CLAIMS

1. A composition comprising a population of FcRn antagonist molecules, wherein at least a portion of the FcRn antagonist molecules in the population consist of a variant Fc region comprising a dimer of a first Fc domain and a second Fc domain, wherein the amino acid sequence of the first and second Fc domain consists of SEQ ID NO: 1, provided that the population is not a homogeneous population of homodimeric FcRn antagonist molecules in which the amino acid sequence of both the first and the second Fc domain consists of SEQ ID NO: 2, 3, 20, or 21.
2. The composition of claim 1, wherein each FcRn antagonist molecule in the population consists of a variant Fc region comprising a dimer of a first Fc domain and a second Fc domain, wherein the amino acid sequence of the first and second Fc domain consists of SEQ ID NO: 1.
3. The composition of claim 1, wherein the amino acid sequences of the first and the second Fc domains consist of SEQ ID NO: 3 and SEQ ID NO: 12, respectively.
4. The composition of claim 1, wherein the amino acid sequences of the first and the second Fc domains consist of SEQ ID NO: 3 and SEQ ID NO: 9, respectively.
5. The composition of claim 1, wherein the amino acid sequences of the first and the second Fc domains consist of SEQ ID NO: 2 and SEQ ID NO: 3, respectively.
6. The composition of claim 1, wherein the amino acid sequences of the first and the second Fc domains consist of SEQ ID NO: 3 and SEQ ID NO: 6, respectively.
7. The composition of claim 1, wherein the amino acid sequence of the first Fc domain consists of any one of SEQ ID NOs: 2-22, and the amino acid sequence of the second Fc domain consists of any one of SEQ ID NOs: 2-22.
8. The composition of claim 1, wherein the amino acid sequence of both the first and the second Fc domain consists of any one of SEQ ID NOs: 5-19 or 22.
9. The composition of claim 1, wherein the population comprises:
   (a) a first subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of both the first and the second Fc domains of the FcRn antagonist molecules in the first subpopulation consist of SEQ ID NO: 3; and

(b) at least one of:

(i) a second subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the second subpopulation consist of SEQ ID NO: 3 and SEQ ID NO: 12, respectively;

(ii) a third subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the third subpopulation consist of SEQ ID NO: 3 and SEQ ID NO: 9, respectively;

(iii) a fourth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of both the first and the second Fc domains of the FcRn antagonist molecules in the fourth subpopulation consist of SEQ ID NO: 3, and wherein two asparagine residues in each FcRn antagonist molecule in the fourth subpopulation are deaminated;

(iv) a fifth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the fifth subpopulation consist of SEQ ID NO: 3 and SEQ ID NO: 9, respectively, and wherein one asparagine residue in each FcRn antagonist molecule in the fifth subpopulation is deaminated;

(v) a sixth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the sixth subpopulation consist of SEQ ID NO: 2 and SEQ ID NO: 3, respectively;

(vi) a seventh subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the seventh subpopulation consist of SEQ ID NO: 2 and SEQ ID NO: 3, respectively, and wherein one methionine residue or one tryptophan residue in each FcRn antagonist molecule in the seventh subpopulation is oxidized;

(vii) an eighth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of both the first and the second Fc domains of the FcRn antagonist molecules in the eighth subpopulation consist of SEQ ID NO: 2;

(viii) a ninth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the ninth subpopulation consist of SEQ ID NO: 3 and SEQ ID NO: 6, respectively;

(ix) a tenth subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of the first and the second Fc domains of the FcRn antagonist molecules in the tenth subpopulation consist of SEQ ID NO: 2 and SEQ ID NO: 3, respectively, and wherein one methionine residue or one tryptophan residue in each FcRn antagonist molecule in the tenth subpopulation is oxidized; and

(x) an eleventh subpopulation of FcRn antagonist molecules, wherein the amino acid sequences of both the first and the second Fc domains of the FcRn antagonist molecules in the eleventh subpopulation consist of SEQ ID NO: 3, and wherein two amino acid residues, independently selected from a methionine residue and a tryptophan, in each FcRn antagonist molecule in the eleventh subpopulation are oxidized.

10. The composition of claim 9, wherein the population comprises 2, 3, 4, 5, 6, 7, 8, 9, 10, or all of the subpopulations set forth in (b).

