

WHAT IS CLAIMED IS:

1. An isolated antibody or antigen-binding fragment thereof that specifically binds to an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
2. An antibody or antigen-binding fragment thereof that specifically binds to TCR α polypeptide, comprising
 - (a) HCDR1 at least 80%, 85%, 90% or 95% identical to SEQ ID NO: 2;
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to SEQ ID NO: 3;
 - (c) HCDR3 identical to CDYW (SEQ ID NO:21); CAYW (SEQ ID NO:23); or CAYL (SEQ ID NO:22);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to SEQ ID NO: 4 or SEQ ID NO: 9;
 - (e) LCDR2 at least 80%, 85%, 90% or 95% identical to SEQ ID NO: 5; and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to SEQ ID NO: 6 or SEQ ID NO: 10.
3. The antibody or antigen-binding fragment thereof of claim 2, comprising
 - (a) HCDR1 identical to SEQ ID NO: 2;
 - (b) HCDR2 identical to SEQ ID NO: 3;
 - (c) HCDR3 identical to CDYW (SEQ ID NO:21); CAYW (SEQ ID NO:23); or CAYL (SEQ ID NO:22);
 - (d) LCDR1 identical to SEQ ID NO: 4; or SEQ ID NO: 9;
 - (e) LCDR2 identical to SEQ ID NO: 5; and
 - (f) LCDR3 identical to SEQ ID NO: 6; or SEQ ID NO: 10.
4. An antibody or antigen-binding fragment thereof that specifically binds to TCR α polypeptide comprising
 - (a) HCDR1 at least 80%, 85%, 90% or 95% identical to V_H CDR1 of 79A-15 SEQ ID NO: 2;
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to V_H CDR2 of 79A-15 SEQ ID NO: 3;

- (c) HCDR3 at least 80%, 85%, 90% or 95% identical to V_H CDR3 of 79A-15 (SEQ ID NO:22);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to V_L CDR1 of 79A-15 SEQ ID NO: 9;
 - (e) LCDR2 at least 80%, 85%, 90% or 95% identical to V_L CDR2 of 79A-15 SEQ ID NO: 5; and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to V_L CDR3 of 79A-15 SEQ ID NO: 10.
5. The isolated antibody or antigen binding fragment thereof of claim 1, comprising a V_H domain at least about 80%, 85%, 90% or 95% identical to the V_H domain of 79A-15 (SEQ ID NO: 11) and a V_L domain at least about 80%, 85%, 90% or 95% identical to the V_L domain of 79A-15 (SEQ ID NO: 12).
6. The isolated antibody or antigen binding fragment thereof of claim 5, comprising a V_H domain between 90% and 99% identical to the V_H domain of 79A-15 (SEQ ID NO: 11) and a V_L domain between 90 and 99% identical to the V_L domain of 79A-15 (SEQ ID NO: 12).
7. The isolated antibody or antigen binding fragment thereof of claim 5, comprising a V_H domain identical to the V_H domain of 79A15 (SEQ ID NO: 11) and a V_L domain identical to the V_L domain of 79A-15 (SEQ ID NO: 12).
8. An isolated antibody or antigen binding fragment thereof that specifically binds to TCR α polypeptide, comprising
- (a) HCDR1 at least 80%, 85%, 90% or 95% identical to V_H CDR1 of 79A-13 KASGYTFTDYMNWV (SEQ ID NO: 2);
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to V_H CDR2 of 79A-13 WIGEINPNN (SEQ ID NO: 3);
 - (c) HCDR3 at least 80%, 85%, 90% or 95% identical to V_H CDR3 of 79A-13 CAYL (SEQ ID NO:22);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to V_L CDR1 of 79A-13 NTYLEWY (SEQ ID NO: 4);

