

## CLAIMS

1. An isolated antibody that binds to human FcRn, the isolated antibody comprising: (1) a light chain variable region comprising a CDR L1, a CDR L2, and a CDR L3 and (2) a heavy chain variable region comprising a CDR H1, a CDR H2, and a CDR H3, wherein
- 5       said CDR L1 has a sequence having no more than two amino acid substitutions relative to the sequence of TGTGSDVGSYNLVS (SEQ ID NO: 1),
- said CDR L2 has a sequence having no more than one amino acid substitutions relative to the sequence of GDSERPS (SEQ ID NO: 2),
- 10       said CDR L3 has a sequence having no more than one amino acid substitutions relative to the sequence of SSYAGSGIYV (SEQ ID NO: 3),
- said CDR H1 has a sequence having no more than one amino acid substitutions relative to the sequence of TYAMG (SEQ ID NO: 4), DYAMG (SEQ ID NO: 5), or NYAMG (SEQ ID NO: 6),
- said CDR H2 has a sequence having no more than two amino acid substitutions relative to the
- 15       sequence of SIGSSGAQTRYADS (SEQ ID NO: 7), SIGASGSQTRYADS (SEQ ID NO: 8), SIGASGAQTRYADS (SEQ ID NO: 9), or SIGASGGQTRYADS (SEQ ID NO: 10), and
- said CDR H3 has a sequence having no more than one amino acid substitutions relative to the sequence of LAIGDSY (SEQ ID NO: 11).
- 20   2. The isolated antibody of claim 1, wherein
- said CDR L1 has the sequence TGTGSDVGSYNLVS (SEQ ID NO: 1),
- said CDR L2 has the sequence GDSERPS (SEQ ID NO: 2),
- said CDR L3 has the sequence SSYAGSGIYV (SEQ ID NO: 3),
- said CDR H1 has the sequence TYAMG (SEQ ID NO: 4),
- 25       said CDR H2 has the sequence SIGASGSQTRYADS (SEQ ID NO: 8), and
- said CDR H3 has the sequence LAIGDSY (SEQ ID NO: 11).
3. An isolated antibody that binds to human FcRn, the isolated antibody comprising: (1) a light chain variable region comprising a CDR L1, a CDR L2, and a CDR L3 and (2) a heavy chain variable region comprising a
- 30       CDR H1, a CDR H2, and a CDR H3, wherein
- said CDR L1 has a sequence  $X_1$ GTGSDVGSYN $X_2$ VS (SEQ ID NO: 12),
- said CDR L2 has a sequence GDX $_3$ X $_4$ RPS (SEQ ID NO: 13),
- said CDR L3 has a sequence  $X_5$ SYX $_6$ GSGIYV (SEQ ID NO: 14),
- said CDR H1 has a sequence Z $_1$ YAMG (SEQ ID NO: 15),
- 35       said CDR H2 has a sequence SIGZ $_2$ SGZ $_3$ QTZ $_4$ YADS (SEQ ID NO: 16),
- said CDR H3 has a sequence LAZ $_5$ Z $_6$ DSY (SEQ ID NO: 17), wherein
- $X_1$  is a polar or hydrophobic amino acid,
- $X_2$  is a hydrophobic amino acid,
- $X_3$  is a polar amino acid,
- 40        $X_4$  is a polar or acidic amino acid,

X<sub>5</sub> is a polar or hydrophobic amino acid,  
X<sub>6</sub> is a hydrophobic amino acid,  
Z<sub>1</sub> is a polar or acidic amino acid,  
Z<sub>2</sub> is a polar or hydrophobic amino acid,  
5 Z<sub>3</sub> is G, S, or A,  
Z<sub>4</sub> is a basic amino acid,  
Z<sub>5</sub> is a hydrophobic or basic amino acid, and  
Z<sub>6</sub> is G, S, D, Q, or H, and  
wherein said antibody binds human FcRn with a K<sub>D</sub> of less than 200, 150, 100, 50, or 40 pM..

