

WHAT IS CLAIMED IS:

CLAIMS

1.A modified IgG comprising:

a feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 428, numbered according to the EU index as in Kabat;

~~2.The modified IgG of claim 1,~~ wherein said substitution is a substitution of serine at position 428 with leucine (S428L), and
wherein said IgG is an anti-TGF β molecule.

2.The modified IgG of claim 1, wherein the wild-type feline IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 3.

3.The modified IgG of claim 1, wherein said feline IgG constant domain ~~further comprising~~ comprises another substitution, wherein said another substitution is at amino acid residue 434, ~~numbered according to the EU index as in Kabat.~~

4.The modified IgG of claim 3, wherein said ~~substitution is another~~ substitution of serine at position 434 with histidine (S434H).

5.The modified IgG of claim 1, wherein the modified IgG having the feline IgG constant domain has ~~an increased half-life compared to the half-life of a~~ higher affinity for FcRn than an IgG having the wild-type feline IgG constant domain.

6.The modified IgG of claim 1, wherein the modified IgG ~~has comprises an Fc constant region~~ having CH2 or CH3 domain, or a higher affinity for FcRn than the IgG having the wild-type feline IgG constant domain. combination thereof.

7.The modified IgG of claim 1, wherein the ~~modified IgG is a feline or feline IgG.~~ feline IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.

8.The modified IgG of claim 1, wherein the ~~IgG is IgG1_a, IgG1_b, or IgG2.~~ anti-TGF β molecule comprises a variable heavy (VH) chain having the amino acid sequence set forth in SEQ ID NO.: 45, 55, 65, 75, 85, 95, 105, 115, 125, or 135.

9. The modified IgG of claim 1, wherein the ~~IgG constant domain is anti-TGF β molecule comprises a constant domain of IgG1_a, IgG1_b, or IgG2; variable light (VL) chain having the amino acid sequence set forth in SEQ ID NO.: 47, 57, 67, 77, 87, 97, 107, 117, 127, or 137.~~

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

11. The modified IgG of claim 1, wherein the ~~IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

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

13. ~~10. A pharmaceutical composition comprising the modified IgG of claim 1~~ any one of claims 1-9 and a pharmaceutically acceptable carrier.

14. ~~11. A kit comprising a fusion molecule comprising the modified IgG of claim 1, in a container, and instructions for use.~~ any one of claims 1-9.

15. ~~A polypeptide comprising: a feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 428, numbered according to the EU index as in Kabat.~~

16. The polypeptide of claim 15, wherein ~~said substitution is a substitution of serine at position 434 with leucine (S428L).~~

17. The polypeptide of claim 15, wherein ~~said feline IgG constant domain further comprising a substitution at amino acid residue 434, numbered according to the EU index as in Kabat.~~

18. The polypeptide of claim 17, wherein ~~said substitution is a substitution of serine at position 434 with histidine (S434H).~~

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

- ~~20. The polypeptide of claim 15, wherein the polypeptide has a higher affinity for FeRn than the polypeptide of the IgG having the wild-type feline IgG constant domain.~~
- ~~21. The polypeptide of claim 15, wherein the polypeptide is a polypeptide of a feline or felinized IgG.~~
- ~~22. The polypeptide of claim 21, wherein the IgG is IgG1a, IgG1b, or IgG2.~~
- ~~23. The polypeptide of claim 15, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~
- ~~24. The polypeptide of claim 15, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~
- ~~25. The polypeptide of claim 15, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~
- ~~26. The polypeptide of claim 15, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~
- ~~27. A pharmaceutical composition comprising the polypeptide of claim 15 and a pharmaceutically acceptable carrier.~~
- ~~28. A kit comprising the polypeptide of claim 15, in a container, and instructions for use.~~
- ~~29. An antibody comprising: a feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 428, numbered according to the EU index as in Kabat.~~
- ~~30. The antibody of claim 29, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~
- ~~31. The antibody of claim 29, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~32.The antibody of claim 31, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~33.The antibody of claim 29, wherein the antibody has an increased half life compared to the half life of an antibody having the wild type feline IgG constant domain.~~

~~34.The antibody of claim 29, wherein the antibody has a higher affinity for FeRn than an antibody having the wild type feline IgG constant domain.~~

~~35.The antibody of claim 29, wherein the antibody is a feline or felinized antibody.~~

~~36.The antibody of claim 29, wherein the antibody is IgG1a, IgG1b, or IgG2.~~

~~37.The antibody of claim 29, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~38.The antibody of claim 29, wherein the IgG constant domain comprises an Fe constant region having CH3 domain.~~

~~39.The antibody of claim 29, wherein the IgG constant domain comprises an Fe constant region having CH2 and CH3 domain.~~

~~40.The antibody of claim 29, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~

~~41.A pharmaceutical composition comprising the antibody of claim 29 and a pharmaceutically acceptable carrier.~~

~~42.A kit comprising the antibody of claim 29, in a container, and instructions for use.~~

~~43~~12.An immunoglobulin molecule comprising the modified IgG of any one of claims 1-9.