- (e) LCDR2 at least 80%, 85%, 90% or 95% identical to V_L CDR2 of 79A-13
KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to V_L CDR3 of 79A-13
MQGSHVPW (SEQ ID NO: 10).
9. An isolated antibody or antigen binding fragment thereof of claim 8, comprising
- (a) HCDR1 identical to KASGYTFTDYIMNWV (SEQ ID NO: 2);
 - (b) HCDR2 identical to WIGIINPNN (SEQ ID NO: 3);
 - (c) HCDR3 identical to CAYL (SEQ ID NO: 22);
 - (d) LCDR1 identical to NTYLEWY (SEQ ID NO: 4);
 - (e) LCDR2 identical to KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 identical to MQGSHVPW (SEQ ID NO: 10).
10. The isolated antibody or antigen binding fragment thereof of claim 1, comprising a V_H domain at least about 80%, 85%, 90% or 95% identical to the V_H domain of 79A-13 (SEQ ID NO: 11) and a V_L domain at least about 80%, 85%, 90% or 95% identical to the V_L domain of 79A-13 (SEQ ID NO: 14).
11. The isolated antibody or antigen binding fragment thereof of claim 10, comprising a V_H domain between 90% and 99% identical to the V_H domain of 79A-13 (SEQ ID NO: 11) or a V_L domain between 90% and 99% identical to the V_L domain of 79A-13 (SEQ ID NO: 14).
12. The isolated antibody or antigen binding fragment thereof of claim 10, comprising a V_H domain identical to the V_H domain of 79A-13 (SEQ ID NO: 11) and a V_L domain identical to the V_L domain of 79A-13 (SEQ ID NO: 14).
13. An antibody or antigen-binding fragment thereof that specifically binds to TCR α polypeptide, comprising
- (a) HCDR1 at least 80%, 85%, 90% or 95% identical to V_H CDR1 of 79A-11
KASGYTFTDYIMNWV (SEQ ID NO: 2);
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to V_H CDR2 of 79A-11
WIGIINPNN (SEQ ID NO: 3);

- (c) HCDR3 at least 80%, 85%, 90% or 95% identical to V_H CDR3 of 79A-11 CAYW (SEQ ID NO:23);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to V_L CDR1 of 79A-11 NTYLEWF (SEQ ID NO: 9);
 - (e) LCDR2 at least 80%, 85%, 90% or 95% identical to V_L CDR2 of 79A-11 KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to V_L CDR3 of 79A-11 MQGSHVPW (SEQ ID NO: 10).
14. The antibody or antigen-binding fragment thereof of claim 13, comprising
- (a) HCDR1 identical to KASGYTFTDYIMNWV (SEQ ID NO: 2);
 - (b) HCDR2 identical to WIGEINPNN (SEQ ID NO: 3);
 - (c) HCDR3 identical to CAYW (SEQ ID NO:23);
 - (d) LCDR1 identical to NTYLEWF (SEQ ID NO: 9);
 - (e) LCDR2 identical to KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 identical to MQGSHVPW (SEQ ID NO: 10).
15. The isolated antibody or antigen binding fragment thereof of claim 1, comprising a V_H domain at least about 80%, 85%, 90% or 95% identical to the V_H domain of 79A-11 (SEQ ID NO: 13) and a V_L domain at least about 80%, 85%, 90% or 95% identical to the V_L domain of 79A-11 (SEQ ID NO: 12).
16. The isolated antibody or antigen binding fragment thereof of claim 15, comprising a V_H domain between 90% and 99% identical to the V_H domain of 79A-11 (SEQ ID NO: 13) or a V_L domain between 90% and 99% identical to the V_L domain of 79A-11 (SEQ ID NO: 12).
17. The isolated antibody or antigen binding fragment thereof of claim 15, comprising a V_H domain identical to the V_H domain of 79A11 (SEQ ID NO: 13) and a V_L domain identical to the V_L domain of 79A11 (SEQ ID NO: 12).
18. An isolated antibody or antigen binding fragment thereof that specifically binds to TCR α polypeptide, comprising