10 4. An isolated antibody comprising a light chain variable region comprising a CDR L1 having the sequence TGTGSDVGSYNLVS (SEQ ID NO: 1), a CDR L2 having the sequence GDSERPS (SEQ ID NO: 2), and a CDR L3 having the sequence SSYAGSGIYV (SEQ ID NO: 3), and a heavy chain variable region comprising a CDR H1, a CDR H2, and a CDR H3, wherein

15 said CDR H1 has a sequence Z<sub>1</sub>YAMG (SEQ ID NO: 15),  
said CDR H2 has a sequence SIGZ<sub>2</sub>SGZ<sub>3</sub>QTRYADS (SEQ ID NO: 18), and  
said CDR H3 has the sequence LAIGDSY (SEQ ID NO: 11), and wherein  
Z<sub>1</sub> is T, D, or N,  
Z<sub>2</sub> is S or A, and  
20 Z<sub>3</sub> is G, S or A.

5. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has a sequence having at least 90% identity to the sequence of  
QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLWSYQQHPGKAPKLMYIGDSERPSGVSNRFSGSKSGN  
25 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTSPKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has a sequence having at least 90% identity to the sequence of  
EVQLLESGLGLVQPGGSLRLSCAASGFTFSTYAMGWVRQAPGKGLEWVSSIGSSGAQTRYADSVKGRFTI  
30 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDE  
LTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSDGSFFLYSKLTVDKSRWQQGNVFCFSVM  
35 HEALHNHYTQKSLSLSPG (SEQ ID NO: 20).

6. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has a sequence having at least 90% identity to the sequence of  
QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLWSYQQHPGKAPKLMYIGDSERPSGVSNRFSGSKSGN  
40 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP

GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has a sequence having at least 90% identity to the sequence of

EVQLLES GGGLVQPGGSLRLSCAASGFTFS DYAMGWVRQAPGKGLEWVSSIGASGSQTRYADSVKGRFTI  
SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDE  
LTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGSSFFLYSKLTVDKSRWQQGNVDFCSVM  
HEALHNHYTQKSLSLSPG (SEQ ID NO: 21).

7. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein  
said light chain variable region has a sequence having at least 90% identity to the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVS WYQQHPGKAPKLMYGDSE RPSGVSNRFS GSKSGN  
TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has a sequence having at least 90% identity to the sequence of

EVQLLES GGGLVQPGGSLRLSCAASGFTFS NYAMGWVRQAPGKGLEWVSSIGASGAQTRYADSVKGRFTI  
SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGSSFFLYSKLTVDKSRWQQGNVDFCSV  
MHEALHNHYTQKSLSLSPG (SEQ ID NO: 22).

8. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein  
said light chain variable region has a sequence having at least 90% identity to the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVS WYQQHPGKAPKLMYGDSE RPSGVSNRFS GSKSGN  
TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has a sequence having at least 90% identity to the sequence of

EVQLLES GGGLVQPGGSLRLSCAASGFTFS TYAMGWVRQAPGKGLEWVSSIGASGGQTRYADSVKGRFTI  
SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGSSFFLYSKLTVDKSRWQQGNVDFCSV  
MHEALHNHYTQKSLSLSPG (SEQ ID NO: 23).

9. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has a sequence having at least 90% identity to the sequence of  
QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSQYQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
5 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has a sequence having at least 90% identity to the sequence of  
EVQLLESGLLVQPGGSLRLSCAASGFTFSTYAMGWVRQAPGKGLEWVSSIGASGSQTRYADSVKGRFTI  
10 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGTMTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHKPSNTKVDDK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGDSFFLYSKLTVDKSRWQQGNVDFCSV  
15 MHEALHNHYTQKSLSLSPG (SEQ ID NO: 24).

10. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSQYQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
20 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has the sequence of

EVQLLESGLLVQPGGSLRLSCAASGFTFSTYAMGWVRQAPGKGLEWVSSIGSSGAQTRYADSVKGRFTI  
25 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGTMTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVTVPSSSLGTQTYICNVNHKPSNTKVDDK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDE  
LTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGDSFFLYSKLTVDKSRWQQGNVDFCSVM  
30 HEALHNHYTQKSLSLSPG (SEQ ID NO: 20).

11. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSQYQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
35 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has the sequence of

EVQLLESGLLVQPGGSLRLSCAASGFTFSDYAMGWVRQAPGKGLEWVSSIGASGSQTRYADSVKGRFTI  
40 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGTMTVSSASTKGPSVFPLAPSSKSTSGGTAAL

GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDE  
LTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGDSFFLYSKLTVDKSRWQQGNVFSCSVM  
5 HEALHNHYTQKSLSLSPG (SEQ ID NO: 21).

12. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSWYQQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
10 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has the sequence of

EVQLLESGGGLVQPGGSLRLSCAASGFTFSNYAMGWRQAPGKGLEWVSSIGASGAQTRYADSVKGRFTI  
15 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGDSFFLYSKLTVDKSRWQQGNVFSCSV  
20 MHEALHNHYTQKSLSLSPG (SEQ ID NO: 22).

13. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSWYQQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
25 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP  
GAVTVAWKADSSPVKAGVETTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has the sequence of

EVQLLESGGGLVQPGGSLRLSCAASGFTFSTYAMGWRQAPGKGLEWVSSIGASGGQTRYADSVKGRFTI  
30 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGMVTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTPVLDSGDSFFLYSKLTVDKSRWQQGNVFSCSV  
35 MHEALHNHYTQKSLSLSPG (SEQ ID NO: 23).

14. An isolated antibody comprising a light chain variable region and a heavy chain variable region, wherein said light chain variable region has the sequence of

QSALTQPASVSGSPGQSITISCTGTGSDVGSYNLVSWYQQHPGKAPKLMYGDSEPSGVSNRFSGSKSGN  
40 TASLTISGLQAEDEADYYCSSYAGSGIYVFGTGTKVTVLGQPKAAPSVTLFPPSSEELQANKATLVCLISDFYP

GAVTVAWKADSSPVKAGVETTTTPSKQSNNKYAASSYLSLTPEQWKSHKSYSCQVTHEGSTVEKTVAPTEC  
S (SEQ ID NO: 19); and

said heavy chain variable region has the sequence of

EVQLLES GGGLVQPGGSLRLSCAASGFTFSTYAMGWVRQAPGKGLEWVSSIGASGSQTRYADSVKGRFTI  
5 SRDNSKNTLYLQMNSLRAEDTAVYYCARLAIGDSYWGQGTMTVSSASTKGPSVFPLAPSSKSTSGGTAAL  
GCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDDK  
VEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVSHEDPEVKFNWYVDGVEVH  
NAKTKPREEQYASTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREE  
MTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTPPVLDSDGSFFLYSKLTVDKSRWQQGNVDFSCSV  
10 MHEALHNHYTQKSLSLSPG (SEQ ID NO: 24).

15. A nucleic acid molecule encoding an isolated antibody of any one of claims 1-14.

16. A vector comprising the nucleic acid molecule of claim 15.

17. A host cell that expresses an isolated antibody of any one of claims 1-14, wherein said host cell  
comprises a nucleic acid molecule of claim 15 or a vector of claim 16, wherein said nucleic acid molecule or  
vector is expressed in said host cell.

18. A method of preparing an isolated antibody of any one of claims 1-14, wherein said method comprising:  
a) providing a host cell comprising a nucleic acid molecule of claim 15 or a vector of claim 16, and  
b) expressing said nucleic acid molecule or vector in said host cell under conditions that allow for the  
formation of said antibody.

19. A pharmaceutical composition comprising an isolated antibody of any one of claims 1-14 and one or  
more pharmaceutically acceptable carriers or excipients.

20. Use of an isolated antibody of any one of claims 1-14 or a pharmaceutical composition of claim 19 in the  
manufacture of a medicament for increasing IgG catabolism in a subject.

21. Use of an isolated antibody of any one of claims 1-14 or a pharmaceutical composition of claim 19 in the  
manufacture of a medicament for reducing autoantibodies in a subject.

22. Use of an isolated antibody of any one of claims 1-14 or a pharmaceutical composition of claim 19 in the  
manufacture of a medicament for reducing an immune complex-based activation of an immune response in a  
subject.