

**METHODS OF TREATING CHRONIC INFLAMMATORY DEMYELINATING POLYNEUROPATHY
USING ANTI-FCRN ANTIBODIES**

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 63/374,644, filed September 6, 2022, which is incorporated by reference herein in its entirety.

INCORPORATION-BY-REFERENCE OF SEQUENCE LISTING

[0002] The Sequence Listing XML associated with this application is provided electronically in XML file format and is hereby incorporated by reference into the specification. The name of the XML file containing the Sequence Listing XML is “MUNO-011_01WO_ST26”. The XML file is (66,055 bytes in size, created on August 18, 2023, and is being submitted electronically.

FIELD

[0003] The present disclosure relates to methods of treating Chronic Inflammatory Demyelinating Polyneuropathy using anti-FcRn antibodies.

BACKGROUND

[0004] Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) affects approximately 16,000 patients in the U.S. and 70% of these patients require ongoing treatment. CIDP is characterized by predominant demyelination of motor and sensory nerves. Although the cause of CIDP is unknown, significant evidence suggests that the disorder(s) are immunologically mediated (Mathey *et al.*, Journal of Neurology, Neurosurgery & Psychiatry 2015; Wolbert *et al.*, JCI Insight. 2020 Feb 13;5(3):e132411. doi: 10.1172/jci.insight.132411). Multiple immune mechanisms including cellular (macrophages), humoral and complement pathways contribute to the pathogenesis of CIDP. Koike H *et al.*, Neurol Ther. 2020 Dec;9(2):213-227; Querol *et al.*, Neurotherapeutics. 2022 Apr).

[0005] No autoantibodies are identified in 50-60% of CIDP patients, while anti-myelinated peripheral nerve IgG is found in 30-40% patients (Mathey *et al.*). Multiple immune mechanisms including cellular (macrophages), humoral and complement pathways contribute to the pathogenesis of CIDP. (Mathey *et al.*, Koike *et al.*).

[0006] CIDP is a long-term, chronic condition for many patients and often requires ongoing treatment. However, existing CIDP treatments can produce side effects and have logistical

challenges. Therefore there remains an unmet need for an effective treatment that can be easily administered.

[0007] Antibodies are immunological proteins that bind to a specific antigen. In most animals, including humans and mice, antibodies are constructed from paired heavy and light polypeptide chains and each chain is made up of two distinct regions, referred to as the variable and constant regions. The heavy and light chain variable regions show significant sequence diversity between antibodies and are responsible for binding to the target antigen. The constant regions show less sequence diversity and are responsible for binding a number of natural proteins to elicit various biochemical events.

[0008] Under normal conditions, the average serum half-life of most IgG (i.e., IgG1, IgG2, and IgG4, excluding the IgG3 isotype) is about 21 days in humans (Morell et al., J. Clin. Invest. 49(4):673-80, 1970), which is a prolonged period relative to the serum half-life of other plasma proteins. With respect to this prolonged serum half-life of IgG, IgG that enters cells by endocytosis can strongly bind to neonatal Fc receptor (FcRn) in endosomes at a pH of 6.0 to avoid the degradative lysosomal pathway (FcRn, a type of Fc gamma receptor, is also referred to as FcRP, FcRB, or Brambell receptor). When the IgG-FcRn complex cycles to the plasma membrane, IgG dissociates rapidly from FcRn in the bloodstream at slightly basic pH (~7.4). By this receptor-mediated recycling mechanism, FcRn effectively rescues the IgG from degradation in lysosomes, thereby prolonging the half-life of IgG (Roopenian et al., J. Immunol. 170:3528, 2003).

[0009] FcRn is a non-covalent heterodimer that typically resides in the endosomes of endothelial and epithelial cells. FcRn is a membrane bound receptor having three heavy chain alpha domains ($\alpha 1$, $\alpha 2$, and $\alpha 3$) and a single soluble light chain $\beta 2$ -microglobulin ($\beta 2m$) domain. Structurally, it belongs to a family of major histocompatibility complex class I molecules that have $\beta 2m$ as a common light chain. The FcRn chain has a molecular weight of about 46 kDa and is composed of an ectodomain containing the $\alpha 1$, $\alpha 2$, and $\alpha 3$ heavy chain domains and a $\beta 2m$ light chain domain and having a single sugar chain, a single-pass transmembrane, and a relatively short cytoplasmic tail.

SUMMARY

[0010] Provided herein is a method of treating CIDP in a patient in need thereof, comprising administering to the patient a first therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof, wherein the antibody or antigen-binding fragment comprises (a) a heavy chain variable region comprising a HCDR1 comprising the amino acid

sequence set forth in SEQ ID No: 27, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 28, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 29; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 30, an LCDR2 comprising the amino acid sequence of SEQ ID No: 31, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 32; or (b) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 49, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 22, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 23; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 50, an LCDR2 comprising the amino acid sequence of SEQ ID No: 25, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 26

[0011] In some embodiments, the antibody or antigen-binding fragment comprises (a) a heavy chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID No: 6, and a light chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID NO: 16; or (b) a heavy chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID No: 51, and a light chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID No: 52. In some embodiments, the antibody or antigen-binding fragment comprises (a) a heavy chain variable region comprising the sequence set forth in SEQ ID No: 6, and a light chain variable region comprising the sequence set forth in SEQ ID NO: 16; or (b) a heavy chain variable region comprising the sequence set forth in SEQ ID No: 51, and a light chain variable region comprising the sequence set forth in SEQ ID NO: 52.

[0012] In some embodiments, the antibody or antigen-binding fragment binds to FcRn with a K_D (dissociation constant) of 0.01 nM to 2 nM at pH 6.0 or pH 7.4. In some embodiments, the K_D is measured by surface plasmon resonance (SPR).

[0013] In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously. In some embodiments, the antibody or antigen-binding fragment is administered once as a once weekly.

[0014] In some embodiments, the first therapeutically effective amount of the antibody or antigen-binding fragment is 300 mg to 500 mg. In some embodiments, the first

therapeutically effective amount of the antibody or antigen-binding fragment is 340 mg. In some embodiments, the first therapeutically effective amount of the antibody or antigen-binding fragment is 500 mg to 700 mg. In some embodiments, the first therapeutically effective amount of the antibody or antigen-binding fragment is 680 mg. In some embodiments, the first effective amount of the antibody or antigen-binding fragment is administered for 12 weeks. In some embodiments, the first effective amount of the antibody or antigen-binding fragment is administered for at least 4 weeks or at least 12 weeks. In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously once weekly.

[0015] In some embodiments, the method further comprises administering a second therapeutically effective amount of the antibody or antigen-binding fragment to the subject. In some embodiments, the second therapeutically effective amount is 340 mg. In some embodiments, the second therapeutically effective amount of the antibody or antigen-binding fragment is administered for 12 weeks. In some embodiments, the first effective amount of the antibody or antigen-binding fragment is administered for at least 4 weeks or at least 12 weeks. In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously once weekly.

[0016] In some embodiments, the method further comprises administering a third therapeutically effective amount of the antibody or antigen-binding fragment to the subject. In some embodiments, the third therapeutically effective amount is 340 mg. In some embodiments, the third therapeutically effective amount is 680 mg. In some embodiments, the third therapeutically effective amount is administered for at least 4 weeks, at least 12 weeks, or at least 28 weeks. In some embodiments, the third therapeutically effective amount is administered for 28 weeks. In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously once weekly.

[0017] In some embodiments, the patient without a relapse during administering of the second therapeutically effective amount, is administered 340 mg of the antibody or antigen-binding fragment. In some embodiments, the patient with a relapse during administering of the second therapeutically effective amount, is administered 680 mg of the antibody or antigen-binding fragment (e.g., for at least 4 weeks) followed by administration of 340 mg of the antibody or antigen-binding fragment. In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously once weekly.

[0018] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered in combination with at least one additional therapeutic agent.

[0019] In another aspect, provided herein is a method of treating CIDP in a patient in need thereof, comprising administering to the patient a first therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof; wherein the antibody or antigen-binding fragment comprises: (a) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 27, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 28, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 29; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 30, an LCDR2 comprising the amino acid sequence of SEQ ID No: 31, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 32; or (b) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 49, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 22, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 23; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 50, an LCDR2 comprising the amino acid sequence of SEQ ID No: 25, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 26; and wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 340 mg or 680 mg administered subcutaneously once weekly, optionally wherein the administering is for about 12 weeks or more.

[0020] In some embodiments, the method further comprises administering a second therapeutically effective amount of the antibody or antigen-binding fragment to the patient, wherein the second therapeutically effective amount is 340 mg administered subcutaneously once weekly, optionally wherein the administering is for about 12 weeks or more.

[0021] In some embodiments, the method further comprises administering a third therapeutically effective amount of the antibody or antigen-binding fragment to the patient, wherein the patient has relapsed CIDP, wherein the third therapeutically effective amount is 680 mg administered subcutaneously once weekly, optionally wherein the administering is for about 4 weeks or more; and optionally followed by administration of 340 mg subcutaneously once weekly for a period of time.

[0022] In some embodiments, the patient is a human.

BRIEF DESCRIPTION OF DRAWINGS

[0023] FIG. 1 is a schematic showing a Phase 2B trial of anti-FcRn antibodies in the treatment of CIDP. The four cohorts (A-D) are defined by CIDP treatment at screening., Participants in cohorts A, B and D who fail to worsen by Week 0 will be withdrawn from the study at Week 0., Period 1 Non-Responders who complete Period 1 will be withdrawn from the study after completing Week 12 and the subsequent 4-week Follow-Up visit. Period 1 Non-Responders who require protocol-prohibited rescue therapy prior to Week 12 will discontinue IMP and may return to standard of care; these participants will be encouraged to remain in the study for Safety Follow-Up through Week 12 and the Follow-Up Visit., Participants that relapse in Period 2 or complete Period 2 without relapse will be eligible for participation in the Long-Term Extension study. Acronyms: CIDP= Chronic Inflammatory Demyelinating Polyneuropathy; EAN/PNS = European Academy of Neurology/Peripheral Nerve Society; Ig = immunoglobulin (IVIg and SCIg) therapy; IMP = investigational medicinal product; LTE = Long-term Extension; PLEX = plasma exchange; QW = every week; Wk = weekly; SC = subcutaneously; INCAT = Inflammatory Neuropathy Cause and Treatment.

DETAILED DESCRIPTION

[0024] In order that the disclosure may be more readily understood, certain terms are defined throughout the detailed description. Unless defined otherwise herein, all scientific and technical terms used in connection with the present disclosure have the same meaning as commonly understood by those of ordinary skill in the art. All references cited herein are also incorporated by reference for any purpose. To the extent a cited reference conflicts with the disclosure herein, the specification will control.

[0025] As used herein, the singular forms of a word also include the plural form, unless the context clearly dictates otherwise; as examples, the terms “a,” “an,” and “the” are understood to be singular or plural. By way of example, “an element” means one or more element. The term “or” means “and/or” unless the specific context indicates otherwise. All ranges, including those stated in the form of “between value X and value Y,” include the endpoints and all points in between unless the specific context indicates otherwise.

[0026] In some embodiments, the present disclosure is directed to a method of treating CIDP by administering an anti-FcRn antibody or an antigen-binding fragment thereof, or by administering a pharmaceutical composition comprising at least one pharmaceutically

acceptable carrier and an anti-FcRn antibody or an antigen-binding fragment thereof, to a patient in need of treatment. In some embodiments, the present disclosure is directed to a use of an anti-FcRn antibody or an antigen-binding fragment thereof in a method of treating CIDP by administering the anti-FcRn antibody or antigen-binding fragment, or by administering a pharmaceutical composition comprising at least one pharmaceutically acceptable carrier and the anti-FcRn antibody or antigen-binding fragment, to a patient in need of treatment. In some embodiments, the present disclosure is directed to a use of an anti-FcRn antibody or an antigen-binding fragment thereof in the manufacture of a medicament for treating CIDP. In some embodiments, the present disclosure is directed to an anti-FcRn antibody or an antigen-binding fragment thereof for use in a method of treating CIDP. Pharmaceutical compositions comprising an anti-FcRn antibody or an antigen-binding fragment thereof and at least one pharmaceutically acceptable carrier are also disclosed and are useful in the therapeutic methods and uses described herein.

[0027] As used herein, the term “treat” and its cognates refer to an amelioration of a disease, disorder, or condition (e.g., CIDP), or at least one discernible symptom thereof (e.g., any one or more of the signs and symptoms described herein). The term “treat” encompasses but is not limited to complete treatment or complete amelioration of one or more symptoms of CIDP. In some embodiments, “treat” refers to at least partial amelioration of at least one measurable physical parameter, not necessarily discernible by the patient, e.g., a reduction in the level of at least one autoantibody and/or pathogenic antibody (e.g., a pathogenic IgG) and/or the level of total serum IgG. In some embodiments, “treat” refers to inhibiting the progression of CIDP, either physically (e.g., stabilization of a discernible symptom), physiologically (e.g., stabilization of a physical parameter), or both. In some embodiments, “treat” refers to slowing the progression or reversing the progression of CIDP.

[0028] The antibodies, antigen-binding fragments, and pharmaceutical compositions disclosed herein can also be used in the prevention or prophylaxis of CIDP. For instance, a prophylactic method can comprise administering to a subject at risk of developing CIDP an antibody, antigen-binding fragment, or pharmaceutical composition disclosed herein to prevent or reduce the odds developing CIDP, or at least one discernible symptom thereof.

[0029] The terms “subject” and “patient” are used interchangeably herein to refer to any human or non-human animal. Non-human animals include all vertebrates (e.g., mammals and non-mammals) such as any mammal. Non-limiting examples of mammals include humans,

mice, rats, rabbits, dogs, monkeys, and pigs. In various embodiments, the subject is a human. In various embodiments, the subject is a human having or suspected of having CIDP.

[0030] In some embodiments, a patient in need of treatment for CIDP exhibits one or more signs and symptoms of CIDP (e.g., symmetric weakness of both proximal and distal muscles around the hip, shoulder, hands and/or feet, impairment in motor function, alterations or loss of sensation, incoordination, numbness, tingling, or prickling sensations, fatigue, burning, pain, clumsiness, difficulty swallowing, double vision, atrophy, reduced or absent deep tendon reflexes, abnormal walking, and/or impaired responses to various sensory stimuli) and/or has been diagnosed with any form of the condition by a treating clinician.

[0031] In some embodiments, a patient in need of treatment for CIDP (or a sample from the patient) has a detectable level of an anti-myelinated peripheral nerve IgG. In some embodiments, the anti-myelinated peripheral nerve IgG is present in the patient's blood. In some embodiments, the anti-myelinated peripheral nerve IgG is an anti-myelinated peripheral nerve IgG1. In some embodiments, the anti-myelinated peripheral nerve IgG is an anti-myelinated peripheral nerve IgG2. In some embodiments, the anti-myelinated peripheral nerve IgG is an anti-myelinated peripheral nerve IgG3. In some embodiments, the anti-myelinated peripheral nerve IgG is an anti-myelinated peripheral nerve IgG4.

[0032] In some embodiments, a patient in need of treatment (or a sample from the patient) has a detectable level of an anti-paranodal IgG. In some embodiments, the anti-paranodal IgG is present in the patient's blood. In some embodiments, the anti-paranodal IgG is an anti-paranodal IgG1. In some embodiments, the anti-paranodal IgG is an anti-paranodal IgG2. In some embodiments, the anti-paranodal IgG is an anti-paranodal IgG3. In some embodiments, the anti-paranodal IgG is an anti-paranodal IgG4. Paranodal antigen proteins include, for example, NF-155 and contactin-1.

[0033] One embodiment is a method of treating CIDP in a patient in need thereof, comprising administering to the patient (i) a therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof; or (ii) a pharmaceutical composition comprising at least one pharmaceutically acceptable carrier and a therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof.

[0034] Another embodiment is an anti-FcRn antibody or an antigen-binding fragment thereof for use in a method of treating CIDP in a patient in need thereof, the method comprising administering to the patient (i) a therapeutically effective amount of the antibody or antigen-binding fragment, or (ii) a pharmaceutical composition comprising at least one

pharmaceutically acceptable carrier and a therapeutically effective amount of the antibody or antigen-binding fragment.

[0035] Another embodiment is a use of an anti-FcRn antibody or an antigen-binding fragment thereof in a method of treating CIDP in a patient in need thereof, comprising administering to the patient (i) a therapeutically effective amount of the antibody or antigen-binding fragment; or (ii) a pharmaceutical composition comprising at least one pharmaceutically acceptable carrier and a therapeutically effective amount of the antibody or antigen-binding fragment.

[0036] Another embodiment is a use of an anti-FcRn antibody or an antigen-binding fragment thereof in the manufacture of a medicament for treating CIDP in a patient in need thereof.

[0037] In various embodiments of the therapeutic methods, uses, and compositions disclosed herein, an anti-FcRn antibody or antigen-binding fragment acts as a non-competitive inhibitor of IgG in binding to FcRn. In various embodiments, the binding of the antibody or antigen-binding fragment to FcRn inhibits the binding of at least one autoantibody and/or pathogenic antibody to FcRn. In various embodiments, such inhibition promotes clearance (i.e., removal) of the at least one autoantibody and/or pathogenic antibody from the body of the subject. In various embodiments, such inhibition reduces the half-life of the at least one autoantibody and/or pathogenic antibody. In various embodiments, such inhibition reduces the level of the at least one autoantibody and/or pathogenic antibody in the subject and/or in a sample from the subject. In various embodiments, a reduction in the level of the at least one autoantibody and/or pathogenic antibody results in and/or correlates with an improvement in at least one clinical parameter of CIDP.

