all of SEQ ID NOs: 40-45;

(4) all of SEQ ID NOs: 59-64; or

(5) all of SEQ ID NOs: 78-83.

13. The polypeptide of claim 12, wherein the polypeptide comprises :

(1) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(2) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 10 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(3) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(4) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(5) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(6) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 122;

(7) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(8) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(9) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(10) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(11) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 29 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(12) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(13) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(14) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(15) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 126;

(16) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(17) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(18) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(19) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(20) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 48 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(21) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(22) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(23) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(24) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 130;

(25) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(26) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(27) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(28) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(29) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 67 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(30) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(31) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(32) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(33) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 134;

(34) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(35) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(36) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(37) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85;

(38) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 86 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(39) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(40) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(41) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(42) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 138;

(43) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136;

(44) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85; or

(45) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136.

14. The polypeptide of claim 12, wherein the polypeptide comprises the amino acid sequences of:

(1) both of SEQ ID NOs: 8 and 9;

(2) both of SEQ ID NOs: 10 and 11;

(3) both of SEQ ID NOs: 12 and 13;

(4) both of SEQ ID NOs: 12 and 11;

(5) both of SEQ ID NOs: 121 and 13;

(6) both of SEQ ID NOs: 121 and 122;

(7) both of SEQ ID NOs: 8 and 120;

(8) both of SEQ ID NOs: 119 and 9;

(9) both of SEQ ID NOs: 119 and 120;

(10) both of SEQ ID NOs: 27 and 28;

(11) both of SEQ ID NOs: 29 and 30;

(12) both of SEQ ID NOs: 31 and 32;

(13) both of SEQ ID NOs: 31 and 30;

(14) both of SEQ ID NOs: 125 and 32;

(15) both of SEQ ID NOs: 125 and 126;

(16) both of SEQ ID NOs: 27 and 124;

(17) both of SEQ ID NOs: 123 and 28;

(18) both of SEQ ID NOs: 123 and 124;

(19) both of SEQ ID NOs: 46 and 47;

(20) both of SEQ ID NOs: 48 and 49;

(21) both of SEQ ID NOs: 50 and 51;

(22) both of SEQ ID NOs: 50 and 49;

(23) both of SEQ ID NOs: 129 and 51;

(24) both of SEQ ID NOs: 129 and 130;

(25) both of SEQ ID NOs: 46 and 128;

(26) both of SEQ ID NOs: 127 and 47;

(27) both of SEQ ID NOs: 127 and 128;

(28) both of SEQ ID NOs: 65 and 66;

(29) both of SEQ ID NOs: 67 and 68;

(30) both of SEQ ID NOs: 69 and 70;

(31) both of SEQ ID NOs: 69 and 68;

(32) both of SEQ ID NOs: 133 and 70;

(33) both of SEQ ID NOs: 133 and 134;

(34) both of SEQ ID NOs: 65 and 132;

(35) both of SEQ ID NOs: 131 and 66;

(36) both of SEQ ID NOs: 131 and 132;

(37) both of SEQ ID NOs: 84 and 85;

(38) both of SEQ ID NOs: 86 and 87;

(39) both of SEQ ID NOs: 88 and 89;

(40) both of SEQ ID NOs: 88 and 87;

(41) both of SEQ ID NOs: 137 and 89;

(42) both of SEQ ID NOs: 137 and 138;

(43) both of SEQ ID NOs: 84 and 136;

(44) both of SEQ ID NOs: 135 and 85; or

(45) both of SEQ ID NOs: 135 and 136.

15. The polypeptide of any one of claims 12-14, further comprising:

(a) an α chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the α chain constant region comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 97 or 145;

(b) a β chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the β chain constant region comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 99 or 140; or

(c) both (a) and (b).

16. The polypeptide of any one of claims 12-14, further comprising:

(a) an α chain constant region comprising the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the α chain constant region comprises the amino acid sequence of SEQ ID NO: 97 or 145;

(b) a β chain constant region comprising the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the β chain constant region comprises the amino acid sequence of SEQ ID NO: 99 or 140; or

(c) both (a) and (b).

17. The polypeptide of any one of claims 12-16, wherein the polypeptide comprises:

(1) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 14 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 15;

(2) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 16 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 17;

(3) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 18 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 19;

(4) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 33 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 34;

(5) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 35 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 36;

(6) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 37 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 38;

(7) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 52 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 53;

(8) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 54 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 55;

(9) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 56 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 57;

(10) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 71 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 72;

(11) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 73 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 74;

(12) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 75 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 76;

(13) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 90 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 91;

(14) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 92 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 93; or

(15) both an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 94 and an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 95.

