

WHAT IS CLAIMED IS: CLAIMS

1. A modified IgG comprising:

a canine IgG constant domain comprising at least one amino acid substitution relative to a wild-type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat;

~~2. The modified IgG of claim 1, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H); and~~

~~3 wherein said IgG is an anti-TGF β molecule.~~

2. The modified IgG of claim 1, wherein the anti-TGF β molecule comprises a variable heavy (VH) chain having the amino acid sequence set forth in SEQ ID NO.: 77, 87, 97, 107, or 117.

3. The modified IgG of claim 1, wherein the anti-TGF β molecule comprises a variable light (VL) chain having the amino acid sequence set forth in SEQ ID NO.: 79, 89, 99, 109, or 119.

4. The modified IgG of claim 1, wherein the modified IgG has an increased half-life compared to the half-life of an IgG having the wild-type canine IgG constant domain.

45. The modified IgG of claim 1, wherein the modified IgG has a higher affinity for FcRn than the IgG having the wild-type canine IgG constant domain.

56. The modified IgG of claim 1, wherein the modified IgG is a canine or caninized IgG.

~~6. The modified IgG of claim 1, wherein the IgG is IgG_A, IgG_B, IgG_C, or IgG_D.~~

~~7. The modified IgG of claim 1, wherein the IgG constant domain is a constant domain of IgG_A, IgG_B, IgG_C, or IgG_D.~~

~~8. The modified IgG of claim 1, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

97. The modified IgG of claim 1, wherein the IgG constant domain comprises an Fc constant region having CH2 ~~and/or~~ CH3 domain, or a combination thereof.

~~108.~~The modified IgG of claim 1, wherein the wild-type canine IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: ~~42~~.

~~119.~~A pharmaceutical composition comprising the modified IgG of claim 1 and a pharmaceutically acceptable carrier.

~~1210.~~A kit comprising the modified IgG of claim 1, in a container, and instructions for use.

~~1311.~~A polypeptide comprising: the modified IgG of claim 1.

12.A fusion molecule comprising the modified IgG of claim 1.

13.An immunoglobulin molecule comprising the modified IgG of claim 1.

14.Use of an immunoglobulin molecule for the manufacture of a canine IgG constant domain comprising at least one amino acid substitution relative to a wild type canine IgG constant domainmedicament, wherein said substitution-immunoglobulin molecule is at amino acid residue 434, ~~numbered according to the EU index as in Kabat~~the molecule of claim 11.

15. Use of an immunoglobulin molecule for increasing its serum half-life in a dog, wherein said immunoglobulin molecule is the molecule of claim 11.

~~14.The polypeptide of claim 13, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~

~~15.The polypeptide of claim 13, wherein the polypeptide has an increased half life compared to the half life of the polypeptide of the wild type canine IgG constant domain.~~

~~16.The polypeptide of claim 13, wherein the polypeptide has a higher affinity for FeRn than the polypeptide of the IgG having the wild type canine IgG constant domain.~~

~~17.The polypeptide of claim 13, wherein the polypeptide is a polypeptide of a canine or caninized IgG.~~

~~18.The polypeptide of claim 17, wherein the IgG is IgG_A, IgG_B, IgG_C, or IgG_D.~~

19. ~~The polypeptide of claim 13, wherein the IgG constant domain is a constant domain of IgG_A, IgG_B, IgG_C, or IgG_D.~~
20. ~~The polypeptide of claim 13, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~
21. ~~The polypeptide of claim 13, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~
22. ~~The polypeptide of claim 13, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~
23. ~~A pharmaceutical composition comprising the polypeptide of claim 13 and a pharmaceutically acceptable carrier.~~
24. ~~A kit comprising the polypeptide of claim 13, in a container, and instructions for use.~~
25. ~~An antibody comprising: a canine IgG constant domain comprising at least one amino acid substitution relative to a wild type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~
26. ~~The antibody of claim 25, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~
27. ~~The antibody of claim 25, wherein the antibody has an increased half-life compared to the half-life of an antibody having the wild type canine IgG constant domain.~~
28. ~~The antibody of claim 25, wherein the antibody has a higher affinity for FcRn than an antibody having the wild type canine IgG constant domain.~~
29. ~~The antibody of claim 25, wherein the antibody is a canine or caninized antibody.~~
30. ~~The antibody of claim 25, wherein the antibody is IgG_A, IgG_B, IgG_C, or IgG_D.~~
31. ~~The antibody of claim 25, wherein the IgG constant domain is a constant domain of IgG_A, IgG_B, IgG_C, or IgG_D.~~

~~32.The antibody of claim 25, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~33.The antibody of claim 25, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~34.The antibody of claim 25, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~

~~35.A pharmaceutical composition comprising the antibody of claim 25 and a pharmaceutically acceptable carrier.~~

~~36.A kit comprising the antibody of claim 25, in a container, and instructions for use.~~

~~37.A vector comprising the nucleic acid sequence encoding the amino acid sequence set forth in SEQ ID NO.: 1.~~

~~38.An isolated cell comprising the vector of claim 37.~~

~~39.A method of manufacturing an antibody or a molecule, the method comprising: providing the cell of claim 38; and culturing said cell.~~

~~40.A method of manufacturing an antibody, the method comprising: providing an antibody of any one of claims 25-34.~~