[0038] As used herein, the term “autoantibody” refers to an antibody produced by an organism’s immune system that is directed against one or more of the organism’s own proteins, tissues, and/or organs. For instance, one or more autoantibodies may be produced by a human patient’s immune system when it fails to distinguish between “self” and “non-self.” In some embodiments, the autoantibody is a pathogenic antibody (e.g., a pathogenic IgG, e.g., a pathogenic IgG1, IgG2, IgG3, or IgG4). The term “pathogenic antibody,” as used herein, refers to an antibody (e.g., an autoantibody) that contributes to the pathogenesis of and/or causes one or more diseases, disorders, or conditions (e.g., CIDP).

[0039] In some embodiments, the pathogenic antibody is a pathogenic IgG (e.g., a pathogenic IgG1, IgG2, IgG3, or IgG4). In some embodiments, the pathogenic antibody

and/or pathogenic IgG is an anti-myelinated peripheral nerve IgG. In some embodiments, the pathogenic antibody is an anti-paranodal IgG.

[0040] In some embodiments, treatment of a patient with an antibody, antigen-binding fragment, or pharmaceutical composition described herein, e.g., using a method described herein, reduces the level of an anti-myelinated peripheral nerve IgG (e.g., an anti-myelinated peripheral nerve IgG1, an anti-myelinated peripheral nerve IgG2, an anti-myelinated peripheral nerve IgG3, and/or an anti-myelinated peripheral nerve IgG4) by least about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 60%, about 70%, about 80%, about 90%, or about 95%, i.e., relative to the level of the anti-myelinated peripheral nerve IgG prior to treatment. In some embodiments, treatment of a patient with an antibody, antigen-binding fragment, or pharmaceutical composition described herein, e.g., using a method described herein, reduces the level of an anti-paranodal IgG (e.g., an anti-paranodal IgG1, an anti-paranodal IgG2, an anti-paranodal IgG3, and/or an anti-anti-paranodal IgG4) by least about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 60%, about 70%, about 80%, about 90%, or about 95%, i.e., relative to the level of the anti-paranodal IgG prior to treatment.

[0041] In some embodiments, the autoantibody and/or pathogenic antibody is an IgG, IgM, IgA, IgD, or IgE. In some embodiments, the autoantibody and/or pathogenic antibody is an IgG (e.g., a pathogenic IgG). In some embodiments, the autoantibody and/or pathogenic antibody is an IgG1, IgG2, IgG3, or IgG4. In some embodiments, the autoantibody and/or pathogenic antibody is an IgG1 (e.g., a pathogenic IgG1, e.g., an anti-paranodal IgG1 or an anti-myelinated nerve IgG1). In some embodiments, the autoantibody and/or pathogenic antibody is an IgG2 (e.g., a pathogenic IgG2, e.g., an anti-paranodal IgG2 or an anti-myelinated nerve IgG2). In some embodiments, the autoantibody and/or pathogenic antibody is an IgG3 (e.g., a pathogenic IgG3, e.g., an anti-paranodal IgG3 or an anti-myelinated nerve IgG3). In some embodiments, the autoantibody and/or pathogenic antibody is an IgG4 (e.g., a pathogenic IgG4, e.g., an anti-paranodal IgG4 or an anti-myelinated nerve IgG4). In some embodiments, the autoantibody is a pathogenic antibody.

[0042] In various embodiments of the therapeutic methods, uses, and compositions disclosed herein, an anti-FcRn antibody or antigen-binding fragment can non-competitively inhibit the binding of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) to FcRn at physiological pH (i.e., pH 7.0-7.4). Without wishing to be bound by theory, it is believed that FcRn binds to its ligand (i.e., IgG) and does not substantially show affinity for

IgG at physiological pH rather than acidic pH. Thus, in various embodiments, at physiological pH, the anti-FcRn antibody or antigen-binding fragment may act as a non-competitive inhibitor of the binding of IgG to FcRn, and the binding of the anti-FcRn antibody or antigen-binding fragment to FcRn is not influenced by the presence of IgG. Thus, in various embodiments, the anti-FcRn antibody or antigen-binding fragment that binds specifically to FcRn non-competitively with IgG in a pH-independent manner has an advantage over conventional competitive inhibitors (i.e., antibodies that bind to FcRn competitively with IgG) in that it can provide therapeutic or prophylactic effects even at significantly low concentrations by the FcRn-mediated signaling of IgG. In addition, in various embodiments, in the procedure of intracellular migration in a state bound to FcRn, the anti-FcRn antibody or antigen-binding fragment can maintain its binding to FcRn with an affinity higher than IgG in blood. Thus, in various embodiments, the anti-FcRn antibody or antigen-binding fragment can inhibit the binding of IgG to FcRn even in endosomes that are acidic pH environments in which IgG can bind to FcRn, thereby promoting the clearance of IgG. In various embodiments, the anti-FcRn antibody or antigen-binding fragment is RVT-1401 (also referred to herein as HL161BKN and Batoclimab). In some embodiments, the antibody or antigen-binding fragment is RVT-1401, or an antigen-binding fragment thereof. RVT-1401/Batoclimab is also described in, e.g., international patent application publication WO2015/167293 (where it is referred to as HL161BKN), which is incorporated by reference herein in its entirety.

[0043] Illustrative CDR sequences of anti-FcRn antibodies are set forth in Table 1

Table 1: CDR sequences of heavy chain and light chain variable domains of selected human FcRn antibodies

Antibody	Heavy chain variable domain CDR			Light chain variable domain CDR		
	CDR1	CDR2	CDR3	CDR1	CDR2	CDR3
HL161A	SCVMT (SEQ ID NO: 21)	VISGSGGS TYYADSV KG (SEQ ID NO: 22)	TPWWLRS PFFDY (SEQ ID NO: 23)	GGNNIGS TSVH (SEQ ID NO: 24)	DDSDRP S (SEQ ID NO: 25)	VRDSSSD HVI (SEQ ID NO: 26)
HL161B (HL161BK) (HL161BKN)	FSYWV (SEQ ID NO: 27)	TIYYSGNT YYNPSLKS (SEQ ID NO: 28)	RAGILTGY LDS (SEQ ID NO: 29)	GGNNIGS KSVH (SEQ ID NO: 30)	DDSDRPS (SEQ ID NO: 31)	QVWDSSS DHVV (SEQ ID NO: 32)

Antibody	Heavy chain variable domain CDR			Light chain variable domain CDR		
	CDR1	CDR2	CDR3	CDR1	CDR2	CDR3
HL161C	GCYMH (SEQ ID NO: 33)	RINPNSGG TNYAQKF QG (SEQ ID NO: 34)	DYSGWSF DY (SEQ ID NO: 35)	RASQGIS NYLA (SEQ ID NO: 36)	AASSLQS (SEQ ID NO: 37)	QQYDSYP PTF (SEQ ID NO: 38)
HL161D	SYWYG (SEQ ID NO: 39)	NIYYSGST YYNPSLM S (SEQ ID NO: 40)	QLSYNWN DRLFDY (SEQ ID NO: 41)	GGNNIGS KNVH (SEQ ID NO: 42)	RDSNRPS (SEQ ID NO: 43)	QVWDSST VV (SEQ ID NO: 44)
HL161ANS	SSVMT (SEQ ID NO: 49)	VISGSGGS TYYADSV KG (SEQ ID NO: 22)	TPWWLRS PFFDY (SEQ ID NO: 23)	GGSNIGS TSVH (SEQ ID NO 50)	DDSDRPS (SEQ ID NO: 25)	VRDSSSD HVI (SEQ ID NO: 26)

[0044] In some embodiments, the antibody or antigen-binding fragment comprises three heavy chain CDR amino acid sequences of SEQ ID No: 27 (HCDR1), SEQ ID No: 28 (HCDR2), SEQ ID No: 29 (HCDR3); and three light chain CDR amino acid sequences of SEQ ID No: 30 (LCDR1), SEQ ID No: 31 (LCDR2), SEQ ID No: 32 (LCDR3). In some embodiments, the antibody or antigen-binding fragment comprises three heavy chain CDR amino acid sequences of SEQ ID No: 49 (HCDR1), SEQ ID No: 22 (HCDR2), SEQ ID No: 23 (HCDR3); and three light chain CDR amino acid sequences of SEQ ID No: 50 (LCDR1), SEQ ID No: 25 (LCDR2), SEQ ID No: 26 (LCDR3).

[0045] Illustrative heavy and light chain variable regions of anti-FcRn antibodies are set forth in Table 2.

Table 2: Amino acid sequences of heavy chain and light chain variable domains of selected human FcRn antibodies

Antibody	Heavy chain variable domain amino acid Sequence	Light chain variable domain amino acid sequence
HL161A	EVQLLESGGG LVQPGGSLRL SCAASEFTFG SCVMTWVRQA PGKGLEWVSV ISGSGGSTYY ADSVKGRFTI SRDNSKNTLY LQMNSLRAED TAVYYCAKTP WWLRSPFFDY WGQGTLLTVSS (SEQ ID NO: 2)	SYVLTPPPSV SVAPGQTARI TCGGNNIGST SVHWYQQKPG QAPVLVHDD SDRPSGIPER FSGSNSGNTA TLISRVEAG DEADYYCQVR DSSSDHVIFG GGTKLTVLGQ PKAAPSVTL (SEQ ID NO: 12)

Antibody	Heavy chain variable domain amino acid Sequence	Light chain variable domain amino acid sequence
HL161B	QLLLQESGPG LVKPSETLSL TCTVSGGSLS SSFSYWVWIR QPPGKGLEWI GTIYYSGNTY YNPSLKSRLT ISVDTSKNHF SLNLSSVTAA DTAVYYCARR AGILTGYLDS WGQGT LVTVSS (SEQ ID NO: 4)	SYVLTQSPSV SVAPGQTARI TCGGNNIGSK SVHWYQQKPG QAPVLVYDD SDRPSGIPER FSASNSGNTA TLTISRVEAG DEADYYCQVW DSSSDHVVF GGTKLTVLGQ PKAAPSVTL (SEQ ID NO: 14)
HL161BK (HL161BKN)	QLLLQESGPG LVKPSETLSL TCTVSGGSLS SSFSYWVWIR QPPGKGLEWI GTIYYSGNTY YNPSLKSRLT ISVDTSKNHF SLKLSSVTAA DTAVYYCARR AGILTGYLDS WGQGT LVTVSS (SEQ ID NO: 6)	SYVLTQSPSV SVAPGQTARI TCGGNNIGSK SVHWYQQKPG QAPVLVYDD SDRPSGIPER FSASNSGNTA TLTISRVEAG DEADYYCQVW DSSSDHVVF GGTKLTVLGQ PKAAPSVTL (SEQ ID NO: 16)
HL161C	QVQLVQSGAE VKKPGASVKV SCKASGYTFT GCYMHWVRQA PGQGLEWMGR INPNSSGTNY AQKFQGRVTM TRDTSISTAY MDLSRLRSDD TAVYYCARDY SGWSFDYWGQ GTLVTVSS (SEQ ID NO: 8)	DIQMTQSPSS LSASVGDRV ITCRASQGIS NYLAWFQQK GKAPKSLIYA ASSLQSGVPS KFSGSGSGTD FTLTISLQS EDFATYYCQQ YDSYPPTFGG GTKVEIKRTV AAPSVFI (SEQ ID NO: 18)
HL161D	QLQLQESGPG LVKPSETLSL TCTVSGGSIS SSSYYWGWIR QPPGKGLEWI GNIYYSGSTY YNPSLMSRVT ISVDTSKNQF SLKLSSVTAA DTAVYYCARQ LSYNWNDRLF DYWGQGT LVT VSS (SEQ ID NO: 10)	SYELTQPLSV SVALGQTARI TCGGNNIGSK NVHWYQQKPG QAPVLVIYRD SNRPSGIPER FSGSNSGNTA TLTISRAQAG DEADYYCQVW DSSTVVFVGGG TKLTVLGQPK AAPSVTL (SEQ ID NO: 20)
HL161ANS	EVQLLESGGG LVQPGGSLRL SCAASEFTFG SSVMTWVRQA PGKGLEWVSV ISGSGGSTYY ADSVKGRFTI SRDNSKNTLY LQMNSLRAED TAVYYCAKTP WWLRSPFFDY WGQGT LVTVSS (SEQ ID NO: 51)	SYVLTQPPSV SVAPGQTARI TCGGSNIGST SVHWYQQKPG QAPVLVHDD SDRPSGIPER FSGSNSGNTA TLTISRVEAG DEADYYCQVR DSSSDHVIFG GGTKLTVLGQ PKAAPSVTL (SEQ ID NO: 52)

[0046] In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 6; and a light chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 16. In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain amino acid comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to

the sequence set forth in SEQ ID No: 46; and a light chain amino acid comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 48. In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain amino acid comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 51; and a light chain amino acid comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 52.

[0047] In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain variable region amino acid sequence of SEQ ID No: 6; and a light chain variable region amino acid sequence of SEQ ID No: 16. In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain amino acid sequence of SEQ ID No: 46; and a light chain amino acid sequence of SEQ ID No: 48. In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain amino acid sequence of SEQ ID No: 51; and a light chain amino acid sequence of SEQ ID No: 52.

[0048] Illustrative heavy chains and light chains of the anti-FcRn antibodies are set forth in Table 3.

Table 3: Amino acid sequences of full-length heavy chain and light chain of selected human FcRn antibodies

Antibody name	Heavy chain amino acid sequence	Light chain amino acid sequence
HL161BKN	QLLQESGPG LVKPSETLSL TCTVSGGSLS SSFSYWVWIR QPPGKGLEWI GTIYYSGNTY YNPSLKSRIT ISVDTSKNHF SLKLSSVTAA DTAVYYCARR AGILTGILDS WGQGTILTVS SASTKGPSVF PLAPSSKSTS GGTAALGCLV KDYFPEPVTV SWNSGALTSG VHTFPAVLQS SGLYSLSSVV TVPSSSLGTQ TYICNVNHKP SNTKVDKRV PKSCDKTHTC PPCAPEAAG GPSVFLFPPK PKDTLMISRT PEVTCVVVDV SHEDPEVKFN WYVDGVEVHN AKTKPREEQY NSTYRVVSVL TVLHQDWLNG KEYKCKVSNK ALPAPIEKTI SKAKGQPREP QVYTLPPSRE EMTKNQVSLT CLVKGFYPSD IAVEWESNGQ PENNYKTPP VLDSGDSFLL YSKLTVDKSR	SYVLTQSPSV SVAPGQTARI TCGGNIGSK SVHWYQQKPG QAPVLVVYDD SDRPSGIPER FSASNSGNTA TLTISRVEAG DEADYYCQVW DSSSDHVVFG GGTKLTVLGQ PKAAPSVTLF PPSSEELQAN KATLVCLISD FYPGAVTVAW KADSSPVKAG VETTTPSKQS NNKYAASSYL SLTPEQWKSH RSYSCQVTHE GSTVEKTVAP TECS (SEQ ID NO: 48)

Antibody name	Heavy chain amino acid sequence	Light chain amino acid sequence
	WQQGNVFSCS VMHEALHNHY TQKSLSLSPG (SEQ ID NO: 46)	
HL161ANS IgG1	EVQLLESGGG LVQPGGSLRL SCAASEFTFG SSVMTWVRQA PGKGLEWVSV ISGSGGSTYY ADSVKGRFTI SRDNSKNTLY LQMNSLRAED TAVYYCAKTP WWLRSPFFDY WGQGTLLTVS SASTKGPSVF PLAPSSKSTS GGTAALGCLV KDYFPEPVT SWNSGALTSG VHTFPAVLQS SGLYSLSSVV TVPSSSLGTQ TYICNVNHKP SNTKVDKRV PKSCDKTHC PPCAPEAAG GPSVFLFPPK PKDTLMISRT PEVTCVVVDV SHEDPEVKFN WYVDGVEVHN AKTKPREEQY NSTYRVVSVL TVLHQDWLNG KEYKCKVSNK ALPAPIEKTI SKAKGQPREP QVYTLPPSRE EMTKNQVSLT CLVKGFYPSD IAVEWESNGQ PENNYKTTTP VLDSGDSFFL YSKLTVDKSR WQQGNVFSCS VMHEALHNHY TQKSLSLSPG (SEQ ID NO: 53)	SYVLTQPPSV SVAPGQTARI TCGGSNIGST SVHWHYQQKPG QAPVLVVHDD SDRPSGIPER FSGSNSGNTA TLTISRVEAG DEADYYCQVR DSSSDHVIFG GGTKLTVLGQ PKAAPSVTLF PPSSEELQAN KATLVCLISD FYPGAVTVAW KADSSPVKAG VETTTPSKQS NNKYAASSYL SLTPEQWKSH RSYSCQVTHE GSTVEKTVAP TECS (SEQ ID NO: 54)
HL161ANS IgG4	EVQLLESGGG LVQPGGSLRL SCAASEFTFG SSVMTWVRQA PGKGLEWVSV ISGSGGSTYY ADSVKGRFTI SRDNSKNTLY LQMNSLRAED TAVYYCAKTP WWLRSPFFDY WGQGTLLTVS SASTKGPSVF PLAPCSRSTS ESTAALGCLV KDYFPEPVT SWNSGALTSG VHTFPAVLQS SGLYSLSSVV TVPSSSLGTK TYTCNVDHKP SNTKVDKRV SKYGPPCPPC PAPEFLGGPS VLFPPKPKD TLMISRTPEV TCVVVDVSQE DPEVQFNWYV DGVEVHNAKT KPREEQFNST YRVVSVLTVL HQDWLNGKEY KCKVSNKGLP SSIEKTISKA KGQPREPVY TLPPSQEEMT KNQVSLTCLV KGFYPSDIAV EWESNGQPEN NYKTTTPVLD SDGSFFLYSR LTVDKSRWQE GNVFSCSVMH EALHNHYTQK SLSSLG (SEQ ID NO: 55)	SYVLTQPPSV SVAPGQTARI TCGGSNIGST SVHWHYQQKPG QAPVLVVHDD SDRPSGIPER FSGSNSGNTA TLTISRVEAG DEADYYCQVR DSSSDHVIFG GGTKLTVLGQ PKAAPSVTLF PPSSEELQAN KATLVCLISD FYPGAVTVAW KADSSPVKAG VETTTPSKQS NNKYAASSYL SLTPEQWKSH RSYSCQVTHE GSTVEKTVAP TECS (SEQ ID NO: 56)

[0049] In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 46 53 or 55; and a light chain comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99 identical to the sequence set forth in SEQ ID No: 48, 54, or 56. In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain comprising the sequence set forth in SEQ ID No: 46 53 or 55; and a light chain comprising the sequence set forth in SEQ ID No: 48, 54, or 56.