18. The polypeptide of any one of claims 12-16, wherein the polypeptide comprises the amino acid sequences of:

(1) both of SEQ ID NOs: 14 and 15;

(2) both of SEQ ID NOs: 16 and 17;

(3) both of SEQ ID NOs: 18 and 19;

(4) both of SEQ ID NOs: 33 and 34;

(5) both of SEQ ID NOs: 35 and 36;

(6) both of SEQ ID NOs: 37 and 38;

(7) both of SEQ ID NOs: 52 and 53;

(8) both of SEQ ID NOs: 54 and 55;

(9) both of SEQ ID NOs: 56 and 57;

(10) both of SEQ ID NOs: 71 and 72;

(11) both of SEQ ID NOs: 73 and 74;

(12) both of SEQ ID NOs: 75 and 76;

(13) both of SEQ ID NOs: 90 and 91;

(14) both of SEQ ID NOs: 92 and 93; or

(15) both of SEQ ID NOs: 94 and 95.

19. An isolated or purified protein comprising:

(1) a first polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 2-4 and a second polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 5-7;

(2) a first polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 21-23 and a second polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 24-26;

(3) a first polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 40-42 and a second polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 43-45;

(4) a first polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 59-61 and a second polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 62-64; or

(5) a first polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 78-80 and a second polypeptide chain comprising the amino acid sequences of all of SEQ ID NOs: 81-83.

20. The protein of claim 19, wherein:

(1) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(2) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 10 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(3) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(4) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 12 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 11;

(5) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 13;

(6) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 121 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 122;

(7) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 8 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(8) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 9;

(9) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 119 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 120;

(10) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(11) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 29 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(12) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(13) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 31 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 30;

(14) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 32;

(15) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 125 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 126;

(16) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 27 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(17) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 28;

(18) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 123 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 124;

(19) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(20) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 48 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(21) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(22) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 50 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 49;

(23) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 51;

(24) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 129 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 130;

(25) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 46 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(26) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 47;

(27) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 127 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 128;

(28) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(29) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 67 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(30) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(31) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 69 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 68;

(32) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 70;

(33) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 133 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 134;

(34) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 65 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(35) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 66;

(36) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 131 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 132;

(37) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85;

(38) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 86 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(39) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(40) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 88 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 87;

(41) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 89;

(42) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 137 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 138;

(43) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 84 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136;

(44) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 85; or

(45) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 135 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 136.

21. The protein of claim 19, wherein:

(1) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 8 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 9;

(2) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 10 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 11;

(3) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 12 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 13;

(4) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 12 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 11;

(5) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 121 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 13;

(6) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 121 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 122;

(7) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 8 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 120;

(8) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 119 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 9;

(9) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 119 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 120;

(10) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 27 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 28;

(11) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 29 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 30;

(12) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 31 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 32;

(13) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 31 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 30;

(14) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 125 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 32;

(15) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 125 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 126;

(16) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 27 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 124;

(17) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 123 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 28;

(18) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 123 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 124;

(19) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 46 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 47;

(20) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 48 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 49;

(21) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 50 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 51;

(22) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 50 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 49;

(23) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 129 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 51;

(24) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 129 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 130;

(25) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 46 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 128;

(26) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 127 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 47;

(27) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 127 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 128;

(28) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 65 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 66;

(29) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 67 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 68;

(30) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 69 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 70;

(31) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 69 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 68;

(32) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 133 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 70;

(33) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 133 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 134;

(34) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 65 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 132;

(35) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 131 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 66;

(36) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 131 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 132;

(37) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 84 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 85;

(38) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 86 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 87;

(39) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 88 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 89;

(40) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 88 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 87;

(41) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 137 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 89;

(42) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 137 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 138;

(43) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 84 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 136;

(44) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 135 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 85; or

(45) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 135 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 136.

22. The protein of any one of claims 19-21, wherein:

(a) the first polypeptide chain comprises an α chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the first polypeptide chain comprises an α chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 97 or 145; and

(b) the second polypeptide chain comprises a β chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the second polypeptide chain comprises a β chain constant region comprising an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 99 or 140.

23. The protein of any one of claims 19-21, further comprising:

(a) the first polypeptide chain comprises an α chain constant region comprising the amino acid sequence of SEQ ID NO: 141, wherein:

(i) X at position 1 of SEQ ID NO: 141 is Asn, Asp, His, or Tyr;

(ii) X at position 48 of SEQ ID NO: 141 is Thr or Cys;

(iii) X at position 112 of SEQ ID NO: 141 is Ser, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

(iv) X at position 114 of SEQ ID NO: 141 is Met, Ala, Val, Leu, Ile, Pro, Phe, or Trp; and

(v) X at position 115 of SEQ ID NO: 141 is Gly, Ala, Val, Leu, Ile, Pro, Phe, Met, or Trp;

wherein optionally the first polypeptide chain comprises an α chain constant region comprising the amino acid sequence of SEQ ID NO: 97 or 145; and

(b) the second polypeptide chain comprises a β chain constant region comprising the amino acid sequence of SEQ ID NO: 142, wherein X at position 57 of SEQ ID NO: 142 is Ser or Cys;

wherein optionally the second polypeptide chain comprises a β chain constant region comprising the amino acid sequence of SEQ ID NO: 99 or 140.