- (a) HCDR1 at least 80%, 85%, 90% or 95% identical to V_H CDR1 of 79A
KASGYTFTDYIMNWV (SEQ ID NO: 2);
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to V_H CDR2 of 79A
WIGEINPNN (SEQ ID NO: 3);
 - (c) HCDR3 at least 80%, 85%, 90% or 95% identical to V_H CDR3 of 79A CDYW
(SEQ ID NO:21);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to V_L CDR1 of 79A
NTYLEWY (SEQ ID NO: 4);
 - (e) LCDR2 at least 80%, 85%, 90% or 95% identical to V_L CDR2 of 79A
KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to V_L CDR3 of 79A
FQGSHPVW (SEQ ID NO: 6).
19. The isolated antibody or antigen binding fragment thereof of claim 18, comprising
- (a) HCDR1 identical to KASGYTFTDYIMNWV (SEQ ID NO: 2);
 - (b) HCDR2 identical to WIGEINPNN (SEQ ID NO: 3);
 - (c) HCDR3 identical to CDYW (SEQ ID NO:21);
 - (d) LCDR1 identical to NTYLEWY (SEQ ID NO: 4);
 - (e) LCDR2 identical to KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 identical to FQGSHPVW (SEQ ID NO: 6).
20. The isolated antibody or antigen binding fragment thereof of claim 1, comprising a V_H domain at least about 80%, 85%, 90% or 95% identical to the V_H domain of 79A (SEQ ID NO: 7) and a V_L domain at least about 80%, 85%, 90% or 95% identical to the V_L domain of 79A (SEQ ID NO: 8).
21. The isolated antibody or antigen binding fragment thereof of claim 20, comprising a V_H domain between 90% and 99% identical to the V_H domain of 79A (SEQ ID NO: 7) or a V_L domain between 90% and 99% identical to the V_L domain of 79A (SEQ ID NO: 8).
22. The isolated antibody or antigen binding fragment thereof of claim 20, comprising a V_H domain identical to the V_H domain of 79A (SEQ ID NO: 7) and a V_L domain identical to the V_L domain of 79A (SEQ ID NO: 8).

23. An isolated antibody or antigen binding fragment thereof that specifically binds to TCR α polypeptide, comprising
- (a) HCDR1 at least 80%, 85%, 90% or 95% identical to KASGYTFTGYMNWV (SEQ ID NO:15);
 - (b) HCDR2 at least 80%, 85%, 90% or 95% identical to WIGGINPNN (SEQ ID NO:16);
 - (c) HCDR3 identical to CRYW (SEQ ID NO:17);
 - (d) LCDR1 at least 80%, 85%, 90% or 95% identical to QSIVHGGGNTY (SEQ ID NO:18);
 - (e) LCDR2 at least 80%, 85%, 90% or 95% identical to KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 at least 80%, 85%, 90% or 95% identical to FQGSHVPW (SEQ ID NO: 6).
24. The isolated antibody or antigen binding fragment thereof of claim 23, comprising
- (a) HCDR1 identical to KASGYTFTGYMNWV (SEQ ID NO:15);
 - (b) HCDR2 identical to WIGGINPNN (SEQ ID NO:16);
 - (c) HCDR3 identical to CRYW (SEQ ID NO:17);
 - (d) LCDR1 identical to QSIVHGGGNTY (SEQ ID NO:18);
 - (e) LCDR2 identical to KLLIYKVSNRFS (SEQ ID NO: 5); and
 - (f) LCDR3 identical to FQGSHVPW (SEQ ID NO: 6).
25. The isolated antibody or antigen binding fragment thereof of claim 1, comprising a V_H domain at least about 80%, 85%, 90% or 95% identical to the V_H domain of 79A-23 (SEQ ID NO: 19) and a V_L domain at least about 80%, 85%, 90% or 95% identical to the V_L domain of 79A-23 (SEQ ID NO:20).
26. The isolated antibody or antigen binding fragment thereof of claim 25, comprising a V_H domain between 90% and 99% identical to the V_H domain of 79A-23 (SEQ ID NO: 19) and a V_L domain between 90 and 99% identical to the V_L domain of 79A-23 (SEQ ID NO: 20).