11. The composition of claim 9, wherein the population comprises the seventh, ninth, or eleventh subpopulations.

12. The composition of claim 9, wherein the population comprises the seventh, ninth, and eleventh subpopulations.

13. The composition of any one of claims 9-12, wherein the first subpopulation is at least 55% of the population, optionally the first subpopulation is 60% to 70% of the population.

14. The composition of any one of claims 9-13, wherein the second subpopulation is no more than 2.5% of the population, optionally the second subpopulation is 1% to 2.5% of the population.
15. The composition of any one of claims 9-14, wherein the third subpopulation is no more than 2.5% of the population, optionally the third subpopulation is 1% to 2.5% of the population.
16. The composition of any one of claims 9-15, wherein the fourth subpopulation is no more than 4% of the population, optionally the fourth subpopulation is 2% to 5% of the population.
17. The composition of any one of claims 9-16, wherein the fifth subpopulation is no more than 10% of the population, optionally the fifth subpopulation is 7% to 10% of the population.
18. The composition of any one of claims 9-17, wherein the sixth subpopulation is no more than 20% of the population, optionally the sixth subpopulation is 7% to 14% of the population.
19. The composition of any one of claims 9-18, wherein the seventh subpopulation is no more than 6% of the population, optionally the seventh subpopulation is 1.5% to 2.5% of the population.
20. The composition of any one of claims 9-19, wherein the eighth subpopulation is no more than 8% of the population, optionally the eighth subpopulation is 3.5% to 7.5% of the population.
21. The composition of any one of claims 9-20, wherein the ninth subpopulation is no more than 3.5% of the population, optionally the ninth subpopulation is 0.5% to 3.5% of the population.
22. The composition of any one of claims 9-21, wherein the tenth subpopulation is no more than 1% of the population.
23. The composition of any one of claims 9-22, wherein the eleventh subpopulation is no more than 1% of the population.

24. The composition of any one of the preceding claims, wherein at least 97%, optionally 97% to 99%, of the Fc domains in the population comprise an N-glycan at EU position 297.

25. The composition of any one of the preceding claims, wherein at least 50%, optionally 50% to 70%, of the Fc domains in the population comprise a G0F N-glycan at EU position 297.

26. The composition of any one of the preceding claims, wherein at least 20%, optionally 20% to 30%, of the Fc domains in the population comprise a G1F N-glycan at EU position 297.

27. The composition of any one of the preceding claims, wherein at least 5%, optionally 8% to 10%, of the Fc domains in the population comprise a G2F N-glycan at EU position 297.

28. The composition of any one of the preceding claims, wherein at least 2%, optionally 2% to 5%, of the Fc domains in the population comprise a G0 N-glycan at EU position 297.

29. The composition of any one of the preceding claims, wherein at least 40%, optionally 40% to 55%, of the population comprise a first Fc domain comprising a G0F N-glycan at EU position 297 and a second Fc domain comprising a G0F N-glycan at EU position 297.

30. The composition of any one of the preceding claims, wherein at least 20%, optionally 20% to 25%, of the population comprise a first Fc domain comprising a G0F N-glycan at EU position 297 and a second Fc domain comprising a G1F N-glycan at EU position 297.

31. The composition of any one of the preceding claims, wherein at least 10%, optionally 10% to 15%, of the population comprise either a first Fc domain comprising a G1F N-glycan at EU position 297 and a second Fc domain comprising a G1F N-glycan at EU position 297, or a first Fc domain comprising G0F N-glycan at EU position 297 and a second Fc domain comprising a G2F N-glycan at EU position 297.

32. The composition of any one of the preceding claims, wherein at least 5%, optionally 5% to 10%, of the population comprise a first Fc domain comprising a G1F N-glycan at EU position 297 and a second Fc domain comprising a G2F N-glycan at EU position 297.

33. The composition of any one of the preceding claims, wherein at least 2%, optionally 2% to 4%, of the population comprise a first Fc domain comprising a G2F N-glycan at EU position 297 and a second Fc domain comprising a G2F N-glycan at EU position 297.

34. The composition of any one of the preceding claims, wherein at least 4%, optionally 4% to 6%, of the population comprise a first Fc domain comprising a G0F N-glycan at EU position 297 and a second Fc domain comprising a G0 N-glycan at EU position 297.

35. The composition of any one of the preceding claims, wherein at least 95%, optionally 95% to 99%, of the Fc domains in the population have aspartate, lysine, threonine, histidine, threonine, and cysteine, at EU positions 221, 222, 223, 224, 225, and 226, respectively.

36. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains in the population lack an amino acid at EU position 221, and have lysine, threonine, histidine, threonine, and cysteine at EU positions 222, 223, 224, 225, and 226, respectively.

37. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains in the population lack amino acids at EU positions 221 and 222, and have threonine, histidine, threonine, and cysteine at EU positions 223, 224, 225, and 226, respectively.

38. The composition of any one of the preceding claims, wherein no more than 2% of the Fc domains in the population lack amino acids at EU positions 221-224, and have threonine, and cysteine at EU positions 225 and 226, respectively.

39. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains in the population lack amino acids at EU positions 221, 222, 223, 224, 225, and 226.

40. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains in the population have isomerization of the aspartate at EU position 280 or 401.

41. The composition of any one of the preceding claims, wherein no more than 10% of the Fc domains in the population have deamidation of the asparagine at EU position 384, 389, or 390.

42. The composition of any one of the preceding claims, wherein no more than 3% of the Fc domains in the population have deamidation of the asparagine at EU position 315.

43. The composition of any one of the preceding claims, wherein no more than 3% of the Fc domains in the population have deamidation of the asparagine at EU position 361.

44. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains in the population have deamidation of the asparagine at EU position 276 or 286.

45. The composition of any one of the preceding claims, wherein no more than 5% of the Fc domains have oxidization of the methionine at EU position 428.

46. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains have amidation of the proline at EU position 445.

47. The composition of any one of the preceding claims, wherein no more than 1% of the Fc domains have oxidization of the tryptophan at EU position 277.

48. The composition of any one of the preceding claims, wherein no more than 0.5% of the FcRn antagonist molecules in the population are aggregated.

49. The composition of any one of the preceding claims, wherein at least 95%, optionally at least 99%, of the dimers in the population are linked by at least one disulfide bond.

50. The composition of any one of the preceding claims, wherein the average molecular weight of non-aggregated FcRn antagonist molecules in the population is 54 to 56 kDa, optionally 54.4 to 54.7 kDa.

51. The composition of any one of the preceding claims, wherein the percentage of free thiol groups in the population is no more than 1%.
52. The composition of any one of the preceding claims, wherein at least 35%, optionally 35% to 55%, of the Fc domains in the population comprise galactose.
53. The composition of any one of the preceding claims, wherein at least 90%, optionally 90% to 98%, of the Fc domains in the population comprise fucose.
54. The composition of any one of the preceding claims, wherein at most 1.5%, optionally 0.5% to 1.5%, of the Fc domains in the population comprise sialic acid.
55. The composition of any one of the preceding claims, which is an aqueous solution comprising about 25 mM sodium phosphate, about 100 mM sodium chloride, and about 150 mM L-arginine, and about 0.02% (w/v) polysorbate 80, wherein the composition has a pH of about 6.7.
56. The composition of claim 55, comprising 20 mg/ml of the population of FcRn antagonist molecules.
57. The composition of any one of the preceding claims, which is an aqueous solution comprising about 4 mM sodium phosphate, about 146 mM sodium chloride, and about 24 mM L-arginine, and about 0.0032% (w/v) polysorbate 80, wherein the composition has a pH of about 6.7.
58. The composition of claim 57, comprising about 3.2 mg/ml of the population of FcRn antagonist molecules.
59. The composition of any one of the preceding claims, which is an aqueous solution comprising about 20 mM L-histidine, about 100 mM sodium chloride, about 60 mM sucrose, about 10 mM L-methionine, and about 0.04% (w/v) polysorbate 20, wherein the composition has a pH of about 6.0.
60. The composition of claim 59, comprising about 180 mg/ml of the population of FcRn antagonist molecules.
61. The composition of any one of the preceding claims, which is an aqueous solution comprising about 20 mM L-histidine, about 50 mM L-arginine, about 100 mM sodium

chloride, about 60 mM sucrose, about 10 mM L-methionine, and about 0.04% (w/v) polysorbate 80, wherein the composition has a pH of about 6.0.

62. The composition of claim 61, comprising about 200 mg/ml of the population of FcRn antagonist molecules.

63. A method of reducing the level of serum IgG autoantibodies in a subject, the method comprising administering to the subject the composition of any one of claims 1-62

64. Use of the composition of any one of claims 1-62 in the manufacture of a medicament for the treatment of an autoimmune disease.

65. A composition of any one of claims 1-62, for use as a medicament.