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

~~44~~14.An isolated cell comprising the vector of claim ~~43~~13.

~~45~~15.A method of manufacturing ~~an antibody or~~ a molecule, the method comprising: providing the cell of claim ~~44~~14; and culturing said cell.

~~46.A method of manufacturing an antibody, the method~~16.An IgG Fc region comprising: providing an antibody- the modified IgG of any one of claims ~~29-40-1-9~~.

~~47.A method~~17.Use of an IgG Fc region for increasing ~~an antibody's~~ a serum half-life of IgG in a cat, ~~the method comprising: administering said cat a therapeutically effective amount of an antibody comprising a feline IgG constant domain, said feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~48.The method of claim 47, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~

~~49.The method of claim 47, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~50.The method of claim 49, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~51.The method of claim 47, wherein the antibody has an increased half-life compared to the half-life of an antibody having the wild-type feline IgG constant domain.~~

~~52.The method of claim 47, wherein the antibody has a higher affinity for FeRn than an antibody having the wild-type feline IgG constant domain.~~

~~53.The method of claim 47, wherein the antibody is a feline or felinized antibody.~~

~~54.The method of claim 47, wherein the antibody is IgG1a, IgG1b, or IgG2.~~

~~55.The method of claim 47, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~56.The method of claim 47, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~57. The method of claim 47, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~58. The method of claim 47, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~

~~59. A fusion molecule comprising: a feline IgG constant domain fused to an agent, said feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~60. The molecule of claim 59, wherein said substitution is a substitution of serine at position 434 with leucine (S428L).~~

~~61. The molecule of claim 59, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~62. The molecule of claim 61, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~63. The molecule of claim 61, wherein the molecule has an increased half-life compared to the half-life of a molecule having the wild-type feline IgG constant domain.~~

~~64. The molecule of claim 61, wherein the molecule has a higher affinity for FcRn than a molecule having the wild-type feline IgG constant domain.~~

~~65. The molecule of claim 61, wherein the molecule comprises a feline or felinized antibody.~~

~~66. The molecule of claim 61, wherein the molecule comprises IgG1a, IgG1b, or IgG2.~~

~~67. The molecule of claim 61, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~68. The molecule of claim 61, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~69. The molecule of claim 61, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~70. The molecule of claim 61, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 1.~~

~~71. A pharmaceutical composition comprising the molecule of claim 61 and a pharmaceutically acceptable carrier.~~

~~72. A kit comprising the molecule of claim 61, in a container, and instructions for use.~~

~~73. A modified IgG comprising: a feline IgG constant domain comprising at least one amino acid substitution relative to a wild type feline IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~74. The Fc region comprising the modified IgG of claim 73, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~75. The modified IgG of claim 73, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~76. The modified IgG of claim 75, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~

~~77. The modified IgG of claim 73, wherein the modified IgG has an increased half life compared to the half life of an IgG having the wild type feline IgG constant domain.~~

~~78. The modified IgG of claim 73, wherein the modified IgG has a higher affinity for FcRn than the IgG having the wild type feline IgG constant domain.~~

~~79. The modified IgG of claim 73, wherein the modified IgG is a feline or felinized IgG.~~

~~80. The modified IgG of claim 73, wherein the IgG is IgG1_a, IgG1_b, or IgG2.~~

~~81. The modified IgG of claim 73, wherein the IgG constant domain is a constant domain of IgG1_a, IgG1_b, or IgG2.~~

~~82.The modified IgG of claim 73, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~83.The modified IgG of claim 73, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~84.The modified IgG of claim 73, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 2.~~

~~85.A pharmaceutical composition comprising the modified IgG of claim 73 and a pharmaceutically acceptable carrier.~~

~~86.A kit comprising the modified IgG of claim 73, in a container, and instructions for use.~~

~~87.A polypeptide comprising: a feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~88.The polypeptide of claim 87, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~89.The polypeptide of claim 87, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~90.The polypeptide of claim 89, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~

~~91.The polypeptide of claim 87, wherein the polypeptide has an increased half life compared to the half life of the polypeptide of the wild type feline IgG constant domain.~~

~~92.The polypeptide of claim 87, wherein the polypeptide has a higher affinity for FcRn than the polypeptide of the IgG having the wild-type feline IgG constant domain.~~

~~93.The polypeptide of claim 87, wherein the polypeptide is a polypeptide of a feline or felinized IgG.~~

94. The polypeptide of claim 93, wherein the IgG is IgG1a, IgG1b, or IgG2.

95. The polypeptide of claim 87, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.

96. The polypeptide of claim 87, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.

97. The polypeptide of claim 87, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.

98. The polypeptide of claim 87, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 2.

99. A pharmaceutical composition comprising the polypeptide of claim 87 and a pharmaceutically acceptable carrier.

100. A kit comprising the polypeptide of claim 87, in a container, and instructions for use.

101. An antibody comprising: a feline IgG constant domain comprising at least one amino acid substitution relative to a wild type feline IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.

102. The antibody of claim 101, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).

103. The antibody of claim 101, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 428, numbered according to the EU index as in Kabat.