27. The isolated antibody or antigen binding fragment thereof of claim 25, comprising a V_H domain identical to the V_H domain of 79A-23 (SEQ ID NO: 19) and a V_L domain identical to the V_L domain of 79A-23 (SEQ ID NO: 20).
28. The antibody or antigen binding fragment thereof according to any one of claims 1-27, which is multispecific.
29. The antibody or antigen binding fragment thereof of claim 28, which is bispecific.
30. The antibody or antigen binding fragment thereof according to any one of claims 1-29, which is an Fab fragment.
31. The antibody or antigen binding fragment thereof according to any one of claims 1-29, which is an F(ab)₂ fragment.
32. The antibody or antigen binding fragment thereof according to any one of claims 1-29, which is an Fv fragment.
33. The antibody or antigen binding fragment thereof according to any one of claims 1-29, which is a single chain antibody.
34. The antibody or antigen binding fragment thereof according to any one of claims 1-33, which is a multivalent and comprises at least two heavy chains and at least two light chains.
35. The antibody or antigen binding fragment thereof according to any one of claims 1-29, 33 and 34, which comprises a light chain constant region selected from the group consisting of a human kappa constant region and a human lambda constant region.
36. The antibody or antigen binding fragment thereof according to any one of claims 1-30, and 33 to 35, which comprises a heavy chain constant region or fragment thereof.

37. The antibody or antigen binding fragment thereof according to claim 36, wherein said heavy chain constant region or fragment thereof is human IgG1, IgG2, IgG3, IgG4, IgM, IgA1, IgA2, IgE, or IgD.
38. The antibody or antigen binding fragment thereof according to any one of claims 1 to 37, wherein said antibody or fragment thereof is humanized, primatized or chimeric.
39. The antibody or antigen binding fragment thereof according to any one of claims 1 to 37, wherein said antibody or fragment thereof is humanized.
40. The antibody or antigen binding fragment thereof of claim 1, comprising a VH and VL domain separated by a linker.
41. The antibody or antigen binding fragment thereof of claim 40, further comprising a transmembrane domain.
42. The antibody or antigen binding fragment thereof according to claim 40 or 41, wherein the VH is a polypeptide at least 90% identical to a polypeptide selected from the group consisting of a SEQ ID NO:11, SEQ ID NO:13 and SEQ ID NO:19, and the VL is a polypeptide at least 90% identical to a polypeptide selected from the group consisting of SEQ ID NO:12, SEQ ID NO:14 and SEQ ID NO:20.
43. The antibody or antigen binding fragment thereof according to claim 40 or 41, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:11 and said VL is a polypeptide at least 90% identical to SEQ ID NO:12.
44. The antibody or antigen binding fragment thereof according to claim 40 or 41, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:13 and said VL is a polypeptide at least 90% identical to SEQ ID NO:12.
45. The antibody or antigen binding fragment thereof according to claim 40 or 441, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:11 and said VL is a polypeptide at least 90% identical to SEQ ID NO:14.

46. The antibody or antigen binding fragment thereof according to claim 40 or 41, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:19 and said VL is a polypeptide at least 90% identical to SEQ ID NO:20.
47. An isolated polynucleotide comprising a nucleic acid encoding an antibody or antigen binding fragment thereof that specifically binds to a T-cell Receptor α chain (TCR α), said antibody binding to an epitope of TCR α polypeptide comprising the sequence GSTLRG (SEQ ID NO: 1).
48. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a VH polypeptide at least 90% identical to SEQ ID NO:11, SEQ ID NO:13 or SEQ ID NO:19.
49. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a VL polypeptide at least 90% identical to, SEQ ID NO:12, SEQ ID NO:14 or SEQ ID NO:20.
50. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR1 amino acid sequence identical to SEQ ID NO:2.
51. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR1 amino acid sequence identical to SEQ ID NO:15.
52. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR2 amino acid sequence identical to SEQ ID NO:3.
53. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR2 amino acid sequence identical to SEQ ID NO:16.
54. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR3 amino acid sequence identical to SEQ ID NO:21.
55. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR3 amino acid sequence identical to SEQ ID NO:22.

56. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR3 amino acid sequence identical to SEQ ID NO:23.
57. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a HCDR3 amino acid sequence identical to SEQ ID NO:17.
58. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR1 amino acid sequence identical to SEQ ID NO:4.
59. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR1 amino acid sequence identical to SEQ ID NO:9.
60. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR1 amino acid sequence identical to SEQ ID NO:18.
61. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR2 amino acid sequence identical to SEQ ID NO:5.
62. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR3 amino acid sequence identical to SEQ ID NO:6.
63. The isolated polynucleotide of claim 47, wherein said nucleic acid encodes a LCDR3 amino acid sequence identical to SEQ ID NO:10.
64. An isolated polynucleotide comprising a nucleic acid encoding a VH polypeptide, wherein said VH polypeptide comprises HCDR1, HCDR2, and HCDR3 amino acid sequences comprising SEQ ID NOs:2, 3, and 21, respectively, and wherein an antibody or antigen fragment comprising said VH polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
65. An isolated polynucleotide comprising a nucleic acid encoding a VH polypeptide, wherein said VH polypeptide comprises HCDR1, HCDR2, HCDR3 amino acid

sequences comprising SEQ ID NOs:2, 3, and 22, respectively, and wherein an antibody or antigen fragment comprising said VH polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).

66. An isolated polynucleotide comprising a nucleic acid encoding a VH polypeptide, wherein said VH polypeptide comprises HCDR1, HCDR2, HCDR3 amino acid sequences comprising SEQ ID NOs:2, 3, and 23, respectively, and wherein an antibody or antigen fragment comprising said VH polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
67. An isolated polynucleotide comprising a nucleic acid encoding a VH polypeptide, wherein said VH polypeptide comprises HCDR1, HCDR2 and HCDR3 amino acid sequences comprising SEQ ID NOs:15, 16, and 17, respectively, and wherein an antibody or antigen fragment comprising said VH polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
68. An isolated polynucleotide comprising a nucleic acid encoding a VL polypeptide, wherein said VL polypeptide comprises LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:4, 5 and 6, respectively, and wherein an antibody or antigen fragment comprising said VL polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
69. An isolated polynucleotide comprising a nucleic acid encoding a VL polypeptide, wherein said VL polypeptide comprises LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:9, 5 and 10, respectively, and wherein an antibody or antigen fragment comprising said VL polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).

70. An isolated polynucleotide comprising a nucleic acid encoding a VL polypeptide, wherein said VL polypeptide comprises LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:4, 5 and 10, respectively, and wherein an antibody or antigen fragment comprising said VL polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
71. An isolated polynucleotide comprising a nucleic acid encoding a VL polypeptide, wherein said VL polypeptide comprises LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:18, 5 and 6, respectively, and wherein an antibody or antigen fragment comprising said VL polypeptide specifically binds an epitope of T-cell receptor alpha (TCR α) polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
72. A vector comprising said polynucleotide of any one of claims 47-71.
73. The vector of claim 72, wherein said polynucleotide is operably associated with a promoter.
74. A method of manufacturing an antibody or antigen binding fragment thereof comprising: (a) expressing one or more polynucleotide molecule(s) encoding a V_L and V_H chain of an antibody in a cell; and (b) purifying the antibody from the cell, wherein the antibody specifically binds to a T-cell Receptor α chain (TCR α).
75. The method of claim 74, wherein said antibody or antigen binding fragment thereof selectively binds an epitope of TCR α comprising GSTLRG (SEQ ID NO:1).
76. A method for selecting a cell comprising a T-cell Receptor α chain (TCR α) comprising: (a) contacting the cell with an antibody or antigen fragment thereof that binds to a TCR α chain, wherein the antibody or fragment binds to T-cells having a plurality of T-cell epitope specificities; and (b) selecting a cell comprising the TCR α chain based on binding of the antibody or fragment.

