What is claimed is:

1. A human interleukin-2 (IL-2) mutein comprising an amino acid sequence that is at least 90% identical to the amino acid sequence set forth in SEQ ID NO:1, wherein said IL-2 mutein has at least one mutation selected from H16A, H16G, H16K, H16M, H16R, H16S, H16T, H16V, H16Y, L12G, L12K, L12Q, and L12S and preferentially stimulates T regulatory cells relative to other T cells or NK cells, both in in vitro assays and in humanized mice (NSG mice reconstituted with CD34+ hematopoietic stem cells).

2. The human IL-2 mutein of claim 1 further comprising a mutation at C125A.

3. An Fc-fusion protein comprising an Fc and the human IL-2 mutein of claim 1.

4. The Fc-fusion protein of claim 1, wherein the Fc is a human IgG1 Fc or wherein the Fc is a human IgG1 Fc comprising one or more mutations altering effector function of said Fc.

5. The Fc-fusion protein of claim 4, wherein the human IgG1 comprises a substitution at N297.

6. The Fc-fusion protein of claim 5, wherein the substitution at N297 is N297G.

7. The Fc-fusion protein of claim 3, wherein the Fc is a human IgG1 Fc comprising a substitution or deletion of the C-terminal lysine of said human IgG1 Fc.

8. The Fc-fusion protein of claim 3, wherein a linker connects the Fc and human IL-2 mutein portions of said protein.

9. The Fc-fusion protein of claim 8, wherein the linker is GGGGS (SEQ ID NO: 5), GGNGT, or (SEQ ID NO: 6), and YGNGT (SEQ ID NO: 7).

10. The Fc-fusion protein of claim 3, wherein the IL-2 mutein further comprises an amino acid addition, substitution, or deletion altering glycosylation of said Fc-fusion protein when expressed in mammalian cells.

11. The Fc-fusion protein of claim 10, wherein the IL-2 mutein comprises a T3 substitution or an S5 mutation.

12. The Fc-fusion protein of claim 11, wherein the IL-2 mutein comprises a T3N or T3A substitution.

13. The Fc-fusion protein of claim 11, wherein the IL-2 mutein further comprises an S5T mutation.

14. The Fc-fusion protein of claim 3, wherein said Fc-fusion protein comprises an Fc dimer.

15. The Fc-fusion protein of claim 14, wherein said Fc-fusion protein comprises two IL-2 muteins.

16. The Fc-fusion protein of claim 14, wherein said Fc-fusion protein comprises a single IL-2 mutein.

17. An *in vitro* method of increasing the ratio of regulatory T cells (Tregs) to non-regulatory T cells within a population of T cells, or increasing the ratio of regulatory T cells (Tregs) to non-regulatory T cells within peripheral blood of a subject, or increasing the ratio of regulatory T cells (Tregs) to natural killer (NK) cells within the peripheral blood of a subject, comprising contacting the population of T cells with an effective amount of a human IL-2 mutein of claim 1 or 2, or an Fc-fusion protein of any one of claims 3 to 16.

18. The method of claim 17, wherein the ratio of CD3+FoxP3+ cells to CD3+FoxP3- increases.

19. Use of an IL-2 mutein of claim 1 or the Fc-fusion protein of claim 3 in the manufacture of a medicament for treating a subject with an inflammatory or autoimmune disease.

20. The use of claim 19, wherein the inflammatory or autoimmune disease is lupus, graft-versus-host disease, hepatitis C-induced vasculitis, type I diabetes, type II diabetes, multiple sclerosis, rheumatoid arthritis, alopecia areata, atherosclerosis, psoriasis, organ transplant rejection, Sjögren's Syndrome, Behcet's disease, spontaneous loss of pregnancy, atopic diseases, asthma, or inflammatory bowel diseases.