[0050] Binding “affinity” refers to the strength of interaction between antibody and antigen at single antigenic sites. Within each antigenic site, the variable region of the antibody “arm” interacts through weak non-covalent forces with the antigen at numerous sites. In general, the more interactions, the higher the affinity.

[0051] As used herein, the term “specific,” “specifically binds,” and “binds specifically” refers to a binding reaction between an antibody or an antigen-binding fragment thereof (e.g., an anti-FcRn antibody or an antigen-binding fragment thereof) and a target antigen (e.g., FcRn) in a heterogeneous population of proteins and other biologics. Antibodies can be tested for specificity of binding by comparing binding to an appropriate antigen with binding to an alternate antigen or antigen mixture under a given set of conditions. If the antibody binds to the appropriate antigen with at least 2 times, at least 5 times, or at least 10 times (or more) higher affinity than to the alternate antigen or antigen mixture, then it is considered to be specific.

[0052] A “specific antibody” or a “target-specific antibody” is one that only binds the target antigen (e.g., FcRn), but does not bind (or exhibits minimal binding) to other antigens. In some embodiments, an antibody or an antigen-binding fragment thereof that specifically binds the target antigen (e.g., FcRn) has a K_D of less than 1×10^{-6} M, less than 1×10^{-7} M, less than 1×10^{-8} M, less than 1×10^{-9} M, less than 1×10^{-10} M, less than 1×10^{-11} M, less than 1×10^{-12} M, or less than 1×10^{-13} M at pH 6.0 or pH 7.4. In some embodiments, the K_D is about 0.01 nM to about 2 nM at pH 6.0 or pH 7.4. In some embodiments, the K_D is about 300 pM or less to about 2 nM or less at pH 7.4. In some embodiments, the K_D is about 2 nM or less to 900 pM or less at pH 6.0.

[0053] As used herein, the term “ K_D ” refers to the equilibrium dissociation constant for antibody-antigen binding, which is obtained from the ratio of k_d to k_a (i.e., k_d/k_a) and is generally expressed as a molar concentration (M). The term “ k_{assoc} ” or “ k_a ” refers to the

association rate of a particular antibody-antigen interaction, whereas the term " k_{dis} " or " k_d " refers to the dissociation rate of a particular antibody-antigen interaction. The measurement of k_d and/or k_a can be performed at 25°C or 37°C. K_D values for antibodies and antigen-binding fragments can be determined using methods well established in the art (see, e.g., Pollard, Mol. Biol. Cell 21(23):4061-7, 2010). In some embodiments, the K_D is measured by direct binding and/or competition binding assays (e.g., surface plasmon resonance and/or competition ELISA). In some embodiments, the K_D is measured by surface plasmon resonance (e.g., human FcRn-immobilized surface plasmon resonance). In some embodiments, the K_D of an anti-FcRn antibody or antigen-binding fragment disclosed herein is measured by human FcRn-immobilized surface plasmon resonance.

[0054] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody or antigen-binding fragment has a K_D (dissociation constant) of about 0.01 nM to 2 nM at pH 6.0 and pH 7.4, as determined by, e.g., surface plasmon resonance. In some embodiments, the anti-FcRn antibody or antigen-binding fragment has a K_D from about 300 pM or less to about 2 nM or less at pH 7.4 and/or has a K_D from about 2 nM or less to about 900 pM or less at pH 6.0, as determined by, e.g., surface plasmon resonance. In some embodiments, the anti-FcRn antibody or antigen-binding fragment binds to the outside of cells and when bound maintains its binding to endosomes. In some embodiments, the anti-FcRn antibody or antigen-binding fragment effectively blocks the binding of one or more autoantibodies to FcRn (e.g., human FcRn), as determined by, e.g., a blocking assay performed using human FcRn-expressing cells and FACS.

[0055] As used herein, the term "anti-FcRn antibody" or "antibody that binds specifically to FcRn" refers to any form of an antibody or an antigen-binding fragment thereof that binds specifically to FcRn, e.g., those binding with a K_D of less than 2 nM at pH 6.0 or pH 7.4, as determined by, e.g., surface plasmon resonance (e.g., human FcRn-immobilized surface plasmon resonance). The term encompasses monoclonal antibodies (including full-length monoclonal antibodies), polyclonal antibodies, and biologically functional fragments so long as they bind specifically to FcRn.

[0056] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody or antigen-binding fragment comprises:

- a CDR1 comprising an amino acid sequence that is at least 90% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 21, 24, 27, 30, 33, 36, 39, 42, 49, and 50;

- a CDR2 comprising an amino acid sequence that is at least 90% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 22, 25, 28, 31, 34, 37, 40, and 43; and
- a CDR3 comprising an amino acid sequence that is at least 90% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 23, 26, 29, 32, 35, 38, 41, and 44.

[0057] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody or antigen-binding fragment comprises:

- a CDR1 comprising an amino acid sequence that is at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 21, 24, 27, 30, 33, 36, 39, 42, 49 and 50;
- a CDR2 comprising an amino acid sequence that is at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 22, 25, 28, 31, 34, 37, 40, and 43; and
- a CDR3 comprising an amino acid sequence that is at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical to one or more amino acid sequences selected from the group consisting of SEQ ID Nos: 23, 26, 29, 32, 35, 38, 41, and 44.

[0058] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody or antigen-binding fragment may comprise one or more amino acid deletions, additions, or substitutions in the amino acid sequences described herein.

[0059] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody or antigen-binding fragment may comprise amino acid sequences identical to or having homology with the amino acid sequences described herein. The term “identity” or “homology” refers to a relationship between the sequences of two or more polypeptides, as determined by comparing the sequences. The term “identity” also means the degree of sequence relatedness between the polypeptides, as determined by the number of matches between strings of two or more amino acid residues. The percent “identity” between the two sequences is a function of the number of identical positions shared by the sequences (i.e., percent identity equals number of identical positions/total number of positions x 100), taking into account the number of gaps, and the length of each gap, which

need to be introduced for optimal alignment of the two sequences. The comparison of sequences and determination of percent identity between two sequences can be accomplished using a mathematical algorithm. For sequence comparison, typically one sequence acts as a reference sequence, to which test sequences are compared. When using a sequence comparison algorithm, test and reference sequences are entered into a computer, subsequence coordinates are designated, if necessary, and sequence algorithm program parameters are designated. Default program parameters can be used, or alternative parameters can be designated. The sequence comparison algorithm then calculates the percent sequence identities for the test sequences relative to the reference sequence, based on the program parameters. Additionally, or alternatively, the amino acid sequences disclosed herein can further be used as a “query sequence” to perform a search against public databases to, for example, identify related sequences. For example, such searches can be performed using the BLAST program of Altschul et al. (J. Mol. Biol. 215:403-10, 1990).

[0060] Two sequences are “substantially identical” if two sequences have a specified percentage of amino acid residues that are the same (i.e., 60% identity, optionally 65%, 70%, 75%, 80%, 85%, 90%, 95%, or 99% identity over a specified region, or, when not specified, over the entire sequence), when compared and aligned for maximum correspondence over a comparison window, or designated region as measured using one of the following sequence comparison algorithms or by manual alignment and visual inspection. Optionally, the identity exists over a region that is at least about 10 amino acids in length, or over a region that is about 20, 50, 200 or more amino acids in length. In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein comprise at least one amino acid sequence that is at least 90% identical to a sequence selected from the group consisting of SEQ ID Nos: 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20-48. In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein comprise at least one amino acid sequence that is at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical to a sequence selected from the group consisting of SEQ ID Nos: 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20-48.

[0061] In some embodiments, the antibody or antigen-binding fragment comprises a heavy chain variable region comprising:

- a CDR1 comprising an amino acid sequence of SEQ ID No: 21, CDR2 comprising an amino acid sequence of SEQ ID No: 22, and CDR3 comprising an amino acid sequence of SEQ ID No: 23;

- a CDR1 comprising an amino acid sequence of SEQ ID No: 27, CDR2 comprising an amino acid sequence of SEQ ID No: 28, and CDR3 comprising an amino acid sequence of SEQ ID No: 29;
- a CDR1 comprising an amino acid sequence of SEQ ID No: 33, CDR2 comprising an amino acid sequence of SEQ ID No: 34, and CDR3 comprising an amino acid sequence of SEQ ID No: 35;
- a CDR1 comprising an amino acid sequence of SEQ ID No: 39, CDR2 comprising an amino acid sequence of SEQ ID No: 40, and CDR3 comprising an amino acid sequence of SEQ ID No: 41; or
- a CDR1 comprising an amino acid sequence of SEQ ID No: 49, CDR2 comprising an amino acid sequence of SEQ ID No: 22, and CDR3 comprising an amino acid sequence of SEQ ID No: 23.

[0062] In some embodiments, the antibody or antigen-binding fragment comprises a light chain variable region comprising:

- a CDR1 comprising an amino acid sequence of SEQ ID No: 24, CDR2 comprising an amino acid sequence of SEQ ID No: 25, and CDR3 comprising an amino acid sequence of SEQ ID No: 26;
- a CDR1 comprising an amino acid sequence of SEQ ID No: 30, CDR2 comprising an amino acid sequence of SEQ ID No: 31, and CDR3 comprising an amino acid sequence of SEQ ID No: 32;
- a CDR1 comprising an amino acid sequence of SEQ ID No: 36, CDR2 comprising an amino acid sequence of SEQ ID No: 37, and CDR3 comprising an amino acid sequence of SEQ ID No: 38;
- a CDR1 comprising an amino acid sequence of SEQ ID No: 42, CDR2 comprising an amino acid sequence of SEQ ID No: 43, and CDR3 comprising an amino acid sequence of SEQ ID No: 44 or
- a CDR1 comprising an amino acid sequence of SEQ ID No: 50, CDR2 comprising an amino acid sequence of SEQ ID No: 25, and CDR3 comprising an amino acid sequence of SEQ ID No: 26.

[0063] In some embodiments, the antibody or antigen-binding fragment comprises one or more heavy chain variable regions and one or more light chain variable regions selected from the group consisting of:

- a heavy chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 21 (HCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 22 (HCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 23 (HCDR3); and a light chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 24 (LCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 25 (LCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 26 (LCDR3);
- a heavy chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 27 (HCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 28 (HCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 29 (HCDR3); and a light chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 30 (LCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 31 (LCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 32 (LCDR3);
- a heavy chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 33 (HCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 34 (HCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 35 (HCDR3); and a light chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 36 (LCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 37 (LCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 38 (LCDR3);
- a heavy chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 39 (HCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 40 (HCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 41 (HCDR3); and a light chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 42 (LCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 43 (LCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 44 (LCDR3); and
- a heavy chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 49 (HCDR1), CDR2 comprising an amino acid sequence of SEQ ID No: 22 (HCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 23 (HCDR3); and a light chain variable region comprising CDR1 comprising an amino acid sequence of SEQ ID No: 50 (LCDR1), CDR2 comprising an amino acid

sequence of SEQ ID No: 25 (LCDR2), and CDR3 comprising an amino acid sequence of SEQ ID No: 26 (LCDR3).

[0064] In some embodiments, the antibody or antigen-binding fragment comprises one or more heavy chain variable regions and/or one or more light chain variable regions comprising one or more amino acid sequences selected from the group consisting of amino acid sequences of SEQ ID Nos: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 51, and 52.

[0065] In some embodiments, the antibody or antigen-binding fragment comprises heavy chain variable region comprising an amino acid sequence of SEQ ID Nos: 2, 4, 6, 8, 10, or 51 and/or light chain variable region comprising an amino acid sequence of SEQ ID Nos: 12, 14, 16, 18, 20, or 52.

[0066] In some embodiments, the antibody or antigen-binding fragment comprises one or more heavy chain variable regions and one or more light chain variable regions selected from the group consisting of:

- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 2 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 12;
- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 4 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 14;
- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 6 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 16;
- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 8 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 18;
- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 10 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 20; and
- a heavy chain variable region comprising an amino acid sequence of SEQ ID No: 51 and a light chain variable region comprising an amino acid sequence of SEQ ID No: 52.

[0067] The terms “fragment,” “antibody fragment,” and “antigen-binding fragment,” as used herein in reference to an antibody, all refer to one or more fragments of a full-length antibody that retain the ability to specifically bind to the target antigen (e.g., FcRn) and/or provide a function of the full-length antibody (e.g., non-competitive interference with the binding of IgG to FcRn). Antigen-binding fragments can also be present in larger macromolecules, e.g., bispecific, trispecific, and multispecific antibodies, such as diabodies, triabodies and tetrabodies. Examples of antigen-binding fragments include, but are not limited to, single-chain antibodies, Fab fragments, F(ab')₂ fragments, Fd, scFv, domain antibodies, dual-specific antibodies, minibodies, scap (sterol regulatory binding protein cleavage activating protein), chelating recombinant antibodies, tribodies or bibodies, intrabodies, nanobodies, and small modular immunopharmaceuticals (SMIP).

[0068] In some embodiments, the antibody or antigen-binding fragment is a binding-domain immunoglobulin fusion protein, camelized antibody, VHH containing antibody, IgD antibody, IgE antibody, IgM antibody, IgG1 antibody, IgG2 antibody, IgG3 antibody, or IgG4 antibody. In some embodiments, the antibody or antigen-binding fragment comprises derivatives in the antibody constant regions. In some embodiments, the antibody or antigen-binding fragment is a synthetic antibody based on protein scaffolds that have the ability to bind to FcRn.

[0069] In some embodiments, an antigen-binding fragment shows the same or similar properties as those of the full-length antibody. Without limitation, an antigen-binding fragment can be produced by any suitable method known in the art. For instance, the various antigen-binding fragments described herein may be produced by enzymatic or chemical modification of full-length antibodies, synthesized de novo using recombinant DNA methodologies (e.g., scFv), or identified using phage display libraries (see, e.g., Pini and Bracci, *Curr. Protein Pept. Sci.* 1(2):155-69, 2000). Antigen-binding fragments may be screened for utility (e.g., specificity, binding affinity, activity) in the same manner as are full-length antibodies.

[0070] In addition, antibodies or antigen-binding fragments having a mutation in the variable and/or constant region may be used in the therapeutic methods, uses, and compositions described herein. Examples of such antibodies or antigen-binding fragments include antibodies having a conservative substitution of an amino acid residue in the variable region and/or constant region. As used herein, the term “conservative substitution” refers to a substitution with another amino acid residue having properties similar to those of the original

amino acid residue. For example, lysine, arginine and histidine have similar properties in that they have a basic side-chain, and aspartic acid and glutamic acid have similar properties in that they have an acidic side chain. In addition, glycine, asparagine, glutamine, serine, threonine, tyrosine, cysteine and tryptophan have similar properties in that they have an uncharged polar side-chain, and alanine, valine, leucine, threonine, isoleucine, proline, phenylalanine and methionine have similar properties in that they have a non-polar side-chain. Also, tyrosine, phenylalanine, tryptophan and histidine have similar properties in that they have an aromatic side-chain. Thus, it will be obvious to those skilled in the art that, even when substitution of amino acid residues in groups showing similar properties as described above occurs, it will likely show no significant change in the properties of the antibody or antigen-binding fragment.

[0071] In addition, in some embodiments, the antibody or antigen-binding fragment may be conjugated to another substance (e.g., a therapeutic agent or a detectable label). Substances that may be conjugated to, or administered in combination with, an antibody or antigen-binding fragment described herein include but are not limited to therapeutic agents that are generally used for the treatment of CIDP (e.g., a standard-of-care agent, e.g., any one or more of the standard-of-care agents described and/or incorporated by reference herein); substances that are capable of inhibiting the activity of FcRn; and moieties that may be physically associated with the antibody or antigen-binding fragment, e.g., to improve its stabilization and/or retention in circulation, e.g., in blood, serum, lymph, or other tissues. For example, the antibody or antigen-binding fragment can be associated with a polymer, e.g., a non-antigenic polymer such as polyalkylene oxide or polyethylene oxide. Suitable polymers will vary substantially by weight. Polymers having molecular number average weights ranging from about 200 to about 35,000 (or about 1,000 to about 15,000, and 2,000 to about 12,500) can be used. For example, the antibody or antigen-binding fragment can be conjugated to water soluble polymers, e.g., hydrophilic polyvinyl polymers, e.g., polyvinylalcohol and polyvinylpyrrolidone. Non-limiting examples of such polymers include, but are not limited to, polyalkylene oxide homopolymers such as polyethylene glycol (PEG) or polypropylene glycols, polyoxyethylenated polyols, copolymers thereof and block copolymers thereof, provided that the water solubility of the block copolymers is maintained.

[0072] In various embodiments, the antibody or antigen-binding fragment binds to FcRn with a K_D (dissociation constant) of 0.01 nM to 2 nM at pH 6.0 or pH 7.4, as measured by, e.g., surface plasmon resonance.