77. The method of claim 76, wherein said TCR α chain comprises an epitope comprising the sequence GSTLRG (SEQ ID NO:1).
78. The method of claims 76 or 77, wherein said antibody or fragment comprises a reporter and the method further comprises selecting said cells by fluorescence-activated cell sorting (FACS).
79. A method for expanding and/or activating T-cells comprising contacting the T-cells with artificial antigen presenting cells (aAPCs) in the presence of an antibody or antigen binding fragment thereof that binds to an epitope of a T-cell Receptor (TCR), wherein said epitope is a polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
80. The method of claim 79, wherein said aAPCs are K562 cells.
81. The method of claim 80, wherein said K562 cells express T-cell co-stimulating ligands.
82. The method of claim 79, wherein said aAPCs expresses an antibody or antigen-binding fragment thereof that binds to said epitope of a TCR.
83. The method of claim 79, wherein said aAPCs comprise an expression construct for expressing an antibody or antigen binding fragment thereof that binds to said epitope of a TCR.
84. The method of claim 79, wherein said antibody or antigen binding fragment thereof that binds to an epitope of a TCR binds to T-cells comprising a plurality of T-cell epitope specificities.
85. The method of claim 79, wherein said antibody or antigen-binding fragment thereof is according to any one of claims 1-47.
86. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises HCDR1 at least 95% or 100% identical to SEQ ID NO:2; HCDR2 at least 95% identical to SEQ ID NO:3; HCDR3 identical to CAYL (SEQ ID NO:22).

87. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises LCDR1 at least 95% or 100% identical to SEQ ID NO:9; LCDR2 at least 95% or 100% identical to SEQ ID NO:5; LCDR3 at least 95% identical to SEQ ID NO:10.
88. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises HCDR1 at least 95% or 100% identical to SEQ ID NO:2; HCDR2 at least 95% or 100% identical to SEQ ID NO:3; HCDR3 identical to CAYW (SEQ ID NO:23).
89. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises LCDR1 at least 95% or 100% identical to SEQ ID NO:9; LCDR2 at least 95% or 100% identical to SEQ ID NO:5; LCDR3 at least 95% or 100% identical to SEQ ID NO:10.
90. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises LCDR1 at least 95% or 100% identical to SEQ ID NO:4; LCDR2 at least 95% or 100% identical to SEQ ID NO:5; LCDR3 at least 95% or 100% identical to SEQ ID NO:10.
91. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises HCDR1 at least 95% or 100% identical to SEQ ID NO:15; HCDR2 at least 95% or 100% identical to SEQ ID NO:16; HCDR3 identical to CRYW (SEQ ID NO:17).
92. The method of claim 85, wherein said antibody or antigen-binding fragment thereof comprises LCDR1 at least 95% or 100% identical to SEQ ID NO:18; LCDR2 at least 95% or 100% identical to SEQ ID NO:5; LCDR3 at least 95% or 100% identical to SEQ ID NO:6.
93. The method of claim 85, wherein said antibody or antigen binding fragment comprises a VH and VL domain separated by a linker.

94. The method of claim 93, wherein said antibody or antigen binding fragment further comprises a transmembrane domain.
95. The method of claim 93 or 94, wherein the VH is a polypeptide at least 90% identical to a polypeptide selected from the group consisting of a SEQ ID NO:11, SEQ ID NO:13 and SEQ ID NO:19, and the VL is a polypeptide at least 90% identical to a polypeptide selected from the group consisting of SEQ ID NO:12, SEQ ID NO:14 and SEQ ID NO:20.
96. The method of claim 91 or 92, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:11 and said VL is a polypeptide at least 90% identical to SEQ ID NO:12.
97. The method of claim 93 or 94, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:13 and said VL is a polypeptide at least 90% identical to SEQ ID NO:12.
98. The method of claim 93 or 94, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:11 and said VL is a polypeptide at least 90% identical to SEQ ID NO:14.
99. The method of claim 93 or 94, wherein said VH is a polypeptide at least 90% identical to SEQ ID NO:19 and said VL is a polypeptide at least 90% identical to SEQ ID NO:20.
100. The method of claims 79-99, wherein said T-cell is a peripheral blood mononuclear cell (PBMC).
101. A method of treating an autoimmune disease or a T cell leukemia in an animal in need of treatment, comprising administering to said animal a host cell comprising a chimeric antigen receptor targeting TCR α polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
102. The method of claim 101, wherein said host cell is an NK or gamma delta T cell