~~41.A method for increasing an antibody serum half life in a dog, the method comprising: administering said dog a therapeutically effective amount of an antibody comprising a canine IgG constant domain, said canine IgG constant domain comprising at least one amino acid substitution relative to a wild type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~42.The method of claim 41, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~

~~43.The method of claim 41, wherein the antibody has an increased half life compared to the half life of an antibody having the wild type canine IgG constant domain.~~

- ~~44. The method of claim 41, wherein the antibody has a higher affinity for FeRn than an antibody having the wild-type canine IgG constant domain.~~
- ~~45. The method of claim 41, wherein the antibody is a canine or caninized antibody.~~
- ~~46. The method of claim 41, wherein the antibody is IgG_A, IgG_B, IgG_C, or IgG_D.~~
- ~~47. The method of claim 41, wherein the IgG constant domain is a constant domain of IgG_A, IgG_B, IgG_C, or IgG_D.~~
- ~~48. The method of claim 41, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~
- ~~49. The method of claim 41, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~
- ~~50. The method of claim 41, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~
- ~~51. A fusion molecule comprising: a canine IgG constant domain fused to an agent, said canine IgG constant domain comprising at least one amino acid substitution relative to a wild-type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~
- ~~52. The molecule of claim 51, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~
- ~~53. The molecule of claim 51, wherein the molecule has an increased half-life compared to the half-life of a molecule having the wild-type canine IgG constant domain.~~
- ~~54. The molecule of claim 51, wherein the molecule has a higher affinity for FeRn than a molecule having the wild-type canine IgG constant domain.~~
- ~~55. The molecule of claim 51, wherein the molecule comprises a canine or caninized antibody.~~
- ~~56. The molecule of claim 51, wherein the molecule comprises IgG_A, IgG_B, IgG_C, or IgG_D.~~

57. The molecule of claim 51, wherein the IgG constant domain is a constant domain of IgG_A, IgG_B, IgG_C, or IgG_D.

58. The molecule of claim 51, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.

59. The molecule of claim 51, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.

60. The molecule of claim 51, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.

61. A pharmaceutical composition comprising the molecule of claim 51 and a pharmaceutically acceptable carrier.

62. A kit comprising the molecule of claim 51, in a container, and instructions for use.

63. A modified IgG comprising: a canine IgG constant domain comprising the amino acid sequence set forth in SEQ ID NO.: 1, 65, or 66, wherein the modified IgG has an increased half life compared to the half life of an IgG having the wild type canine IgG constant domain.

64. The modified IgG of claim 63, wherein the increased half life is for a period ranging from about 25 days to about 35 days.

65. The modified IgG of claim 63, wherein the increased half life is for about 30 days.

66. A modified IgG comprising: a canine IgG constant domain comprising the amino acid sequence set forth in SEQ ID NO.: 1, 65, or 66, wherein the modified IgG maintains its therapeutic level for a long term.

67. The modified IgG of claim 66, wherein the modified IgG maintains its therapeutic level over a period ranging from about 1 month to about 7 months

68. The modified IgG of claim 66, wherein the modified IgG maintains its therapeutic level over said period upon subcutaneous delivery of said IgG to a canine subject.

~~69. An antibody comprising: a canine IgG constant domain comprising the amino acid sequence set forth in SEQ ID NO.: 1, 65, or 66, wherein the antibody has an increased half-life compared to the half-life of an antibody having the wild-type canine IgG constant domain.~~

~~70. The antibody of claim 69, wherein the increased half-life is for a period ranging from about 25 days to about 35 days.~~

~~71. The antibody of claim 69, wherein the increased half-life is for about 30 days.~~

~~72. An antibody comprising: a canine IgG constant domain comprising the amino acid sequence set forth in SEQ ID NO.: 1, 65, or 66, wherein the antibody maintains its therapeutic level for a long term.~~

~~73. The antibody of claim 66, wherein the antibody maintains its therapeutic level over a period ranging from about 1 month to about 7 months~~

~~74. The antibody of claim 66, wherein the antibody maintains its therapeutic level over said period upon subcutaneous delivery of said antibody to a canine subject.~~

~~75. The antibody of any one of claims 25-34 and 69-74, wherein said antibody is an anti-IL31, an anti-NGF, or an anti-TGF β antibody.~~

~~76. A method for increasing an antibody serum half-life in a dog, the method comprising: administering said dog a therapeutically effective amount of an antibody comprising a canine IgG constant domain, said canine IgG constant domain comprising at least one amino acid substitution relative to a wild-type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat, and wherein said antibody is anti-TGF β antibody.~~

~~77. The method of claim 76, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~

~~78. A method for maintaining a therapeutic serum level of an antibody in a dog, the method comprising: administering said dog a therapeutically effective amount of an antibody comprising a canine IgG constant domain, said canine IgG constant domain comprising at least one amino~~

~~acid substitution relative to a wild type canine IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat, and wherein said antibody is anti-TGF β antibody.~~

~~79. The method of claim 78, wherein said substitution is a substitution of asparagine at position 434 with histidine (N434H).~~

~~80. A method of treating a TGF β mediated disease or condition in a canine subject, the method comprising: administering to said subject a therapeutically effective amount of the anti-TGF β antibody of claim 75, thereby treating said TGF β mediated disease or condition in said canine subject.~~

~~81. The method of claim 80, wherein the TGF β mediated disease is a chronic kidney disease.~~

~~82. The method of claim 80, wherein the antibody is administered bimonthly, once in three months, once in four months, once in five months, once in six months, or once in seven months.~~