[0073] RVT-1401 (also referred to herein as HL161BKN) is an example of an anti-FcRn antibody. In some embodiments, the antibody or antigen-binding fragment is RVT-1401, or an antigen-binding fragment thereof. In some embodiments, the antibody or antigen-binding fragment comprises the three heavy chain CDR amino acid sequences of RVT-1401 (HCDR1 (SEQ ID No: 27), HCDR2 (SEQ ID No: 28), HCDR3 (SEQ ID No: 29)); and the three light chain CDR amino acid sequences of RVT-1401 (LCDR1 (SEQ ID No: 30), LCDR2 (SEQ ID No: 31), LCDR3 (SEQ ID No: 32)). In some embodiments, the antibody or antigen-binding fragment comprises the heavy chain variable region amino acid sequence of RVT-1401 (SEQ ID No: 6); and the light chain variable region amino acid sequence of RVT-1401 (SEQ ID No: 16). In some embodiments, the antibody or antigen-binding fragment comprises the heavy chain amino acid sequence of RVT-1401 (SEQ ID No: 46); and the light chain amino acid sequence of RVT-1401 (SEQ ID No: 48).

[0074] In various embodiments of the therapeutic methods and uses disclosed herein, the antibody or antigen-binding fragment is administered alone. In various embodiments, the antibody or antigen-binding fragment is administered in combination with at least one additional therapeutic agent. In various embodiments, the at least one additional therapeutic agent may comprise or consist of a standard-of-care agent or treatment for CIDP.

[0075] Administered “in combination” or “co-administration,” as used herein, means that two or more different treatments are delivered to a subject during the subject’s affliction with CIDP. For example, in some embodiments, the two or more treatments are delivered after the subject has been diagnosed with the disease, and before the disease has been cured or eliminated, or when a subject is identified as being at risk but before the subject has developed symptoms of the disease. In some embodiments, the delivery of one treatment is still occurring when the delivery of the second treatment begins, so that there is overlap. In some embodiments, the first and second treatment are initiated at the same time. These types of delivery are sometimes referred to herein as “simultaneous,” “concurrent,” or “concomitant” delivery. In other embodiments, the delivery of one treatment ends before delivery of the second treatment begins. This type of delivery is sometimes referred to herein as “successive” or “sequential” delivery. In some embodiments, the antibody or antigen-binding fragment and the at least at one additional therapeutic agent are administered simultaneously. In some embodiments, the antibody or antigen-binding fragment and the at least at one additional therapeutic agent are administered sequentially.

[0076] In some embodiments, the two treatments (e.g., an anti-FcRn antibody or antigen-binding fragment and a second therapeutic agent) are present in the same composition. Such compositions may be administered in any appropriate form and by any suitable route. In other embodiments, the two treatments (e.g., an anti-FcRn antibody or antigen-binding fragment and a second therapeutic agent) are administered in separate compositions, in any appropriate form and by any suitable route. For example, a composition comprising an anti-FcRn antibody or antigen-binding fragment and a composition comprising a second therapeutic agent (e.g., a standard-of-care treatment for CIDP) may be administered concurrently or sequentially, in any order at different points in time; in either case, they should be administered sufficiently close in time so as to provide the desired therapeutic or prophylactic effect.

[0077] The term “agent,” as used herein, refers to a chemical compound, a mixture of chemical compounds, a biological macromolecule, or an extract made from biological materials. The term “therapeutic agent” or “drug” refers to an agent that is capable of modulating a biological process and/or has biological activity. The anti-FcRn antibodies and antigen-binding fragments described herein are examples of therapeutic agents.

[0078] As used herein, the term “standard-of-care agent” refers to any therapeutic agent or other form of therapy that is accepted as a proper treatment for a certain type of disease (e.g., warm autoimmune hemolytic anemia). The term “standard dosage” or “standard dosing regimen,” as used herein, refers to any usual or routine dosing regimen for a therapeutic agent, e.g., a regimen proposed by the manufacturer, approved by regulatory authorities, or otherwise tested in human subjects to meet the average patient’s needs.

[0079] Example of a standard-of-care treatments and agents for CIDP include glucocorticoids (steroids), intravenous immunoglobulin (IVIg), subcutaneous immunoglobulin (SCIg), and plasma exchange (PLEx).

[0080] The anti-FcRn antibodies and antigen-binding fragments described herein may be administered in combination with any of the exemplary standard-of-care agents or therapies described herein. In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein are administered in combination with a glucocorticoid (steroid) or in combination with plasma exchange (PLEx). In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein are administered in combination with intravenous immunoglobulin (IVIg) and/or subcutaneous immunoglobulin (SCIg). In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein

are not administered in combination with any of the exemplary standard-of-care agents or therapies described herein. In some embodiments, the anti-FcRn antibodies and antigen-binding fragments described herein are administered alone or not administered in combination with any other agent or therapy.

[0081] Also provided herein are pharmaceutical compositions comprising the anti-FcRn antibody or an antigen-binding fragment thereof formulated together with at least one pharmaceutically acceptable carrier. The compositions may also contain one or more additional therapeutic agents that are suitable for treating for example, CIDP. Methods of formulating pharmaceutical compositions and suitable formulations are known in the art (see, e.g., "Remington's Pharmaceutical Sciences," Mack Publishing Co., Easton, PA). Appropriate formulation may depend on the route of administration.

[0082] As used herein, a "pharmaceutical composition" refers to a preparation of an anti-FcRn antibody or an antigen-binding fragment thereof in addition to other components suitable for administration to a patient, such as a pharmaceutically acceptable carrier and/or excipient. The pharmaceutical compositions provided herein may be suitable for administration *in vitro* and/or *in vivo*. In some embodiments, the pharmaceutical compositions provided herein are in such form as to permit administration and subsequently provide the intended biological activity of the active ingredient(s) and/or to achieve a therapeutic effect. The pharmaceutical compositions provided herein preferably contain no additional components which are unacceptably toxic to a subject to which the formulation would be administered.

[0083] As used herein, the terms "pharmaceutically acceptable carrier" and "physiologically acceptable carrier," which may be used interchangeably, refer to a carrier, diluent, or excipient that does not cause significant irritation to a subject and does not abrogate the biological activity and properties of the administered antibody or antigen-binding fragment. Thus, pharmaceutically acceptable carriers should be compatible with the active ingredient such as the antibody or an antigen-binding fragment thereof and may include physiological saline, sterile water, Ringer's solution, buffered saline, dextrose solution, maltodextrin solution, glycerol, ethanol, or a mixture of two or more thereof. Pharmaceutically acceptable carriers may also enhance or stabilize the composition, or can be used to facilitate preparation of the composition. Pharmaceutically acceptable carriers can include other conventional additives, such as antioxidants, buffers, solvents, bacteriostatic agents, dispersion media, coatings, antibacterial and antifungal agents, isotonic and absorption delaying agents, and the

like that are physiologically compatible. The carrier may be selected to minimize adverse side effects in the subject, and/or to minimize degradation of the active ingredient(s). In some embodiments, the carrier comprises one or more of L-histidine hydrochloride, L-histidine, L-arginine hydrochloride, and/or Polysorbate 20.

[0084] As used herein, the term "excipient" refers to an inert substance added to a pharmaceutical composition to further facilitate administration of an active ingredient. Formulations for parenteral administration can, for example, contain excipients such as sterile water or saline, polyalkylene glycols such as polyethylene glycol, vegetable oils, or hydrogenated naphthalenes. Other excipients include, but are not limited to, calcium bicarbonate, calcium phosphate, various sugars and types of starch, cellulose derivatives, gelatin, ethylene-vinyl acetate co-polymer particles, and surfactants, including, for example, polysorbate 20.

[0085] In various embodiments of the therapeutic methods, uses, and compositions disclosed herein, the anti-FcRn antibody, antigen-binding fragment, or pharmaceutical composition can be administered by a variety of methods known in the art. The route and/or mode of administration may vary depending upon the desired results. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered by oral, intravenous, intramuscular, intra-arterial, intramedullary, intradural, intracardial, transdermal, subcutaneous, intraperitoneal, gastrointestinal, sublingual, or local routes. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered orally or parenterally. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered parenterally, e.g., intravenously or subcutaneously (e.g., by injection or infusion). In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered subcutaneously (e.g., by injection or infusion). In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered as one or more subcutaneous injections. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered as a single (i.e., one) subcutaneous injection. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered as two or more (e.g., two) consecutive subcutaneous injections. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered without intravenous administration (e.g., intravenous induction) prior to the one or more subcutaneous injections. In some embodiments, the antibody, antigen-binding fragment, or

pharmaceutical composition is delivered via a syringe, a catheter, a pump delivery system, or a stent. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is delivered via a syringe (e.g., a pre-filled syringe). Depending on the route of administration, the active compound(s), i.e., the anti-FcRn antibody or antigen-binding fragment, may be coated in a material to protect the compound(s) from the action of acids and other natural conditions that may inactivate the compound(s).

[0086] An antibody, antigen-binding fragment, or pharmaceutical composition may be formulated as various forms such as a powder, tablet, capsule, liquid, injection, ointment, or syrup, and/or comprised in a single-dosage or multi-dosage container such as a sealed ampoule, vial, or syringe. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated as an injectable form. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated as an aqueous solution, suspension, or emulsion, with one or more excipients, diluents, dispersants, surfactants, binders, and/or lubricants. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is comprised in a syringe (e.g., a pre-filled syringe). In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is comprised in a syringe having and/or compatible with a small gauge needle (e.g., a needle greater than about 25 gauge, greater than about 26 gauge, greater than about 27 gauge, greater than about 28 gauge, greater than about 29 gauge, and/or greater than about 30 gauge).

[0087] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated to achieve stability and/or to prevent or minimize physical and/or chemical degradation prior to administration. Physical instability may involve processes such as denaturation and aggregation, while common chemical degradation pathways include but are not limited to cross-linking, deamidation, isomerization, oxidation, and fragmentation (see, e.g., Wang et al., J. Pharm. Sci. 91(1):1-26, 2007). As used herein, the term “stable” or “stability” when used to describe an antibody or an antigen-binding fragment thereof means that the antibody or antigen-binding fragment remains intact in a manner to retain activity (e.g., binding to FcRn) and/or achieve a therapeutic effect. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated with one or more pharmaceutically acceptable carriers (e.g., one or more excipients) such that it is stable under standard storage conditions. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated with one or more pharmaceutically

acceptable carriers (e.g., one or more excipients) such that it is stable at high concentrations. In some embodiments, the antibody or antigen-binding fragment can be stably concentrated at formulations up to about 150 mg/mL or above. In some embodiments, the antibody or antigen-binding fragment can be stably concentrated at formulations up to about 170 mg/mL or above. In some embodiments, the antibody or antigen-binding fragment can be stably concentrated at formulations above about 170 mg/mL (e.g., at about 180 mg/mL, at about 200 mg/mL, at about 220 mg/mL, or above). In some embodiments, the stably concentrated formulation (e.g., a formulation comprising up to about 170 mg/mL or above of the antibody or antigen-binding fragment) retains acceptable viscosity for administration via a small gauge needle. In some embodiments, the small gauge needle is greater than about 25 gauge, greater than about 26 gauge, greater than about 27 gauge, greater than about 28 gauge, greater than about 29 gauge, or greater than about 30 gauge.

[0088] Dosage regimens for the anti-FcRn antibody or antigen-binding fragment, either alone or in combination with one or more additional therapeutic agents or therapy, may be adjusted to provide the optimum desired response (e.g., a therapeutic response). For example, a single bolus of the anti-FcRn antibody or antigen-binding fragment may be administered at one time, several divided doses may be administered over a predetermined period of time, or the dose of the anti-FcRn antibody or antigen-binding fragment may be proportionally reduced or increased as indicated by the exigencies of the therapeutic situation. For any particular subject, specific dosage regimens may be adjusted over time according to the individual's need, and the professional judgment of the treating clinician. For instance, in some embodiments, the dose of the anti-FcRn antibody or antigen-binding fragment can be suitably determined by taking into consideration the patient's severity, condition, age, case history, and the like.

[0089] The anti-FcRn antibody or antigen-binding fragment may be formulated into pharmaceutically acceptable dosage forms by conventional methods known to those of skill in the art. Parenteral compositions, for example, may be formulated in dosage unit form for ease of administration and uniformity of dosage. As used herein, "dosage unit form" refers to physically discrete units suited as unitary dosages for the subjects to be treated; each unit contains a predetermined quantity of active compound calculated to produce the desired therapeutic effect in association with a pharmaceutically acceptable carrier. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated in dosage unit form. In some embodiments, the antibody, antigen-binding

fragment, or pharmaceutical composition is formulated in dosage unit form for subcutaneous administration. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated in dosage unit form for administration as one or more subcutaneous injections (e.g., one subcutaneous injection or two or more (e.g., two) consecutive subcutaneous injections). In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is formulated in dosage unit form (e.g., as one or more subcutaneous injections) for self-administration by the patient and/or for administration by a treating clinician.

[0090] Dosage values for the anti-FcRn antibody or antigen-binding fragment, compositions comprising the anti-FcRn antibody or antigen-binding fragment, and/or any additional therapeutic agent(s), may be selected based on the unique characteristics of the active compound(s) and the particular therapeutic effect to be achieved. A physician or veterinarian can start doses of the antibodies or antigen-binding fragments at levels lower than those required to achieve the desired therapeutic effect and gradually increase the dosage until the desired effect is achieved. A physician or veterinarian can also start doses of the antibodies or antigen-binding fragments at levels higher than those required to achieve the desired therapeutic effect and gradually decrease the dosage until the desired effect is achieved. In general, effective doses of the antibodies or antigen-binding fragments for the treatment of CIDP may vary depending upon many different factors, for example, on the stage of the disease, the severity of symptoms, and the subject's prognosis. The selected dosage level may also depend upon a variety of pharmacokinetic factors including the activity of the particular compositions employed, or the ester, salt or amide thereof, the route of administration, the time of administration, the rate of excretion of the particular compound being employed, the duration of the treatment, other drugs, compounds and/or materials used in combination with the particular compositions employed, the age, sex, weight, condition, general health and prior medical history of the patient being treated, and like factors. In some embodiments, the treatment may be administered once or several times. Intermittent and/or chronic (continuous) dosing strategies may be applied in view of the condition of the particular patient.

[0091] In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is employed in the methods, uses, and pharmaceutical compositions of the present disclosure.

[0092] As used herein, the terms “therapeutically effective amount” and “therapeutically effective dose” are used interchangeably herein to refer to an amount sufficient to decrease at least one symptom or measurable parameter associated with a disease, disorder, or condition; to normalize body functions in a disease, disorder, or condition that results in the impairment of specific bodily functions; and/or to provide improvement in, or slow the progression of, one or more clinically measured parameters of a disease, disorder, or condition. A therapeutically effective amount may, for example, be sufficient to treat, reduce the severity, delay the onset, and/or reduce the risk of occurrence of one or more symptoms of CIDP. A therapeutically effective amount, as well as a therapeutically effective frequency of administration, can be determined by methods known in the art and discussed herein. In some embodiments of the methods, uses, and compositions described herein, the anti-FcRn antibody or antigen-binding fragment is administered in an amount that is therapeutically effective when administered as a single agent. In some embodiments, the anti-FcRn antibody or antigen-binding fragment and at least one additional therapeutic agent are each administered in an amount that is therapeutically effective when the agents are used in combination. In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the level of total serum IgG and/or the level of at least one autoantibody (e.g., at least one IgG) in a patient having or suspected of having CIDP.

[0093] In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the level of total serum IgG and/or the level of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) in a patient with CIDP and/or in a sample from the patient with CIDP by at least about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, or about 80% relative to the level prior to treatment with the anti-FcRn antibody or antigen-binding fragment. In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the level of total serum IgG and/or the level of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) a patient with CIDP and/or in a sample from the patient with CIDP by at least about 40%, about 50%, about 60%, about 70%, or about 80% relative to the level prior to treatment with the anti-FcRn antibody or antigen-binding fragment. In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the serum

endogenous IgG concentration in a patient with CIDP and/or in a sample from the patient with CIDP to less than about 40%, about 50%, about 60%, about 70%, or about 80% of pretreatment values. In some embodiments, the autoantibody is an anti-myelinated peripheral nerve IgG. In some embodiments, the autoantibody is an anti-paranodal IgG.

[0094] The phrase “total IgG level” or “level of total serum IgG,” as used herein, refers to the serum endogenous IgG concentration, e.g., in a patient or in a biological sample (e.g., a blood sample) from a patient.

[0095] The phrase “level of at least one autoantibody,” as used herein, refers to the serum endogenous concentration of the at least one autoantibody, e.g., in a patient or in a biological sample from a patient.

[0096] The phrase “level of at least one IgG,” as used herein, refers to the serum endogenous concentration of the at least one IgG, e.g., in a patient or in a biological sample from a patient. In some embodiments, the at least one IgG comprises a pathogenic IgG. In some embodiments, the at least one IgG comprises serum IgG1. In some embodiments, the at least one IgG comprises serum IgG2. In some embodiments, the at least one IgG comprises serum IgG3. In some embodiments, the at least one IgG comprises serum IgG4.

[0097] The term “about” or “approximately,” as used herein in the context of numerical values and ranges, refers to values or ranges that approximate or are close to the recited values or ranges such that the embodiment may perform as intended, as is apparent to the skilled person from the teachings contained herein. These terms encompass values beyond those resulting from systematic error. In some embodiments, “about” or “approximately” means plus or minus 10% of a numerical amount.