104. The antibody of claim 103, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).

105. The antibody of claim 101, wherein the antibody has an increased half life compared to the half life of an antibody having the wild type feline IgG constant domain.

~~106.The antibody of claim 101, wherein the antibody has a higher affinity for FeRn than an antibody having the wild-type feline IgG constant domain.~~

~~107.The antibody of claim 101, wherein the antibody is a feline or felinized antibody.~~

~~108.The antibody of claim 101, wherein the antibody is IgG1a, IgG1b, or IgG2.~~

~~109.The antibody of claim 101, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~110.The antibody of claim 101, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~111.The antibody of claim 101, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~112.The antibody of claim 101, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 2.~~

~~113.A pharmaceutical composition comprising the antibody of claim 101 and a pharmaceutically acceptable carrier.~~

~~114.A kit comprising the antibody of claim 101, in a container, and instructions for use.~~

~~115.A vector comprising the nucleic acid sequence encoding the amino acid sequence set forth in SEQ ID NO.: 2.~~

~~116.An isolated cell comprising the vector of claim 115.~~

~~117.A method of manufacturing an antibody or a molecule, the method comprising: providing the cell of claim 116; and culturing said cell.~~

~~118.A method of manufacturing an antibody, the method comprising: providing an antibody of any one of claims 101-112. 1-9.~~

~~119.A method for increasing an antibody serum half life in a cat, the method comprising: administering said cat a therapeutically effective amount of an antibody comprising a feline IgG~~

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

~~120. The method of claim 119, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~121. The method of claim 119, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~122. The method of claim 121, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~

~~123. The method of claim 119, wherein the antibody has an increased half life compared to the half life of an antibody having the wild-type feline IgG constant domain.~~

~~124. The method of claim 119, wherein the antibody has a higher affinity for FcRn than an antibody having the wild-type feline IgG constant domain.~~

~~125. The method of claim 119, wherein the antibody is a feline or felinized antibody.~~

~~126. The method of claim 119, wherein the antibody is IgG1a, IgG1b, or IgG2.~~

~~127. The method of claim 119, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~128. The method of claim 119, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~129. The method of claim 119, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~130. The method of claim 119, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 2.~~

~~131. A fusion molecule comprising: a feline IgG constant domain fused to an agent, said feline IgG constant domain comprising at least one amino acid substitution relative to a wild-type feline IgG constant domain, wherein said substitution is at amino acid residue 434, numbered according to the EU index as in Kabat.~~

~~132. The molecule of claim 131, wherein said substitution is a substitution of serine at position 434 with histidine (S434H).~~

~~133. The molecule of claim 131, wherein said feline IgG constant domain further comprising a substitution at amino acid residue 428, numbered according to the EU index as in Kabat.~~

~~134. The molecule of claim 133, wherein said substitution is a substitution of serine at position 428 with leucine (S428L).~~

~~135. The molecule of claim 131, wherein the molecule has an increased half life compared to the half life of a molecule having the wild-type feline IgG constant domain.~~

~~136. The molecule of claim 131, wherein the molecule has a higher affinity for FcRn than a molecule having the wild-type feline IgG constant domain.~~

~~137. The molecule of claim 131, wherein the molecule comprises a feline or felinized antibody.~~

~~138. The molecule of claim 131, wherein the molecule comprises IgG1a, IgG1b, or IgG2.~~

~~139. The molecule of claim 131, wherein the IgG constant domain is a constant domain of IgG1a, IgG1b, or IgG2.~~

~~140. The molecule of claim 131, wherein the IgG constant domain comprises an Fc constant region having CH3 domain.~~

~~141. The molecule of claim 131, wherein the IgG constant domain comprises an Fc constant region having CH2 and CH3 domain.~~

~~142. The molecule of claim 131, wherein the IgG constant domain comprises the amino acid sequence set forth in SEQ ID NO.: 2.~~

~~143. A pharmaceutical composition comprising the molecule of claim 131 and a pharmaceutically acceptable carrier.~~

~~144. A kit comprising the molecule of claim 131, in a container, and instructions for use.~~

~~145. The antibody of anyone of claims 29-40, wherein said antibody is an anti-TGF β antibody.~~

~~146. The pharmaceutical composition of claim 41, wherein said antibody is an anti-TGF β antibody.~~

~~147. The kit of claim 42, wherein said antibody is an anti-TGF β antibody.~~

~~148. The method of claim 45 or 46, wherein said antibody is an anti-TGF β antibody.~~

~~149. The method of anyone of claims 47-58, wherein said antibody is an anti-TGF β antibody.~~

~~150. The antibody of anyone of claims 101-112, wherein said antibody is an anti-TGF β antibody.~~

~~151. The pharmaceutical composition of claim 113, wherein said antibody is an anti-TGF β antibody.~~

~~152. The kit of claim 114, wherein said antibody is an anti-TGF β antibody.~~

~~153. The method of claim 117 or 118, wherein said antibody is an anti-TGF β antibody.~~

~~154. The method of anyone of claims 119-130, wherein said antibody is an anti-TGF β antibody.~~