24. The protein of any one of claims 19-23, wherein:

(1) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 14 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 15;

(2) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 16 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 17;

(3) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 18 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 19;

(4) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 33 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 34;

(5) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 35 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 36;

(6) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 37 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 38;

(7) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 52 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 53;

(8) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 54 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 55;

(9) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 56 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 57;

(10) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 71 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 72;

(11) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 73 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 74;

(12) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 75 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 76;

(13) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 90 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 91;

(14) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 92 and the second polypeptide chain

comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 93; or

(15) the first polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 94 and the second polypeptide chain comprises an amino acid sequence at least 95% identical to the amino acid sequence of SEQ ID NO: 95.

25. The protein of any one of claims 19-23, wherein:

(1) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 14 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 15;

(2) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 16 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 17;

(3) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 18 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 19;

(4) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 33 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 34;

(5) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 35 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 36;

(6) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 37 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 38;

(7) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 52 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 53;

(8) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 54 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 55;

(9) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 56 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 57;

(10) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 71 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 72;

(11) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 73 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 74;

(12) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 75 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 76;

(13) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 90 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 91;

(14) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 92 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 93; or

(15) the first polypeptide chain comprises the amino acid sequence of SEQ ID NO: 94 and the second polypeptide chain comprises the amino acid sequence of SEQ ID NO: 95.

26. An isolated or purified nucleic acid comprising a nucleotide sequence encoding the TCR of any one of claims 1-11, the polypeptide of any one of claims 12-18, or the protein of any one of claims 19-25.

27. An isolated or purified nucleic acid comprising, from 5' to 3', a first nucleic acid sequence and a second nucleotide sequence, wherein the first and second nucleotide sequence, respectively, encode the amino sequences of SEQ ID NOs: 8 and 9; 9 and 8; 10 and 11; 11 and 10; 12 and 13; 13 and 12; 12 and 11; 11 and 12; 121 and 13; 13 and 121; 121 and 122; 122 and 121; 8 and 120; 120 and 8; 119 and 9; 9 and 119; 119 and 120; 120 and 119; 14 and 15; 15 and 14; 16 and 17; 17 and 16; 18 and 19; 19 and 18; 27 and 28; 28 and 27; 29 and 30; 30 and 29; 31 and 32; 32 and 31; 31 and 30; 30 and 31; 125 and 32; 32 and 125; 125 and 126; 126 and 125; 27 and 124; 124 and 27; 123 and 28; 28 and 123; 123 and 124; 124 and 123; 33 and 34; 34 and 33; 35 and 36; 36 and 35; 37 and 38; 38 and 37; 46 and 47; 47 and 46; 48 and 49; 49 and 48; 50 and 51; 51 and 50; 50 and 49; 49 and 50; 129 and 51; 51 and 129; 129 and 130; 130 and 129; 46 and 128; 128 and 46; 127 and 47; 47 and 127; 127 and 128; 128 and 127; 52 and 53; 53 and 52; 54 and 55; 55 and 54; 56 and 57; 57 and 56; 65 and 66; 66 and 65; 67 and 68; 68 and 67; 69 and 70; 70 and 69; 69 and 68; 68 and 69; 133 and 70; 70 and 133; 133 and 134; 134 and 133; 65 and 132; 132 and 65; 131 and 66; 66 and 131; 131 and 132; 132 and 131; 71 and 72; 72 and 71; 73 and 74; 74 and 73; 75 and 76; 76 and 75; 84 and 85; 85 and 84; 86 and 87; 87 and 86; 88 and 89; 89 and 88; 88 and 87; 87 and 88; 137 and 89; 89 and 137; 137 and 138; 138 and 137; 84 and 136; 136 and 84; 135 and 85; 85 and 135; 135 and 136; 136 and 135; 90 and 91; 91 and 90; 92 and 93; 93 and 92; 94 and 95; or 95 and 94.

28. The isolated or purified nucleic acid of claim 27, further comprising a third nucleotide sequence interposed between the first and second nucleotide sequence, wherein the third nucleotide sequence encodes a cleavable linker peptide.

29. The isolated or purified nucleic acid of claim 28, wherein the cleavable linker peptide comprises the amino acid sequence of RAKRSGSGATNFSLLKQAGDVEENPGP (SEQ ID NO: 100).