[0098] In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the adjusted inflammatory neuropathy cause and treatment (Adj INCAT) score in a patient with CIDP and/or in a sample from the patient with CIDP. The AdjINCAT disability score is a measure of activity limitation and comprises two parts, the arm score and the leg score. Based on a patient’s level of impairment in their arms and legs, each part is scored between 0 and 5 points, resulting in an INCAT total score between 0 and 10. In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the Adj INCAT score of a patient by at least 1 point, at least 2 points, at least 3 points, at least 4 points, at least 5 points, at least 6 points, at least 7 points, at least 8 points, or at least 9 points relative to the level prior to treatment with the anti-FcRn antibody or antigen-

binding fragment. In some embodiments, a therapeutically effective amount of the anti-FcRn antibody or antigen-binding fragment is the amount required to reduce the Adj INCAT score of a patient by 1 point, 2 points, 3 points, 4 points, 5 points, 6 points, 7 points, 8 points, 9 points, or 10 points relative to the level prior to treatment with the anti-FcRn antibody or antigen-binding fragment.

[0099] In various embodiments of the therapeutic methods and uses disclosed herein, the antibody or antigen-binding fragment is administered to a patient as a fixed dose. In various embodiments of the therapeutic methods and uses disclosed herein, the antibody or antigen-binding fragment is administered to a patient as a weight-based dose, i.e., a dose dependent on the patient's bodyweight. In various embodiments of the therapeutic methods and uses disclosed herein, the antibody or antigen-binding fragment is administered to a patient as a body surface area-based dose, i.e., a dose dependent on the patient's body surface area (BSA). In various embodiments, the dose administered to the patient comprises a therapeutically effective amount of the antibody or antigen-binding fragment.

[0100] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at dose of about 170 mg to about 1500 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at dose of about 300 mg to about 800 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 170 mg, about 200 mg, about 250 mg, about 300 mg, about 350 mg, about 400 mg, about 450 mg, about 500 mg, about 550 mg, about 600 mg, about 650 mg, about 700 mg, about 750 mg, about 800 mg, about 850 mg, about 900 mg, about 950 mg, about 1000 mg, about 1050 mg, about 1100 mg, about 1150 mg, about 1200 mg, about 1250 mg, about 1300 mg, about 1350 mg, about 1400 mg, about 1450 mg, or about 1500 mg, e.g., once weekly or once every 2 weeks.

[0101] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 170 mg to about 300 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 170 mg, about 180 mg, about 190 mg, about 200 mg, about 210 mg, about 220 mg, about 230 mg, about 240 mg, about 250 mg, about 260 mg, about 270 mg, about 280 mg, about 290 mg, or about 300 mg.

[0102] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 300 mg to about 500 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 300 mg, about 310 mg, about 320 mg, about 330 mg, about 340 mg, about 350 mg, about 360 mg, about 370 mg,

about 380 mg, about 390 mg, about 400 mg, about 410 mg, about 420 mg, about 430 mg, about 440 mg, about 450 mg, about 460 mg, about 470 mg, about 480 mg, about 490 mg, or about 500 mg.

[0103] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 300 mg to about 400 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 300 mg, about 310 mg, about 320 mg, about 330 mg, about 340 mg, about 350 mg, about 360 mg, about 370 mg, about 380 mg, about 390 mg, or about 400 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 320 mg, about 330 mg, about 340 mg, about 350 mg, or about 360 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly or once every 2 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly as a single subcutaneous injection. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly for at least 2 weeks (e.g., 2 weeks, 3 weeks, 4 weeks, 5 weeks, 6 weeks, 7 weeks, 8 weeks, 10 weeks, 12 weeks, or longer). In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly for at least 4 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly for at least 7 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 340 mg once weekly for at least 12 weeks.

[0104] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 500 mg to about 700 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 500 mg, about 510 mg, about 520 mg, about 530 mg, about 540 mg, about 550 mg, about 560 mg, about 570 mg, about 580 mg, about 590 mg, about 600 mg, about 610 mg, about 620 mg, about 630 mg, about 640 mg, about 650 mg, about 660 mg, about 670 mg, about 680 mg, about 690 mg, or about 700 mg.

[0105] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 650 mg to about 750 mg. In some embodiments, the antibody or

antigen-binding fragment is administered to the patient at a dose of about 650 mg, about 660 mg, about 670 mg, about 680 mg, about 690 mg, about 700 mg, about 710 mg, about 720 mg, about 730 mg, about 740 mg, or about 750 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 660 mg, about 670 mg, about 680 mg, about 690 mg, or about 700 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly or once every 2 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly as two or more (e.g., two) consecutive subcutaneous injections. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly for at least 2 weeks (e.g., 2 weeks, 3 weeks, 4 weeks, 5 weeks, 6 weeks, 7 weeks, 8 weeks, 10 weeks, 12 weeks, or longer). In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly for at least 4 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly for at least 7 weeks. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 680 mg once weekly for at least 12 weeks.

[0106] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 700 mg to about 900 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 700 mg, about 710 mg, about 720 mg, about 730 mg, about 740 mg, about 750 mg, about 760 mg, about 770 mg, about 780 mg, about 790 mg, about 800 mg, about 810 mg, about 820 mg, about 830 mg, about 840 mg, about 850 mg, about 860 mg, about 870 mg, about 880 mg, about 890 mg, or about 900 mg.

[0107] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 900 mg to about 1100 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 900 mg, about 910 mg, about 920 mg, about 930 mg, about 940 mg, about 950 mg, about 960 mg, about 970 mg, about 980 mg, about 990 mg, about 1000 mg, about 1010 mg, about 1020 mg, about

1030 mg, about 1040 mg, about 1050 mg, about 1060 mg, about 1070 mg, about 1080 mg, about 1090 mg, or about 1100 mg.

[0108] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1100 mg to about 1300 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1100 mg, about 1110 mg, about 1120 mg, about 1130 mg, about 1140 mg, about 1150 mg, about 1160 mg, about 1170 mg, about 1180 mg, about 1190 mg, about 1200 mg, about 1210 mg, about 1220 mg, about 1230 mg, about 1240 mg, about 1250 mg, about 1260 mg, about 1270 mg, about 1280 mg, about 1290 mg, or about 1300 mg.

[0109] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1300 mg to about 1500 mg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1300 mg, about 1310 mg, about 1320 mg, about 1330 mg, about 1340 mg, about 1350 mg, about 1360 mg, about 1370 mg, about 1380 mg, about 1390 mg, about 1400 mg, about 1410 mg, about 1420 mg, about 1430 mg, about 1440 mg, about 1450 mg, about 1460 mg, about 1470 mg, about 1480 mg, about 1490 mg, or about 1500 mg.

[0110] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1 mg/kg to about 2000 mg/kg bodyweight. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1 mg/kg to about 200 mg/kg, about 200 mg/kg to about 400 mg/kg, about 400 mg/kg to about 600 mg/kg, about 600 mg/kg to about 800 mg/kg, about 800 mg/kg to about 1000 mg/kg, about 1000 mg/kg to about 1200 mg/kg, about 1200 mg/kg to about 1400 mg/kg, about 1400 mg/kg to about 1600 mg/kg, about 1600 mg/kg to about 1800 mg/kg, or about 1800 mg/kg to about 2000 mg/kg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1 mg/kg to about 200 mg/kg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1 mg/kg, about 10 mg/kg, about 20 mg/kg, about 30 mg/kg, about 40 mg/kg, about 50 mg/kg, about 60 mg/kg, about 70 mg/kg, about 80 mg/kg, about 90 mg/kg, about 100 mg/kg, about 110 mg/kg, about 120 mg/kg, about 130 mg/kg, about 140 mg/kg, about 150 mg/kg, about 160 mg/kg, about 170 mg/kg, about 180 mg/kg, about 190 mg/kg, or about 200 mg/kg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a dose of about 1 mg/kg to about 40 mg/kg. In some embodiments, the antibody or antigen-binding fragment is administered to the patient at a

dose of about 1 mg/kg, about 5 mg/kg, about 10 mg/kg, about 15 mg/kg, about 20 mg/kg, about 25 mg/kg, about 30 mg/kg, about 35 mg/kg, or about 40 mg/kg.

[0111] The frequency with which the antibody or antigen-binding fragment is administered to the patient, as a single agent or in combination with one or more additional therapeutic agents, may be once or more than once. In some embodiments, the antibody or antigen-binding fragment is administered on a single occasion. In some embodiments, the antibody or antigen-binding fragment is administered on multiple occasions. Intervals between dosages can be, e.g., daily, weekly, bi-weekly, monthly, or yearly. Intervals can also be irregular, e.g., based on measuring blood levels of the antibody or antigen-binding fragment in the patient in order to maintain a relatively consistent plasma concentration of the antibody or antigen-binding fragment; based on measuring levels of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) in order to maintain a reduced level of the at least one autoantibody and/or pathogenic antibody (e.g., the at least one IgG) so as to provide the desired therapeutic or prophylactic effect; and/or based on measuring levels of total serum IgG in order to maintain a reduced level of total serum IgG so as to provide the desired therapeutic or prophylactic effect. Intervals can also be irregular, e.g., based on measuring levels of hemoglobin in order to maintain an increased level of hemoglobin so as to provide the desired therapeutic or prophylactic effect. Alternatively, in some embodiments, the antibody or antigen-binding fragment can be administered as a sustained release formulation, in which case less frequent administration is required. Dosage and frequency may vary depending on the half-life of the antibody or antigen-binding fragment in the patient. The dosage and frequency of administration may also vary depending on whether the treatment is prophylactic or therapeutic. In prophylactic applications, a relatively low dosage may be administered at relatively infrequent intervals over a long period of time. Some patients may continue to receive treatment for the rest of their lives. In therapeutic applications, a relatively higher dosage at relatively shorter intervals is sometimes administered until progression of the disease is reduced or terminated, and optionally until the patient shows partial or complete amelioration of one or more symptoms of the disease. Thereafter, the patient may be administered a lower, e.g., prophylactic regime.

[0112] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once or more than once over a period of about 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days, 8 days, 9 days, 10 days, 11 days, 12 days, 13 days, 14 days, 1 week, 2 weeks, 3 weeks, 4 weeks, 1 month, 2 months, 3 months, 4

months, 5 months, 6 months, 7 months, 8 months, 9 months, 10 months, 11 months, 12 months, 18 months, 24 months, 30 months, 36 months, 48 months, 52 months, 60 months, or longer.

[0113] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once as a single dose.

[0114] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 1 week, at least 2 weeks, at least 3 weeks, at least 4 weeks, at least 5 weeks, at least 6 weeks, at least 7 weeks, at least 8 weeks, at least 9 weeks, at least 10 weeks, at least 12 weeks, at least 20 weeks, at least 24 weeks, at least 30 weeks, at least 40 weeks, at least 50 weeks, at least 60 weeks, at least 70 weeks, at least 76 weeks, at least 80 weeks, or longer. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for 6 to 76 weeks, or any time period in between. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 2 weeks, at least 3 weeks, at least 4 weeks, or at least 6 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 4 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 7 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 12 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 24 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly for at least 52 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly until sufficient to treat, prevent, reduce the severity, delay the onset, and/or reduce the risk of occurrence of one or more symptoms of CIDP.

[0115] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly as a single (i.e., one) subcutaneous injection. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly as two or more consecutive

subcutaneous injections (e.g., two consecutive subcutaneous injections). The term “consecutive,” as used herein in the context of subcutaneous injections (or other routes of administration), refers to two or more subcutaneous injections administered one after another, but sufficiently close in time so as to provide the desired therapeutic or prophylactic effect. In some embodiments, consecutive subcutaneous injections are administered within about 30 seconds, within about 1 minute, within about 2 minutes, within about 5 minutes, within about 10 minutes, within about 30 minutes, within about 1 hour, within about 2 hours, or within about 5 hours of one another.

[0116] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once every 2 weeks (bi-weekly). In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once every 2 weeks for at least 2 weeks, at least 4 weeks, at least 6 weeks, at least 8 weeks, at least 10 weeks, at least 12 weeks, at least 20 weeks, at least 24 weeks, at least 30 weeks, at least 40 weeks, at least 50 weeks, at least 60 weeks, at least 70 weeks, at least 76 weeks, at least 80 weeks, or longer. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once every 2 weeks for 6 to 76 weeks, or any time period in between. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once every 2 weeks for at least 12 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly for at least 12 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly for at least 24 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly for at least 52 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly for up to 24 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly for up to 52 weeks. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly until sufficient to treat, prevent, reduce the severity, delay the onset, and/or reduce the risk of occurrence of one or more symptoms of CIDP. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient weekly as a single subcutaneous injection. In some

embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once weekly as two or more consecutive subcutaneous injections.

[0117] In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once monthly. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once monthly for at least 1 month, at least 2 months, at least 3 months, at least 4 months, at least 5 months, at least 6 months, at least 7 months, at least 8 months, at least 9 months, at least 10 months, at least 11 months, at least 12 months, at least 18 months, at least 24 months, at least 30 months, at least 36 months, or longer. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once monthly until sufficient to treat, prevent, reduce the severity, delay the onset, and/or reduce the risk of occurrence of one or more symptoms of CIDP. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once monthly as a single subcutaneous injection. In some embodiments, the antibody, antigen-binding fragment, or pharmaceutical composition is administered to the patient once monthly as two or more consecutive subcutaneous injections.

[0118] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 1500 mg administered once as a single dose. More specifically, in some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 300 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 500 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 500 mg to about 700 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 700 mg to about 900 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 900 mg to about 1100 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1100 mg to about 1300 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1300 mg to about 1500 mg administered once as a single dose.

[0119] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 800 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 400 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 340 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 450 mg to about 550 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 500 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 700 mg to about 800 mg administered once as a single dose. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 765 mg administered once as a single dose. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, or about 50%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 25%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 35%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 45%. In some embodiments, maximum reduction in the level of total serum IgG in a patient occurs at about 5 days to about 20 days after administration of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, maximum reduction in the level of total serum IgG in a patient occurs at about 8 days to about 15 days after administration of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, maximum reduction in the level of total serum IgG occurs after about 3 to 5 doses (e.g., after about 4 doses) of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 5%, about 10%, about 15%, or about 20% (e.g., about 5% to about 30%). In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 10% (e.g., about 10% to about 15%). In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 20% (e.g., about 20% to about

25%). In some embodiments, treatment increases the level of hemoglobin in a patient by more than about 20% (e.g., about 25%, about 30%, or more).

[0120] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 1500 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 300 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 500 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 500 mg to about 700 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 700 mg to about 900 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 900 mg to about 1100 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1100 mg to about 1300 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1300 mg to about 1500 mg administered once weekly.

[0121] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 800 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 400 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 340 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 650 mg to about 750 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 680 mg administered once weekly. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, or about 80%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 60%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about 70%. In some embodiments, treatment reduces the level of total serum IgG in a patient by at least about

80%. In some embodiments, maximum reduction in the level of total serum IgG in a patient occurs at about 20 days to about 30 days after administration of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, maximum reduction in the level of total serum IgG in a patient occurs at about 24 days after administration of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, maximum reduction in the level of total serum IgG occurs after about 3 to 5 doses (e.g., after about 4 doses) of the antibody or antigen-binding fragment, or a pharmaceutical composition comprising the antibody or antigen-binding fragment. In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 5%, about 10%, about 15%, or about 20% (e.g., about 5% to about 30%). In some embodiments, treatment increases the level of hemoglobin in a patient by more than about 20%. In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 10% (e.g., about 10% to about 15%) after about 1 or 2 weeks of weekly dosing (e.g., 680 mg administered once weekly). In some embodiments, treatment increases the level of hemoglobin in a patient by at least about 20% (e.g., about 20% to about 25%) after about 1 or 2 weeks of weekly dosing (e.g., 680 mg administered once weekly or 340 mg administered once weekly). In some embodiments, an increase in the level of hemoglobin in a patient (e.g., an increase of about 10%, about 20%, or more) is maintained during the entire treatment period or a portion thereof. In some embodiments, an increase in the level of hemoglobin in a patient (e.g., an increase of about 10%, about 20%, or more) is maintained for at least 4 weeks (e.g., at least 4 weeks, 6 weeks, 8 weeks, 10 weeks, 12 weeks, or longer).

[0122] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 1500 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 800 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 300 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 500 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 500 mg to about 700 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the

antibody or antigen-binding fragment is about 700 mg to about 900 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 900 mg to about 1100 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1100 mg to about 1300 mg administered once every 2 weeks. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1300 mg to about 1500 mg administered once every 2 weeks.

[0123] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 1500 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 800 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 170 mg to about 300 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 300 mg to about 500 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 500 mg to about 700 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 700 mg to about 900 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 900 mg to about 1100 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1100 mg to about 1300 mg administered once monthly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 1300 mg to about 1500 mg administered once monthly.

[0124] In some embodiments of the therapeutic methods, uses, and compositions disclosed herein, the therapeutically effective amount of an antibody or antigen-binding fragment is about 340 mg or about 680 mg administered once weekly. In some embodiments, the antibody or antigen-binding fragment is administered subcutaneously.

[0125] In some embodiments, treatment with the antibody or antigen-binding fragment at a dose of about 340 mg or about 680 mg administered once weekly reduces the level of total serum IgG in a patient and/or a sample from a patient by at least about 40% (e.g., about 40%

to about 50%) after about 1 or 2 weeks of weekly dosing, relative to the level of total serum IgG in the patient and/or sample prior to treatment. In some embodiments, treatment with the antibody or antigen-binding fragment at a dose of about 340 mg or about 680 mg administered once weekly reduces the level of total serum IgG in a patient and/or a sample from a patient by at least about 60% (e.g., about 60% to about 70%) after about 3 weeks of weekly dosing, relative to the level of total serum IgG in the patient and/or sample prior to treatment. In some embodiments, treatment with the antibody or antigen-binding fragment at a dose of about 340 mg or about 680 mg administered once weekly reduces the level of total serum IgG in a patient and/or a sample from a patient by at least about 70% (e.g., about 70% to about 80%) after about 5 weeks of weekly dosing, relative to the level of total serum IgG in the patient and/or sample prior to treatment. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 680 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 680 mg administered once weekly for at least 2 weeks (e.g., 2 weeks, 3 weeks, 4 weeks, 5 weeks, 6 weeks, 7 weeks, 8 weeks, 10 weeks, 12 weeks, 24 weeks, 48 weeks, 52 weeks, or longer). In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 340 mg administered once weekly. In some embodiments, the therapeutically effective amount of the antibody or antigen-binding fragment is about 680 mg administered once weekly for at least 2 weeks (e.g., 2 weeks, 3 weeks, 4 weeks, 5 weeks, 6 weeks, 7 weeks, 8 weeks, 10 weeks, 12 weeks, 24 weeks, 48 weeks, 52 weeks, or longer).