103. A host cell comprising one or more polynucleotide molecules encoding an antibody or antigen binding fragment thereof that binds to a TCR α chain comprising GSTLRG (SEQ ID NO:1), wherein the antibody or antigen binding fragment thereof selectively binds to T-cells having a plurality of T-cell epitope specificities.
104. The host cell of claim 103, wherein the cell is selected from the group consisting of a mammalian cell, a yeast cell, a bacterial cell, a ciliate cell or an insect cell.
105. A recombinant host cell comprising a VH-encoding polynucleotide and a VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH polypeptide comprising HCDR1 and HCDR2 amino acid sequences consisting of SEQ ID NOs:2 and 3, respectively, and HCDR3 amino acid sequence CAYL (SEQ ID NO:22), wherein the VL-encoding polynucleotide encodes a VL polypeptide comprising LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:9, 5 and 10, respectively, and wherein an antibody or antigen fragment thereof encoded by the VH and VL encoding polynucleotides specifically binds an epitope of TCR α chain polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
106. A recombinant host cell comprising a VH-encoding polynucleotide and a VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH polypeptide comprising HCDR1 and HCDR2 amino acid sequences comprising SEQ ID NOs:2 and 3, respectively and HCDR3 amino acid sequence CAYW (SEQ ID NO:23), wherein the VL-encoding polynucleotide encodes a VL polypeptide comprising LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:9, 5 and 10, respectively, and wherein an antibody or antigen fragment thereof encoded by the VH and VL encoding polynucleotides specifically binds an epitope of TCR α chain polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
107. A recombinant host cell comprising a VH-encoding polynucleotide and a VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH polypeptide comprising HCDR1 and HCDR2 amino acid sequences consisting of SEQ ID NOs:2 and 3, respectively, and HCDR3 amino acid sequence CAYL (SEQ ID NO:22), wherein the VL-encoding polynucleotide encodes a VL polypeptide

comprising LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:4, 5 and 10, respectively, and wherein an antibody or antigen fragment thereof encoded by the VH and VL encoding polynucleotides specifically binds an epitope of TCR α chain polypeptide comprising sequence GSTLRG (SEQ ID NO:1).

108. A recombinant host cell comprising a VH-encoding polynucleotide and a VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH polypeptide comprising HCDR1 and HCDR2 amino acid sequences consisting of SEQ ID NOs:15 and 16, respectively, and HCDR3 amino acid sequence CRYW (SEQ ID NO:17), wherein the VL-encoding polynucleotide encodes a VL polypeptide comprising LCDR1, LCDR2, and LCDR3 amino acid sequences comprising SEQ ID NOs:18, 5 and 6, respectively, and wherein an antibody or antigen fragment thereof encoded by the VH and VL encoding polynucleotides specifically binds an epitope of TCR α chain polypeptide comprising sequence GSTLRG (SEQ ID NO:1).
109. A recombinant host cell comprising a surface antibody or antigen containing fragment thereof that specifically binds an epitope of TCR α polypeptide comprising sequence GSTLRG (SEQ ID NO:1) and further comprises an antibody or antigen containing fragment thereof targeting a tumor associated antigen.
110. The recombinant host cell of claim 107, wherein said antibody or antigen containing fragment thereof targeting a tumor associated antigen is a chimeric antigen receptor (CAR).
111. A host cell comprising a chimeric antigen receptor targeting TCR α polypeptide comprising sequence GSTLRG (SEQ ID NO:1), wherein said host cell is an NK or gamma delta T cell.