30. The isolated or purified nucleic acid of claim 29, which encodes an amino acid sequence selected from the group consisting of: SEQ ID NOs: 20, 39, 58, 77, and 96.

31. A recombinant expression vector comprising the nucleic acid of any one of claims 26-30.

32. The recombinant expression vector of claim 31, which is a transposon or a lentiviral vector.

33. An isolated or purified TCR, polypeptide, or protein encoded by the nucleic acid of any one of claims 26-30 or the vector of claim 31 or 32.

34. An isolated or purified TCR, polypeptide, or protein that results from expression of the nucleic acid of any one of claims 26-30 or the vector of claim 31 or 32 in a cell.

35. A method of producing a host cell expressing a TCR that has antigenic specificity for the peptide of DRNTFRHSVVVP**C**EPPEVGSDCTTI (SEQ ID NO: 115) or SGNLLGRNSFEV**C**VCACPGRDRRTE (SEQ ID NO: 117), the method comprising contacting an isolated or purified cell with the vector of claim 31 or 32 under conditions that allow introduction of the vector into the cell.

36. An isolated or purified host cell comprising the nucleic acid of any one of claims 26-30 or the recombinant expression vector of claim 31 or 32.

37. The host cell of claim 36, wherein the cell is a human lymphocyte.

38. The host cell of claim 36, wherein the cell is selected from the group consisting of a T cell, a natural killer T (NKT) cell, an invariant natural killer T (iNKT) cell, and a natural killer (NK) cell.

39. An isolated or purified population of cells comprising the host cell of any one of claims 36-38.

40. A method of producing the TCR of any one of claims 1-11, 33, or 34, the polypeptide of any one of claims 12-18, 33, or 34, or the protein of any one of claims 19-25, 33, or 34, the method comprising culturing the isolated or purified host cell of any one of claims 36-38, or the isolated or purified population of host cells of claim 39, so that the TCR, polypeptide, or protein is produced.

41. A pharmaceutical composition comprising (a) the TCR of any one of claims 1-11, 33, or 34, the polypeptide of any one of claims 12-18, 33, or 34, the protein of any one of claims 19-25, 33, or 34, the nucleic acid of any one of claims 26-30, the recombinant expression vector of claim 31 or 32, the host cell of any one of claims 36-38, or the population of cells of claim 39 and (b) a pharmaceutically acceptable carrier.

42. A method of detecting the presence of cancer in mammal, the method comprising:

(a) contacting a sample comprising cells of the cancer with the TCR of any one of claims 1-11, 33, or 34, the polypeptide of any one of claims 12-18, 33, or 34, the protein of any one of claims 19-25, 33, or 34, the nucleic acid of any one of claims 26-30, the recombinant expression vector of claim 31 or 32, the host cell of any one of claims 36-38, the population of cells of claim 39, or the pharmaceutical composition of claim 41, thereby forming a complex; and

(b) detecting the complex,

wherein detection of the complex is indicative of the presence of cancer in the mammal.

43. Use of the TCR of any one of claims 1-11, 33, or 34, the polypeptide of any one of claims 12-18, 33, or 34, the protein of any one of claims 19-25, 33, or 34, the nucleic acid of any one of claims 26-30, the recombinant expression vector of claim 31 or 32, the host cell of any one of claims 36-38, the population of cells of claim 39, or the pharmaceutical composition of claim 41, in the manufacture of a medicament for the inducement of an immune response against a cancer in a mammal.

44. Use of the TCR of any one of claims 1-11, 33, or 34, the polypeptide of any one of claims 12-18, 33, or 34, the protein of any one of claims 19-25, 33, or 34, the nucleic acid of any one of claims 26-30, the recombinant expression vector of claim 31 or 32, the host cell of any one of claims 36-38, the population of cells of claim 39, or the pharmaceutical composition of claim 41, in the manufacture of a medicament for the treatment or prevention of cancer in a mammal.

45. The use of claim 43 or 44, wherein the population of cells is autologous to the mammal.

46. The use of claim 43 or 44, wherein the population of cells is allogeneic to the mammal.

47. The method of claim 42 or the use of any one of claims 43-46, wherein the cancer is an epithelial cancer.

48. The method of claim 42 or the use of any one of claims 43-46, wherein the cancer is cholangiocarcinoma, melanoma, colon cancer, rectal cancer, ovarian cancer, endometrial cancer, non-small cell lung cancer (NSCLC), glioblastoma, uterine cervical cancer, head and neck cancer, breast cancer, pancreatic cancer, or bladder cancer.

49. The method of claim 42 or the use of any one of claims 43-48, wherein the cancer is known to comprise an R273C or a Y220C mutation in human p53.