[0126] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at one or more doses (e.g., two or more different doses). For example, in some embodiments, the antibody or antigen-binding fragment is administered to the patient at two different doses, e.g., at least one higher dose, followed by at least one lower dose. A higher dose (e.g., a higher dose of two different doses) may be referred to herein as an "induction" dose, i.e., a dose capable of reducing the level of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) in a patient and/or a sample from a patient. A lower dose (e.g., a lower dose of two different doses) may be referred to herein as a "maintenance" dose, i.e., a dose capable of maintaining the reduced level of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) in the patient and/or a sample from the patient following at least one induction dose of an antibody or antigen-binding fragment (e.g., about 20-80% of pretreatment (pre-induction dose) values). In some embodiments, a maintenance

dose maintains the level of at least one autoantibody and/or pathogenic antibody (e.g., at least one IgG) in the patient and/or a sample from the patient at about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, or about 80% of pretreatment (pre-induction dose) values.

[0127] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at two or more doses (e.g., three or more different doses). For example, in some embodiments, the antibody or antigen-binding fragment is administered to the patient at three different doses, e.g., at least one higher dose (e.g., 680 mg) for a period of time, followed by at least one lower dose (e.g., 340 mg) for a period of time, followed by a third dose for a period of time. In some embodiments, the third dose administered is the same as the higher dose administered (e.g., 680 mg). In some embodiments, the third dose administered is the same as the lower dose administered (e.g., 340 mg). In some embodiments, the third dose administered is about 340 mg per dose or 680 mg per dose. In some embodiments, where the patient has not relapsed during administration of the second, lower, dose, the patient is administered the lower dose (e.g., 340 mg) in the third dose period. In some embodiments, where the patient has relapsed during administration of the second, lower, dose, the patient is administered as part of the third dose period the higher dose (e.g., 680 mg for, e.g., at least 4 weeks, at least 12 weeks, or at least 28 weeks) followed by a lower dose (e.g., 340 mg). In some embodiments, the administering is subcutaneous once weekly.

[0128] In some embodiments, the antibody or antigen-binding fragment is administered to the patient at two or more doses, wherein the patient has relapsed. In some embodiments, the patient has relapsed after treatment with at least one maintenance dose. In some embodiments, a relapsed patient is treated with about 680 mg dose followed by about 340 mg dose. In some embodiments, a relapsed patient is treated with about 680 mg dose administered subcutaneously once weekly for, e.g., 4 weeks or at least 4 weeks, followed by about 340 mg dose subcutaneous once weekly.

[0129] In some embodiments, the induction dose and the maintenance dose are alternated, e.g., the patient may receive the induction dose for a first period of time followed by the maintenance dose for a first period of time, followed by the induction dose for a second period of time, optionally followed by the maintenance dose for a second period of time. In some embodiments, the cycle of induction and maintenance dose (administration of the induction dose for a period of time followed by administration of the maintenance dose for a period of time being one cycle) is repeated one twice, three times, four times, five times, six

times seven times, or ten times. In some embodiments, the cycle of induction and maintenance dose is repeated for about 3 months, about 6 months, about 12 months, about 15 months, about 18 months, about 24 months, or longer.

[0130] In some embodiments, at least one higher dose and/or induction dose is about 680 mg per dose or more (e.g., about 700 mg per dose, about 720 mg per dose, about 750 mg per dose, or more). In some embodiments, the at least one higher dose and/or induction dose is about one dose, about 2 doses, about 3 doses, about 4 doses, or about 5 doses at about 680 mg per dose or more (e.g., about 700 mg per dose, about 720 mg per dose, about 750 mg per dose, or more). In some embodiments, the at least one higher dose and/or induction dose is about 3 doses at about 680 mg per dose or more (e.g., about 700 mg per dose, about 720 mg per dose, about 750 mg per dose, or more).

[0131] In some embodiments, the at least one higher dose and/or induction dose is administered to the patient once, once weekly, once every 2 weeks, or once monthly. In some embodiments, the at least one higher dose and/or induction dose is administered to the patient intravenously. In some embodiments, the at least one higher dose and/or induction dose is administered to the patient subcutaneously. In some embodiments, each higher dose is administered to the patient as one or more subcutaneous injections. In some embodiments, each higher dose is administered to the patient as two consecutive subcutaneous injections.

[0132] In some embodiments, at least one lower dose and/or maintenance dose is about 340 mg per dose. In some embodiments, the at least one lower dose and/or maintenance dose is about one dose, about 2 doses, about 3 doses, about 4 doses, or about 5 doses at about 340 mg per dose. In some embodiments, the at least one lower dose and/or maintenance dose is about 3 doses at about 340 mg per dose. In some embodiments, the at least one lower dose and/or maintenance dose is administered to the patient once, once weekly, once every 2 weeks, or once monthly. In some embodiments, the at least one lower dose and/or maintenance dose is administered to the patient subcutaneously. In some embodiments, each lower dose is administered to the patient as one or more subcutaneous injections. In some embodiments, each lower dose is administered to the patient as one subcutaneous injection.

[0133] In various embodiments, the present disclosure also provides a kit for use in the therapeutic applications described herein. In various embodiments, the present disclosure provides a kit comprising the anti-FcRn antibody or an antigen-binding fragment thereof for use in the treatment of prevention of CIDP. In various embodiments, the kit further comprises one or more additional components, including but not limited to: instructions for use; other

agents, e.g., one or more additional therapeutic agents (e.g., one or more standard-of-care agents); devices, containers, or other materials for preparing the antibody or antigen-binding fragment for therapeutic administration; pharmaceutically acceptable carriers (e.g., excipients); and devices, containers, or other materials for administering the antibody or antigen-binding fragment to a patient. In some embodiments, the kit comprises a prefilled syringe comprising a single dose (e.g. a dose provided herein) of the antibody or antigen-binding fragment thereof and instructions for use. Instructions for use can include guidance for therapeutic applications including suggested dosages and/or modes of administration, e.g., in a patient having or suspected of having CIDP. In various embodiments, the kit comprises the anti-FcRn antibody or an antigen-binding fragment thereof and instructions for therapeutic use, e.g., the use of the antibody or antigen-binding fragment to treat or prevent CIDP in a patient. In various embodiments, the kit further contains at least one additional therapeutic agent (e.g., for administering in combination with the antibody or antigen-binding fragment). In various embodiments, the antibody or antigen-binding fragment is formulated as a pharmaceutical composition.

[0134] In some embodiments, the anti-FcRn antibody or antigen-binding fragment is produced by expression and purification using a gene recombination method. In some embodiments, polynucleotide sequences that encode the variable regions of the antibody or antigen-binding fragment are produced by expression in separate host cells or simultaneously in a single host cell. Illustrative polynucleotides encoding the VH and VL and the heavy and light chains of anti-FcRn antibodies are set forth in Table 4 and Table 5, respectively.

Table 4: Polynucleotide sequences of heavy chain and light chain variable domains of selected human FcRn antibodies

Antibody	Heavy chain variable domain polynucleotide sequence	Light chain variable domain polynucleotide sequence
HL161A	GAAGTGCAGC TGCTGGAATC CGGCGGAGGC CTGGTGCAGC CTGGCGGCTC TCTGAGACTG TCCTGCGCCG CCTCCGAGTT CACCTTCGGC AGCTGCGTGA TGACCTGGGT CCGACAGGCT CCCGGCAAGG GCCTGGAATG GGTGTCCGTG ATCTCCGGCT CCGGCGGCTC CACCTACTAC GCCGACTCTG TGAAGGGCCG GTTCAACATC TCCCGGGACA ACTCCAAGAA CACCCTGTAC	TCTTACGTGC TGACCCAGCC CCCCTCCGTG TCTGTGGCTC CTGGCCAGAC CGCCAGAATC ACCTGTGGCG GCAACAACAT CGGCTCCACC TCCGTGCACT GGTATCAGCA GAAGCCCGGC CAGGCCCCCG TGCTGGTGGT GCACGACGAC TCCGACCGGC CTTCTGGCAT CCCTGAGCGG TTCTCCGGCT CCAACTCCGG CAACACCGCC ACCCTGACCA TCTCCAGAGT GGAAGCCGGC

Antibody	Heavy chain variable domain polynucleotide sequence	Light chain variable domain polynucleotide sequence
	CTGCAGATGA ACTCCCTGCG GGCCGAGGAC ACCGCCGTGT ACTACTGCGC CAAGACCCCC TGGTGGCTGC GGTCCCCCTT CTTCGATTAC TGGGGCCAGG GCACCCTGGT GACAGTGTCC TCC (SEQ ID NO: 1)	GACGAGGCCG ACTACTACTG CCAAGTGCGA GACTCCTCCT CCGACCACGT GATCTTCGGC GGAGGCACCA AGCTGACCGT GCTGGGGCCAG CCTAAGGCCG CTCCCTCCGT GACCCTG (SEQ ID NO: 11)
HL161B	CAACTGTTGC TCCAGGAATC CGGTCCTGGT CTTGTAAAGC CATCTGAGAC TCTCTCCCTT ACCTGTACCG TTAGCGGAGG AAGTCTTTCC TCAAGCTTCT CCTACTGGGT GTGGATCAGA CAGCCTCCCG GAAAAGGGTT GGAGTGGATT GGCACAATAT ACTACTCCGG CAACACTTAC TATAACCCCA GCCTGAAGAG CAGGCTGACT ATCTCTGTCG ACACCAGTAA AAATCACTTT TCTCTGAATC TGTCTTCAGT GACCGCAGCC GACACCGCCG TGTATTATTG CGCTCGGCGC GCCGGGATTC TGACAGGCTA TCTGGATTCA TGGGGCCAGG GGACATTGGT TACAGTGTCT AGT (SEQ ID NO: 3)	TCTTACGTGC TGACCCAGTC CCCCTCCGTG TCCGTGGCTC CTGGCCAGAC CGCCAGAATC ACCTGTGGCG GCAACAACAT CGGCTCCAAG TCCGTGCACT GGTATCAGCA GAAGCCCCGGC CAGGCCCCCG TGCTGGTGGT GTACGACGAC TCCGACCGGC CCTCTGGCAT CCCTGAGCGG TTCTCCGCCT CCAACTCCGG CAACACCGCC ACCCTGACCA TCTCCAGAGT GGAAGCCGGC GACGAGGCCG ACTACTACTG CCAAGTGTGG GACTCCTCCT CCGACCACGT GGTGTTTCGGC GGAGGCACCA AGCTGACCGT GCTGGGGCCAG CCTAAGGCCG CTCCCTCCGT GACCCTG (SEQ ID NO: 13)
HL161BK (HL161BKN)	CAGCTGCTGC TGCAAGAATC CGGCCCTGGC CTGGTGAAC CCTCCGAGAC ACTGTCCCTG ACCTGCACCG TGTCCGGCGG CTCCCTGTCC TCCAGCTTCT CCTACTGGGT CTGGATCCGG CAGCCCCCTG GCAAGGGCCT GGAATGGATC GGCACCATCT ACTACTCCGG CAACACCTAC TACAACCCCA GCCTGAAGTC CCGGCTGACC ATCTCCGTGG ACACCTCCAA GAACCACTTC AGCCTGAAGC TGTCTCCGT GACCGCCGCT GACACCGCCG TGTACTIONTG TGCCAGAAGG GCCGGCATCC TGACCGGCTA CCTGGACTCT TGGGGCCAGG GCACCCTGGT GACAGTGTCC TCC (SEQ ID NO: 5)	TCTTACGTGC TGACCCAGTC CCCCTCCGTG TCCGTGGCTC CTGGCCAGAC CGCCAGAATC ACCTGTGGCG GCAACAACAT CGGCTCCAAG TCCGTGCACT GGTATCAGCA GAAGCCCCGGC CAGGCCCCCG TGCTGGTGGT GTACGACGAC TCCGACCGGC CCTCTGGCAT CCCTGAGCGG TTCTCCGCCT CCAACTCCGG CAACACCGCC ACCCTGACCA TCTCCAGAGT GGAAGCCGGC GACGAGGCCG ACTACTACTG CCAAGTGTGG GACTCCTCCT CCGACCACGT GGTGTTTCGGC GGAGGCACCA AGCTGACCGT GCTGGGGCCAG CCTAAGGCCG CTCCCTCCGT GACCCTG (SEQ ID NO: 15)
HL161C	CAGGTGCAGC TCGTGCAGTC CGGCGCAGAG GTCAAAAAGC	GACATCCAGA TGACCCAGTC ACCATCATCC CTTTCCGCAT

Antibody	Heavy chain variable domain polynucleotide sequence	Light chain variable domain polynucleotide sequence
	CTGGTGCATC TGTGAAAGTG AGTTGCAAGG CTAGCGGCTA CACCTTTACC GGATGTTATA TGCATTGGGT ACGCCAAGCC CCCGGACAAG GCTTGGAATG GATGGGGCGT ATCAACCCAA ACTCTGGCGG GACTAATTAC GCCCAGAAGT TTCAGGGAAG GGTGACTATG ACAAGGGACA CATCCATATC CACCGCTTAT ATGGACCTGT CTCGACTGCG GTCTGATGAT ACAGCCGTTT ATTACTGCGC CAGAGACTAC AGCGGATGGA GCTTCGATTA TTGGGGGCAG GGTACTTTGG TCACAGTTTC AAGT (SEQ ID NO: 7)	CTGTCGGAGA TAGAGTGACT ATCACCTGCA GGGCTTCTCA AGGTATTTC AACTACCTCG CCTGGTTCCA GCAAAAGCCA GGTAAAGCCC CAAAGAGCTT GATCTACGCC GCTTCTAGTC TGCAGAGTGG AGTTCCTAGT AAGTTCTCCG GCTCTGGCAG TGGCACAGAT TTTACCTTGA CCATTTCCAG CCTGCAGTCT GAGGATTTTC CTACCTACTA TTGTCAGCAG TATGACAGCT ATCCCCCAC ATTTGGGGGG GGCACTAAGG TGGAGATAAA ACGGACAGTG GCTGCCCTT CTGTCTTTAT T (SEQ ID NO: 17)
HL161D	CAGCTGCAGT TGCAGGAGTC AGGCCCCGGT TTGGTTAAGC CTTCTGAAAC CCTTTCTCTC ACATGCACAG TATCCGGTGG CTCCATCTCC AGTTCAAGTT ACTACTGGGG ATGGATCCGG CAACCCCCAG GAAAAGGGCT GGAGTGGATT GGCAATATAT ATTACTCTGG GTCCACCTAT TACAACCCTT CCCTGATGAG TAGAGTGACC ATCAGCGTGG ACACAAGCAA AAACCAATTC AGCCTGAAGC TTTCTAGCGT GACCGCTGCC GACACAGCTG TCTATTACTG TGCCCGCCAG CTTAGTTATA ACTGGAATGA TAGGCTGTTT GATTACTGGG GCCAGGGGAC TCTCGTTACA GTCAGCAGC (SEQ ID NO: 9)	AGCTATGAGC TGACCCAGCC TCTGAGCGTA TCTGTCGCTC TCGGCCAGAC AGCCAGAATT ACCTGTGGCG GCAATAACAT AGGATCCAAA AATGTTCACT GGTATCAGCA AAAACCTGGC CAAGCTCCCG TGCTCGTGAT CTACCGGGAC TCTAACCGAC CCAGTGGAAT CCCCGAACGC TTAGCGGTT CCAACTCTGG AAATACAGCT ACTCTGACTA TCTCCAGGGC TCAGGCCGGG GATGAGGCCG ATTACTACTG CCAGGTGTGG GACTCAAGCA CAGTGGTCTT CGGCGGAGGT ACCAAGTTGA CTGTTCTTGG GCAGCCAAAG GCCGCACCTT CAGTGACCCT G (SEQ ID NO: 19)

Table 5: Polynucleotide sequences of full-length heavy chain and light chain of selected human FcRn antibodies

Antibody	Heavy chain polynucleotide sequence	Light chain polynucleotide sequence
HL161BKN	CAG CTG CTG CTG CAA GAA TCC GGC CCT GGC CTG GTG AAA CCC TCC GAG ACA CTG TCC CTG ACC TGC ACC GTG TCC GGC GGC TCC CTG TCC TCC AGC TTC TCC TAC TGG GTC TGG ATC CGG CAG CCC CCT GGC AAG	TCT TAC GTG CTG ACC CAG TCC CCC TCC GTG TCC GTG GCT CCT GGC CAG ACC GCC AGA ATC ACC TGT GGC GGC

