

CLAIMS

WHAT IS CLAIMED IS:

1. Use of a recombinant antibody that specifically binds Leukemia Inhibitory Factor (LIF) in the manufacture of a medicament for treating cancer in an individual, wherein the recombinant antibody is to be administered to the individual, wherein the recombinant antibody that specifically binds LIF comprising:

- a) a heavy chain complementarity determining region 1 (VH-CDR1) comprising the amino acid sequence set forth in any one of SEQ ID NOs: 1-3;
- b) a heavy chain complementarity determining region 2 (VH-CDR2) comprising the amino acid sequence set forth in any one of SEQ ID NOs: 9-10;
- c) a heavy chain complementarity determining region 3 (VH-CDR3) comprising the amino acid sequence set forth in any one of SEQ ID NOs: 15-16;
- d) a light chain complementarity determining region 1 (VL-CDR1) comprising the amino acid sequence set forth in any one of SEQ ID NOs: 21-22;
- e) a light chain complementarity determining region 2 (VL-CDR2) comprising the amino acid sequence set forth in any one of SEQ ID NOs: 25-26; and
- f) a light chain complementarity determining region 3 (VL-CDR3) comprising the amino acid sequence set forth in any one of SEQ ID NO: 29;

wherein the recombinant antibody is capable of specifically binding to LIF thereby capable of treating the individual with cancer.

2. The use of claim 1, wherein the recombinant antibody binds to glycosylated LIF.
3. The use of claim 1, wherein the recombinant antibody comprises at least one framework region derived from a human antibody framework region.
4. The use of claim 1, wherein the recombinant antibody is humanized.
5. The use of claim 1, wherein the recombinant antibody is deimmunized.
6. The use of claim 1, wherein the recombinant antibody comprises two immunoglobulin heavy chains and two immunoglobulin light chains.
7. The use of claim 1, wherein the recombinant antibody is a Fab, F(ab)₂, single-domain antibody, a single chain variable fragment (scFv), or a nanobody.
8. The use of claim 1, wherein the recombinant antibody specifically binds LIF with a dissociation constant (K_D) of less than about 200 picomolar.
9. The use of claim 1, wherein the recombinant antibody specifically binds LIF with a dissociation constant (K_D) of less than about 100 picomolar.
10. The use of claim 1, wherein the VH-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 1 (GFTFSHAWMH), wherein the VH-CDR2 comprises the amino acid

sequence set forth in SEQ ID NO: 9 (QIKAKSDDYATYYAESVKG), wherein the VH-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 15 (TCWEWDLDF), wherein the VL-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 21 (RSSQSLLDSDGHTYLN), wherein the VL-CDR2 comprises the amino acid sequence set forth in SEQ ID NO: 25 (SVSNLES), and wherein the VL-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 29 (MQATHAPPYT).

11. The use of claim 1, wherein the VH-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 2 (GFTFSHAW), wherein the VH-CDR2 comprises the amino acid sequence set forth in SEQ ID NO: 10 (IKAKSDDYAT), wherein the VH-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 15 (TCWEWDLDF), wherein the VL-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 22 (QSLDSDGHTYLN), wherein the VL-CDR2 comprises the amino acid sequence set forth in SEQ ID NO: 26 (SVS), and wherein the VL-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 29 (MQATHAPPYT).

12. The use of claim 1, wherein the VH-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 3 (HAWMH), wherein the VH-CDR2 comprises the amino acid sequence set forth in SEQ ID NO: 9 (QIKAKSDDYATYYAESVKG), wherein the VH-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 16 (WEWDLDF), wherein the VL-CDR1 comprises the amino acid sequence set forth in SEQ ID NO: 21 (RSSQSLLDSDGHTYLN), wherein the VL-CDR2 comprises the amino acid sequence set forth in SEQ ID NO: 25 (SVSNLES), and wherein the VL-CDR3 comprises the amino acid sequence set forth in SEQ ID NO: 29 (MQATHAPPYT).

13. The use of claim 1, wherein the cancer comprises glioblastoma, a pancreatic cancer, ovarian cancer, colon cancer, prostate cancer, or lung cancer.

14. The use of claim 1, wherein the recombinant antibody is to be administered intravenously.

15. The use of claim 1, wherein the recombinant antibody is to be administered intracerebrally.

16. Use of a recombinant antibody that specifically binds Leukemia Inhibitory Factor (LIF) in the manufacture of a medicament for treating cancer in an individual, wherein the recombinant antibody is to be administered to the individual, wherein the recombinant antibody that specifically binds LIF comprising:

- a) an immunoglobulin heavy chain variable region (VH) sequence with the amino acid sequence identical to the amino acid sequence set forth in SEQ ID NO: 72; and

- b) an immunoglobulin light chain variable region (VL) sequence with the amino acid sequence identical to the amino acid sequence set forth in SEQ ID NO: 76.