

CLAIMS

1. An isolated monoclonal antibody that binds specifically to human TGF- β 1, TGF- β 2, and TGF- β 3, comprising the heavy chain complementarity-determining regions (CDR) 1-3 in SEQ ID NO:1 and the light chain CDR1-3 in SEQ ID NO:2, wherein the antibody comprises a human IgG₄ constant region having a proline at position 228 (EU numbering).
2. The antibody of claim 1, wherein the antibody comprises a heavy chain variable domain (VH) amino acid sequence corresponding to residues 1-120 of SEQ ID NO:1 and a light chain variable domain (VL) amino acid sequence corresponding to residues 1-108 of SEQ ID NO:2.
3. The antibody of claim 1, wherein the antibody has one or more of the following properties:
 - a) inhibits the differentiation of CD4⁺ T cells into inducible regulatory T cells (iTreg);
 - b) increases CD8⁺ T cell proliferation;
 - c) increases clustering of natural killer (NK) cells;
 - d) increases the level of MIP-2; and
 - e) increases the level of KC/GRO.
4. A composition comprising the antibody of claim 1, wherein the composition comprises less than 1% of half antibody.
5. A pharmaceutical composition comprising the antibody of claim 1 and a pharmaceutically acceptable carrier.
6. An isolated monoclonal antibody, wherein the amino acid sequences of the heavy and light chains comprise SEQ ID NOs:1 and 2, respectively.
7. A pharmaceutical composition comprising the antibody of claim 6 and a pharmaceutically acceptable carrier.

8. An isolated monoclonal antibody, wherein the amino acid sequences of the heavy and light chains are SEQ ID NOs:1 and 2, respectively.
9. A pharmaceutical composition comprising the antibody of claim 8 and a pharmaceutically acceptable carrier.
10. An article of manufacture comprising the antibody of claim 8 and another therapeutic agent.
11. The article of manufacture of claim 10, wherein the other therapeutic agent is an anti-PD-1 or anti-PD-L1 antibody.
12. The article of manufacture of claim 10, wherein the other therapeutic agent is an anti-PD-1 antibody comprising the heavy chain CDR1-3 in SEQ ID NO:5 and the light chain CDR1-3 in SEQ ID NO:6.
13. The article of manufacture of claim 12, wherein the anti-PD-1 antibody comprises a VH amino acid sequence corresponding to residues 1-117 of SEQ ID NO:5 and a VL amino acid sequence corresponding to residues 1-107 of SEQ ID NO:6.
14. The article of manufacture of claim 13, wherein the amino acid sequences of the heavy and light chains of the anti-PD-1 antibody comprise SEQ ID NOs:5 and 6, respectively.