Antibody	Heavy chain polynucleotide sequence	Light chain polynucleotide sequence
	GGC CTG GAA TGG ATC GGC ACC ATC TAC TAC TCC GGC AAC ACC TAC TAC AAC CCC AGC CTG AAG TCC CGG CTG ACC ATC TCC GTG GAC ACC TCC AAG AAC CAC TTC AGC CTG AAG CTG TCC TCC GTG ACC GCC GCT GAC ACC GCC GTG TAC TAC TGT GCC AGA AGG GCC GGC ATC CTG ACC GGC TAC CTG GAC TCT TGG GGC CAG GGC ACC CTG GTG ACA GTG TCC TCC GCC TCC ACC AAG GGC CCC TCC GTG TTC CCT CTG GCC CCC TCC AGC AAG TCC ACC TCT GGC GGC ACC GCT GCC CTG GGC TGT CTG GTG AAA GAC TAC TTC CCC GAG CCC GTG ACC GTG TCC TGG AAC TCT GGC GCC CTG ACC TCC GGC GTG CAC ACC TTC CCT GCC GTG CTG CAG TCC TCC GGC CTG TAC TCC CTG TCC AGC GTG GTG ACC GTG CCC TCC AGC TCT CTG GGC ACC CAG ACC TAC ATC TGC AAC GTG AAC CAC AAG CCC TCC AAC ACC AAG GTG GAC AAG CGG GTG GAA CCC AAG TCC TGC GAC AAG ACC CAC ACC TGT CCC CCC TGT CCT GCC CCT GAA GCT GCT GGC GGC CCT AGC GTG TTC CTG TTC CCC CCA AAG CCC AAG GAC ACC CTG ATG ATC TCC CGG ACC CCC GAA GTG ACC TGC GTG GTG GTG GAC GTG TCC CAC GAG GAC CCT GAA GTG AAG TTC AAT TGG TAC GTG GAC GGC GTG GAA GTG CAC AAC GCC AAG ACC AAG CCC AGA GAG GAA CAG TAC AAC TCC ACC TAC CGG GTG GTG TCC GTG CTG ACC GTG CTG CAC CAG GAC TGG CTG AAC GGC AAA GAG TAC AAG TGC AAG GTC TCC AAC AAG GCC CTG CCT GCC CCC ATC GAA AAG ACC ATC TCC AAG GCC AAG GGC CAG CCC CGC GAG CCC CAG GTG TAC ACA CTG CCC CCT AGC CGG GAA GAG ATG ACC AAG AAC CAG GTG TCC CTG ACA TGC CTG GTG AAG GGC TTC TAC CCC TCC GAC ATT GCC GTG GAA TGG GAG TCC AAC GGC CAG CCC GAG AAC AAC TAC AAG ACC ACC CCC CCT GTG CTG GAC TCC GAC GGC TCA TTC TTC CTG TAC TCC AAG CTG ACC GTG GAC AAG TCC CGG TGG CAG CAG GGC AAC GTG TTC TCC TGC TCC GTG ATG CAC GAG GCC CTG CAC AAC CAC TAC ACC CAG AAG TCC CTG TCC CTG AGC CCC GGC (SEQ ID NO: 45)	AAC AAC ATC GGC TCC AAG TCC GTG CAC TGG TAT CAG CAG AAG CCC GGC CAG GCC CCC GTG CTG GTG GTG TAC GAC GAC TCC GAC CGG CCC TCT GGC ATC CCT GAG CGG TTC TCC GCC TCC AAC TCC GGC AAC ACC GCC ACC CTG ACC ATC TCC AGA GTG GAA GCC GGC GAC GAG GCC GAC TAC TAC TGC CAA GTG TGG GAC TCC TCC TCC GAC CAC GTG GTG TTC GGC GGA GGC ACC AAG CTG ACC GTG CTG GGC CAG CCT AAG GCC GCT CCC TCC GTG ACC CTG TTC CCC CCA TCC TCC GAG GAA CTG CAG GCC AAC AAG GCC ACC CTG GTC TGC CTG ATC TCC GAC TTC TAC CCT GGC GCC GTG ACC GTG GCC TGG AAG GCC GAC AGC TCT CCT GTG AAG GCC GGC GTG GAA ACC ACC ACC CCC TCC AAG CAG TCC AAC AAC AAA TAC GCC GCC TCC TCC TAC CTG TCC CTG ACC CCC GAG CAG TGG AAG TCC CAC CGG TCC TAC AGC TGC CAA GTG ACA CAC GAG GGC TCC ACC GTG GAA AAG ACC GTG GCC CCT ACC GAG TGC TCC (SEQ ID NO: 47)
HL161ANS IgG1	ATGGGCTGGTCCTACATCATCCTGTTTCTGGT GGCCACCGCCGCCACCGTGCCTCC	ATGGGCTGGTCCTACA TCATCCTGTTTCTGGT

Antibody	Heavy chain polynucleotide sequence	Light chain polynucleotide sequence
	GAAGTGCAGCTGCTGGAATCCGGCGGAGGCC TGGTGCAGCCTGGCGGCTCTCTGAGACTGTCC TGCGCCGCCTCCGAGTTCACCTTCGGCAGCAG CGTGATGACCTGGGTCCGACAGGCTCCCGGC AAGGGCCTGGAATGGGTGTCCGTGATCTCCG GCTCCGGCGGCTCCACCTACTACGCCGACTCT GTGAAGGGCCGTTACCATCTCCCGGGACA ACTCCAAGAACACCCTGTACCTGCAGATGAA CTCCCTGCGGGCCGAGGACACCGCCGTGTACT ACTGCGCCAAGACCCCCCTGGTGGCTGCGGTCC CCCTTCTTCGATTACTGGGGCCAGGGCACCCCT GGTGACAGTGTCTCCGCCTCCACCAAGGGCC CCTCCGTGTTCCCTCTGGCCCCCTCCAGCAAG TCCACCTCTGGCGGCACCGCTGCCCTGGGCTG CCTGGTGAAAGACTACTTCCCCGAGCCCGTGA CCGTGTCTGGAACCTCTGGCGCCCTGACCTCC GGCGTGCACACCTTCCCTGCCGTGCTGCAGTC CTCCGGCCTGTACTCCCTGTCTCCGTGGTGA CCGTGCCCTCCAGCTCTCTGGGCACCCAGACC TACATCTGCAACGTGAACCACAAGCCCTCCA ACACCAAGGTGGACAAGCGGGTGGAACCCAA GTCCTGCGACAAGACCCACACCTGTCCCCCT GTCCTGCCCCCTGAAGCTGCTGGCGGCCCTAGC GTGTTCTCTGTTCCCCCCTAAAGCCCAAGGACAC CCTGATGATCTCCCGGACCCCCGAAGTGACCT GCGTGGTGGTGGACGTGTCCACGAGGACCC TGAAGTGAAGTTCAATTGGTACGTGGACGGC GTGGAAGTGCACAACGCCAAGACCAAGCCCA GAGAGGAACAGTACAACCTCCACCTACCGGGT GGTGTCTGTGCTGACCGTGCTGCACCAGGACT GGCTGAACGGCAAAGAGTACAAGTGCAAGGT GTCCAACAAGGCCCTGCCTGCCCCCATCGAA AAGACCATCTCCAAGGCCAAGGGCCAGCCCC GCGAGCCCCAGGTGTACACACTGCCCCCTAG CCGGGAAGAGATGACCAAGAACCAGGTGTCC CTGACCTGTCTGGTGAAAGGCTTCTACCCCTC CGACATTGCCGTGGAATGGGAGTCCAACGGC CAGCCCGAGAACAACCTACAAGACCACCCCCC CTGTGCTGGACTCCGACGGCTCATTCTTCCTG TACTCCAAGCTGACCGTGGAACAAGTCCCGGT GGCAGCAGGGCAACGTGTTCTCCTGCTCCGTG ATGCACGAGGCCCTGCACAACCACTACACCC AGAAGTCCCTGTCCCTGAGCCCCGGCTGAGTA TACTTAATTAAGTGGGCCTCATGGGCCTTCCG CTCACTGCCCGCTTTCCAG (SEQ ID NO: 57)	GCCACCGCCGCCACCG TGCACTCC TCTTACGTGCTGACCC AGCCCCCTCCGTGTC TGTGGCTCCTGGCCAG ACCGCCAGAATCACCT GTGGCGGCTCAAACAT CGGCTCCACCTCCGTG CACTGGTATCAGCAGA AGCCCGGCCAGGCCCC CGTGCTGGTGGTGCAC GACGACTCCGACCGGC CTTCTGGCATCCCTGA GCGGTTCTCCGGCTCC AACTCCGGCAACACCG CCACCCTGACCATCTC CAGAGTGGAAGCCGGC GACGAGGCCGACTACT ACTGCCAAGTGCGAGA CTCCTCCTCCGACCAC GTGATCTTCGGCGGAG GCACCAAGCTGACCGT GCTGGGCCAGCCTAAG GCCGCTCCCTCCGTGA CCCTGTTCCCCCATCC TCCGAGGAACTGCAGG CCAACAAGGCCACCCCT GGTCTGCCTGATCTCC GACTTCTACCCTGGCG CCGTGACCGTGGCCTG GAAGGCCGACAGCTCT CCTGTGAAGGCCGGCG TGGAAAACCACCACCC CTCCAAGCAGTCCAAC AACAAATACGCCGCT CCTCCTACCTGTCCCTG ACCCCCGAGCAGTGGA AGTCCCAACCGGTCTTA CAGCTGCCAAGTGACA CACGAGGGCTCCACCG TGGAAGAACCGGTGGC CCCTACCGAGTGCTCC TGA (SEQ ID NO: 58)
HL161 ANS IgG4	ATGGGCTGGTCCTACATCATCCTGTTTCTGGT GGCTACCGCCGCCACCGTGCATTCT	ATGGGCTGGTCCTACA TCATCCTGTTTCTGGTG

Antibody	Heavy chain polynucleotide sequence	Light chain polynucleotide sequence
	GAAGTTCAGCTGTTGGAGTCTGGCGGCGGATT GGTTCAACCTGGCGGATCTCTGAGACTGTCTT GCGCCGCCTCTGAGTTCACCTTCGGCTCCTCT GTGATGACCTGGGTCCGACAGGCTCCTGGCA AAGGACTGGAATGGGTGTCCGTGATCTCTGG CTCTGGCGGCTCTACCTACTACGCCGATTCTG TGAAGGGCAGATTACCATCAGCCGGGACAA CTCCAAGAACACCCTGTACCTGCAGATGAACT CCCTGAGAGCCGAGGACACCGCCGTGTACTA TTGTGCTAAGACCCCTTGGTGGCTGCGGTCCC CTTTCTTTGATTATTGGGGCCAGGGCACCCCTG GTCACCGTGTCTCTGCTTCTACAAAGGGCCC CTCTGTGTTCCCTCTGGCTCCTTGCTCTAGATC CACCTCCGAGTCTACCGCTGCTCTGGGCTGTC TGGTCAAGGACTACTTTCTGAGCCTGTGACC GTGTCTTGAACTCTGGTGCTCTGACCTCCGG CGTGCACACATTTCCAGCTGTGCTGCAGTCCT CCGGCCTGTACTCTCTGTCTCTGTCTGACCT GTGCCTTCTAGCTCTCTGGGCACCAAGACCTA CACCTGTAACGTGGACCACAAGCCTTCCAAC ACCAAGGTGGACAAGCGCGTGGAATCTAAGT ACGGCCCTCCTTGTCTTCCATGTCTGCTCCA GAATTCTCGGCGGACCCTCCGTGTTCTCTGTT TCCTCCAAAGCCTAAGGACACCCTGATGATCT CTCGGACCCCTGAAGTGACCTGCGTGGTGGTG GATGTGTCTCAAGAGGACCCCGAGGTGCAGT TCAATTGGTACGTGGACGGCGTGGAAGTGCA CAACGCCAAGACCAAGCCTAGAGAGGAACAG TTCAACTCCACCTACAGAGTGGTGTCTGTGCT GACCGTGCTGCACCAGGATTGGCTGAACGGC AAAGAGTACAAGTGCAAGGTGTCCAACAAGG GCCTGCCTTCCAGCATCGAAAAGACCATCTCC AAGGCTAAGGGCCAGCCTCGGGAACCTCAGG TTTACACCCTGCCTCCAAGCCAAGAGGAAAT GACCAAGAACCAGGTGTCCCTGACCTGCCTC GTGAAGGGCTTCTACCCTTCCGACATTGCCGT GGAATGGGAGTCTAACGGCCAGCCAGAGAAC AACTACAAGACAACCCCTCCTGTGCTGGACTC CGACGGCTCTTTCTTCCCTGTATTCTCGCCTGAC CGTGGACAAGTCTCGGTGGCAAGAGGGCAAC GTGTTCTCCTGTTCTGTGATGCACGAGGCCCT GCACAACCACTACACCCAGAAGTCCCTGTCTC TGTCC CTG GGC TAATGA (SEQ ID NO: 59)	GCCACCGCCGCCACCG TGC ACTCC TCTTACGTGCTGACCC AGCCCCCTCCGTGTC TGTGGCTCCTGGCCAG ACCGCCAGAATCACCT GTGGCGGCTCAAACAT CGGCTCCACCTCCGTG CACTGGTATCAGCAGA AGCCCGGCCAGGCCCC CGTGCTGGTGGTGCAC GACGACTCCGACCGGC CTTCTGGCATCCCTGA GCGGTTCTCCGGCTCC AACTCCGGCAACACCG CCACCCTGACCATCTC CAGAGTGGAAGCCGGC GACGAGGCCGACTACT ACTGCCAAGTGCGAGA CTCCTCCTCCGACCAC GTGATCTTCGGCGGAG GCACCAAGCTGACCGT GCTGGGCCAGCCTAAG GCCGCTCCCTCCGTGA CCCTGTTCCCCCATCC TCCGAGGAACTGCAGG CCAACAAGGCCACCCT GGTCTGCCTGATCTCC GACTTCTACCCTGGCG CCGTGACCGTGGCCTG GAAGGCCGACAGCTCT CCTGTGAAGGCCGGCG TGGA AACCACACCCC CTCCAAGCAGTCCAAC AACAAATACGCCGCT CCTCCTACCTGTCCCTG ACCCCCGAGCAGTGGA AGTCCCAACCGGTCTTA CAGCTGCCAAGTGACA CACGAGGGCTCCACCG TGGAAAAGACCGTGGC CCCTACCGAGTGCTCC TGA (SEQ ID NO: 60)

[0135] As used herein, the term "recombinant vector" refers to an expression vector capable of expressing a protein of interest in a suitable host cell. The term encompasses a DNA

construct including essential regulatory elements operably linked to express a nucleic acid insert.

[0136] As used herein, the term "operably linked" refers to a nucleic acid expression control sequence functionally linked to a nucleic acid sequence encoding a protein of interest so as to execute general functions. Operable linkage with the recombinant vector can be performed using a gene recombination technique well known in the art, and site-specific DNA cleavage and ligation can be easily performed using enzymes generally known in the art.

[0137] A suitable expression vector may include expression regulatory elements such as a promoter, an operator, an initiation codon, a stop codon, a polyadenylation signal, and an enhancer, as well as a signal sequence for membrane targeting or secretion. The initiation and stop codons are generally considered as part of a nucleotide sequence encoding the immunogenic target protein, and are necessary to be functional in an individual to whom a genetic construct has been administered, and must be in frame with the coding sequence. Promoters may generally be constitutive or inducible. Prokaryotic promoters include, but are not limited to, lac, tac, T3 and T7 promoters. Eukaryotic promoters include, but are not limited to, simian virus 40 (SV40) promoter, mouse mammary tumor virus (MMTV) promoter, human immunodeficiency virus (HIV) promoter such as the HIV Long Terminal Repeat (LTR) promoter, moloney virus promoter, cytomegalovirus (CMV) promoter, epstein barr virus (EBV) promoter, rous sarcoma virus (RSV) promoter, as well as promoters from human genes such as human β -actin, human hemoglobin, human muscle creatine, and human metallothionein. The expression vector may include a selectable marker that allows selection of host cells containing the vector. Genes coding for products that confer selectable phenotypes, such as resistance to drugs, a nutrient requirement, or resistance to cytotoxic agents or expression of surface proteins, may be used as general selectable markers. Since only cells expressing a selectable marker survive in the environment treated with a selective agent, transformed cells can be selected. Also, a replicable expression vector may include a replication origin, a specific nucleic acid sequence that initiates replication. Recombinant expression vectors that may be used include various vectors such as plasmids, viruses, and cosmids. The kind of recombinant vector is not limited, and the recombinant vector could function to express a desired gene and produce a desired protein in various host cells such as prokaryotic and eukaryotic cells. In some embodiments, a vector that can produce a large amount of a foreign protein similar to a natural protein while having strong expression ability with a promoter showing strong activity is used.

[0138] A variety of expression host/vector combinations may be used to express the anti-FcRn antibody or an antigen-binding fragment thereof. For example, expression vectors suitable for the eukaryotic host include, but are not limited to, SV40, bovine papillomavirus, adenovirus, adeno-associated virus, cytomegalovirus, and retrovirus. Expression vectors that may be used for bacterial hosts include bacterial plasmids such as pET, pRSET, pBluescript, pGEX2T, pUC, col E1, pCR1, pBR322, pMB9 and derivatives thereof, a plasmid such as RP4 having a wider host range, phage DNA represented as various phage lambda derivatives such as gt10, gt11 and NM989, and other DNA phages such as M13 and filamentous single-stranded DNA phage. Expression vectors useful in yeast cells include 2 μ m plasmid and derivatives thereof. A vector useful in insect cells is pVL941.

[0139] In some embodiments, the recombinant vector is introduced into a host cell to form a transformant. Host cells suitable for use include prokaryotic cells such as *E. coli*, *Bacillus subtilis*, *Streptomyces* sp., *Pseudomonas* sp., *Proteus mirabilis* and *Staphylococcus* sp., fungi such as *Aspergillus* sp., yeasts such as *Pichia pastoris*, *Saccharomyces cerevisiae*, *Schizosaccharomyces* sp., and *Neurospora crassa*, and eukaryotic cells such as lower eukaryotic cells, and higher other eukaryotic cells such as insect cells.

[0140] In some embodiments, host cells are derived from plants or animals (e.g., mammals), and examples thereof include, but are not limited to, monkey kidney cells (COS7), NSO cells, SP2/0, Chinese hamster ovary (CHO) cells, W138, baby hamster kidney (BHK) cells, MDCK, myeloma cells, HuT 78 cells and HEK293 cells. In some embodiments, CHO cells are used.

[0141] Transfection or transformation into a host cell may include any method by which nucleic acids can be introduced into organisms, cells, tissues or organs, and, as known in the art, may be performed using a suitable standard technique selected according to the kind of host cell. Methods include, but are not limited to, electroporation, protoplast fusion, calcium phosphate (CaPO₄) precipitation, calcium chloride (CaCl₂) precipitation, agitation with silicon carbide fiber, and agrobacterium-, PEG-, dextran sulfate-, lipofectamine- and desiccation/inhibition-mediated transformation.

[0142] The anti-FcRn antibody or antigen-binding fragment can be produced in large amounts by culturing the transformant comprising the recombinant vector in nutrient medium, and the medium and culture conditions that are used can be selected depending on the kind of host cell. During culture, conditions, including temperature, the pH of medium, and culture time, can be controlled so as to be suitable for the growth of cells and the mass

production of protein. The antibody or antigen-binding fragment produced by the recombination method as described herein can be collected from the medium or cell lysate and can be isolated and purified by conventional biochemical isolation techniques (Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Ed., Cold Spring Harbor Laboratory Press (1989); Deutscher, *Guide to Protein Purification Methods Enzymology*, Vol. 182. Academic Press. Inc., San Diego, CA (1990)). These techniques include, but are not limited to, electrophoresis, centrifugation, gel filtration, precipitation, dialysis, chromatography (e.g., ion exchange chromatography, affinity chromatography, immunosorbent chromatography, size exclusion chromatography, etc.), isoelectric point focusing, and various modifications and combinations thereof. In some embodiments, the antibody or antigen-binding fragment is isolated and purified using protein A.

EXAMPLES

[0143] Hereinafter, the present disclosure will be described in further detail with reference to examples. It will be obvious to a person having ordinary skill in the art that these examples are illustrative purposes only and are not to be construed to limit the scope of the present disclosure.

Example 1: Clinical Study of Batoclimab Treatment in CIDP

[0144] This Example describes a Phase 2b, multi-center, randomized, quadruple-blind, placebo-controlled study of Batoclimab treatment in adult participants with Active CIDP. A schematic of the clinical trial is shown in FIG. 1. Approximately 277 patients will be enrolled.

[0145] Four cohorts (designated as Cohort A, B, C, or D) are defined based on their baseline CIDP treatment and whether they meet diagnosis according to the EAN/PNS criteria (Cohorts A, B, and C) or clinical criteria (Cohort D) at the time of screening: Cohort A, immune globulin (IVIg or SCIg) therapy or PLEX; Cohort B, chronic systemic corticosteroids (i.e., pulsed or daily use); Cohort C, untreated (i.e., newly diagnosed patients or those who were previously stable off treatment and are currently presenting with disease worsening); and Cohort D, immune globulin (IVIg or SCIg) therapy or PLEX who meet clinical criteria for CIDP but do not meet full diagnostic criteria for CIDP per the EAN/PNS Guideline on Diagnosis and Treatment of CIDP.

[0146] Batoclimab is formulated as 340 mg pre-filled syringe (170 mg/mL, 2 mL) with 340 mg Batoclimab, 25.16 mg L-histidine hydrochloride, 12.416 mg L-histidine, 42.14 mg L-

arginine hydrochloride, and 0.4 mg Polysorbate 20 in water. Placebo preparation has the same buffering agents and surfactant (without batoclimab).

[0147] Participants in Cohorts A, B or D are entered into a washout period up to 12 weeks long in which their standard of care therapy is either stopped or tapered. Participants in cohort A, B, or D who fail to worsen by the end of this washout period (Week 0) are withdrawn from the study. Participants who meet criteria for worsening, and participants who enter the study in Cohort C and do not enter washout, are randomized to receive 680 mg or 340 mg batoclimab once weekly by subcutaneous injections in Period 1 (12 weeks long). Non-responders who complete Period 1 will be withdrawn from the study after completing Week 12 and the subsequent 4-week follow-up visit. Period 1 Non-Responders who require protocol-prohibited rescue therapy prior to Week 12 will discontinue batoclimab and may return to standard of care; these participants will be encouraged to remain in the study for Safety Follow-Up through Week 12 and the Follow-Up Visit.

[0148] In Period 2 (up to 24 weeks), participants are randomized to either placebo or 340 mg batoclimab, each administered weekly by subcutaneous injection. Participants that relapse in Period 2 or complete Period 2 without relapse will be eligible for participation in the Long-Term Extension study. Period 2 is followed by a long-term extension (LTE) period (of up to 52 weeks). In the LTE period, participants who relapsed in period 2 receive 680 mg batoclimab once weekly by subcutaneous injections for 4 weeks followed by 340 mg batoclimab once weekly subcutaneous injections. In the LTE period, participants who did not relapse in period 2 receive 340 mg batoclimab once weekly subcutaneous injections.

Objectives

[0149] The primary objective of the trial is to evaluate the efficacy of Batoclimab compared to placebo in maintaining clinical response as assessed by adjusted inflammatory neuropathy cause and treatment (Adj INCAT) score in participants receiving immune globulin (IVIg or SCIg) or plasma exchange (PLEX) treatment for CIDP at the time of screening.

[0150] Secondary objectives are (1) to evaluate the efficacy of Batoclimab compared to placebo in maintaining clinical response in participants receiving immune globulin (IVIg or SCIg) or PLEX treatment for CIDP at the time of screening; (2) to evaluate the efficacy of batoclimab compared to placebo in maintaining clinical response in participants receiving any CIDP treatment at the time of screening; and (3) to evaluate the efficacy of batoclimab compared to placebo in maintaining clinical response regardless of CIDP treatment history.

Inclusion criteria:

1. Are > 18 years at the Screening Visit.
2. Have met clinical diagnostic criteria for typical CIDP, or one of the following CIDP variants: multifocal CIDP, focal CIDP, or motor CIDP in accordance with the EAN/PNS Guideline on the Diagnosis and Treatment of CIDP. Clinical criteria for typical CIDP and variants are as follows (either criteria must be met):
 - a. Typical CIDP: All the following:
 - Progressive or relapsing, symmetric, proximal, and distal muscle weakness of upper and lower limbs, and sensory involvement of at least two limbs (at any point in the disease course)
 - Developing over at least 8 weeks
 - Absent or reduced tendon reflexes in all limbs
 - b. CIDP variants: One of the following, but otherwise as in typical CIDP (tendon reflexes may be normal in unaffected limbs):
 - Multifocal CIDP: documented sensory loss and muscle weakness in a multifocal pattern, usually asymmetric, upper limb predominant
 - Focal CIDP: sensory loss and muscle weakness in only one limb
 - Motor CIDP: motor symptoms and signs without sensory involvement

Cohorts A and B:

3. Have electrodiagnostic test results supporting the diagnosis of CIDP in accordance with the EAN/PNS Guideline on the Diagnosis and Treatment of CIDP (either criterion 3(a) or 3(b) must be met):
 - a. Motor nerve conduction criteria strongly supportive of demyelination.
 - b. Motor nerve conduction criteria weakly supportive of demyelination and 2 or more of the following additional diagnostic criteria:
 - Objective improvement to an empiric trial of therapy with immunoglobulin treatment, plasma exchange (PLEX) or corticosteroids.
 - Diagnostic imaging by ultrasound or magnetic resonance imaging (MRI) supporting the diagnosis of CIDP by demonstrating nerve enlargement.
 - Cerebrospinal fluid (CSF) demonstrating albuminocytologic dissociation (i.e., elevated CSF protein level [defined as > 70 milligrams per deciliter {mg/dL} or more than 10 mg/dL greater than years of age for those aged 60 years and over] with normal CSF white blood cell [WBC] level).

- Nerve biopsy demonstrating features supporting the diagnosis of CIDP such as edema, demyelination, and/or onion bulb formation.

Cohorts A and D only:

4. Are currently on, and have been receiving, immunoglobulin therapy (IVIg or SCIg) or PLEX for at least 3 months for the treatment of CIDP at the time of the Screening Visit. Note: Participants receiving chronic systemic corticosteroids in combination with immunoglobulin therapy or PLEX are allowed only if the corticosteroid dose remains stable and ≤ 10 mg/day prednisolone/prednisone or equivalent during Washout and through the duration of participation in Periods 1 and 2. Participants taking other immunosuppressive drugs are not excluded but must stop these drugs upon entering Washout.
5. Have had a documented response to immunoglobulin therapy or PLEX prior to the Screening Visit (criterion (a), (b), (c), or (d) below must be met):
 - a. Have had a trial of treatment withdrawal from (or a reduction in dose or frequency of) immunoglobulin therapy or PLEX in the 5 years prior to the Screening Visit with subsequent documented worsening of symptoms.
 - b. Have required an increase in therapy (i.e., an increase in dose or frequency of immunoglobulin therapy or PLEX) in the 12 months prior to the Screening Visit with documented improvement in signs and symptoms.
 - c. Have maintained an INCAT score of 0 or 1 (or clinical history consistent with an INCAT score of 0 or 1) with no need for an increase in therapy (i.e., no need for an increase in dose or frequency of immunoglobulin therapy or PLEX; and did not require an addition of corticosteroids to treatment regimen) after commencement of treatment and initial titration.
 - a. Note: Participants meeting criterion (c) must have an INCAT score of 0 or 1 at the Screening Visit.
 - d. Have had improvement documented to an empiric trial of therapy with immunoglobulin treatment or PLEX.

Cohort B only:

6. Are receiving a chronic, stable dose of systemic corticosteroids (i.e., daily or pulse regimen) for treatment of CIDP at the time of the Screening Visit (either criterion (a) or (b) below must be met):
 - a. Are receiving chronic oral corticosteroids equivalent to prednisolone/prednisone 20-40 mg/day (including an every other day or similar regimen) and are willing to follow the dose taper requirements in the Washout Period. See note below if participants are receiving doses below 20 mg/day.

Note: Stable dose is considered to be daily excursions ≤ 2.5 mg prednisone or prednisone equivalent for ≥ 3 months prior to the Screening Visit.

Note: Participants who are maintained on steroid doses below 20 mg/day prednisolone/prednisone or equivalent (including an every other day or similar regimen) may be considered for eligibility if they meet inclusion criteria 2(a) and 3(a) and after discussion with the Sponsor's Medical Monitor.
 - b. Are receiving chronic pulsed corticosteroid regimens defined as doses of ≥ 100 mg/day prednisolone/prednisone equivalent (i.e., intravenously [IV]/intramuscularly [IM] or orally [PO]) with a minimum interval between pulse treatments of ≥ 3 weeks and are willing to discontinue pulse treatments at the start of Washout.

Note: Stable dose is considered to be repetitive cycles without the need for dose adjustment to maintain disease control for ≥ 3 months prior to the Screening Visit.
7. Have had a documented response to any first-line standard of care therapy (immunoglobulin therapy, corticosteroids or PLEX) for CIDP (criterion (a), (b), (c), or (d) below must be met):
 - a. Have had a trial of treatment withdrawal from (or a reduction in dose or frequency of) immunoglobulin therapy, corticosteroids, or PLEX in the 5 years prior to the Screening Visit with subsequent documented worsening of symptoms.
 - b. Have required an increase in corticosteroid therapy (i.e., an increase in corticosteroid dose or frequency) in the 12 months prior to the Screening Visit with documented improvement in signs and symptoms.

- c. Have maintained an INCAT score of 0 or 1 (or clinical history consistent with an INCAT score of 0 or 1) with no need for an increase in therapy (i.e., no need for an increase in corticosteroid dose or frequency) after commencement of treatment and initial titration.

Note: Participants meeting criterion (c) must have an INCAT score of 0 or 1 at the Screening Visit.

- d. Have had improvement documented to an empiric trial of therapy with immunoglobulin treatment, PLEX, or corticosteroids.

Cohort C only:

- 8. Have a diagnosis of CIDP in accordance with the EAN/PNS Guideline on Diagnosis and Treatment of CIDP (van den Bergh, et al., 2021) based on clinical criteria and motor nerve conduction criteria strongly supportive of demyelination (i.e., motor nerve conduction criteria weakly supportive of demyelination is insufficient diagnostic evidence for admission to Cohort C).
- 9. Are currently not receiving treatment for CIDP at the Screening Visit (either criterion (a) or (b) below must be met):
 - a. Are naïve to treatment.
 - b. Have a history of prior treatment with immunoglobulin therapy (IVIg or SCIg), corticosteroids, or PLEX discontinued at least 3 months and no more than 24 months prior to the Screening Visit.
- 10. Have documented evidence of a clinical worsening of CIDP within the three months prior to the Screening Visit that requires initiation or re-initiation of treatment.
- 11. Have an INCAT score of ≥ 2 points at the Screening and Period 1 Baseline Visits.

Note: Participants with an INCAT score of 2 at study entry must have this score exclusively from the leg disability score; for participants with an INCAT score of ≥ 3 at study entry, there are no specific requirements for arm or leg.

- 12. Additional inclusion criteria are defined in the protocol.

Exclusion criteria:

- 1. Have presence of immunoglobulin M (IgM) paraproteinemia with or without anti-myelin-associated-glycoprotein antibodies.

2. Have Distal CIDP, Sensory CIDP or are suspected of having a diagnosis of autoimmune nodopathy in accordance with the EAN/PNS Guideline on the Diagnosis and Treatment of CIDP.
3. Have polyneuropathy of causes other than CIDP including but not limited to:
 - a. Multifocal motor neuropathy
 - b. Hereditary demyelinating neuropathy
 - c. Polyneuropathy, organomegaly, endocrinopathy, monoclonal protein and skin change syndromes (i.e., POEMS)
 - d. Lumbosacral radiculoplexus neuropathy
 - e. Systemic illnesses including vitamin deficiency syndromes and paraneoplastic neuropathies
 - f. Drug- or toxin-induced
4. Have diabetes mellitus (DM) and meets any of the following criteria:
 - a. Diagnosis of DM pre-dates the diagnosis of CIDP
 - b. Has ever required daily insulin therapy
 - c. Duration of DM is 5 years or greater
 - d. Has evidence of microvascular complications of DM including
 - e. retinopathy or nephropathy
5. Have a history of myelopathy or evidence of central demyelination.
6. Are receiving chronic oral corticosteroids monotherapy at a dose > 40 mg/day prednisolone/prednisone or its equivalent at the Screening Visit.
7. Are receiving chronic oral corticosteroid at a dose > 10 mg/day prednisone or equivalent in combination with immunoglobulin therapy or PLEX at the Screening Visit.
8. Additional exclusion criteria are defined in the protocol.

Endpoints:

[0151] The primary endpoint is the Proportion of participants who remain relapse-free at Week 36 where relapse is defined as a worsening (increase) of ≥ 1 point on the Adj INCAT score at any time point during Period 2 relative to Period 2 baseline which is sustained at a Follow-Up visit 1 week later.

[0152] Secondary Endpoints include:

- Period 2/ Cohort A:

- -Time to first relapse relative to Period 2 baseline
- Change from Period 2 baseline to Week 36 in:
 - Adj INCAT score
 - Inflammatory Rasch-built Overall Disability Scale (I-RODS)
 - Mean Grip Strength
 - Medical Research Council (MRC) Sum Score
 - Overall Neuropathy Limitations Scale (ONLS)
- Period 2/ Cohort A and B combined:
 - -Change from Period 2 baseline to Week 36 in:
 - Adj INCAT score
 - I-RODS
 - Mean Grip Strength
 - MRC Sum Score
 - ONLS
- Period 2/ Cohorts A, B and C combined:
 - Proportion of participants who remain relapse-free at Week 36

[0153] Although the present disclosure has been described in detail with reference to the specific features, it will be apparent to those skilled in the art that this description is only for purposes of illustration and does not limit the scope of the present disclosure. Thus, the substantial scope of the present disclosure will be defined by the appended claims and equivalents thereof.

CLAIMS

1. A method of treating CIDP in a patient in need thereof, comprising administering to the patient a first therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof; wherein the antibody or antigen-binding fragment comprises
 - (a) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 27, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 28, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 29; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 30, an LCDR2 comprising the amino acid sequence of SEQ ID No: 31, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 32; or
 - (b) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 49, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 22, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 23; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 50, an LCDR2 comprising the amino acid sequence of SEQ ID No: 25, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 26.
2. The method of claim 1, wherein the antibody or antigen-binding fragment comprises
 - (a) a heavy chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID No: 6, and a light chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID NO: 16; or
 - (b) a heavy chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID No: 51, and a light chain variable region comprising an amino acid sequence that is at least 90%, at least 95%, at least 98%, or least 99% identical to the sequence set forth in SEQ ID NO: 52.
3. The method of claim 1, wherein the antibody or antigen-binding fragment comprises

- (a) a heavy chain variable region comprising the sequence set forth in SEQ ID No: 6, and a light chain variable region comprising the sequence set forth in SEQ ID NO: 16; or
 - (b) a heavy chain variable region comprising the sequence set forth in SEQ ID No: 51, and a light chain variable region comprising the sequence set forth in SEQ ID NO: 52.
- 4. The method of any one of claims 1-3, wherein the antibody or antigen-binding fragment binds to FcRn with a K_D (dissociation constant) of 0.01 nM to 2 nM at pH 6.0 or pH 7.4.
- 5. The method of claim 4, wherein the K_D is measured by surface plasmon resonance (SPR).
- 6. The method of any one of claims 1-5, wherein the antibody or antigen-binding fragment is administered subcutaneously.
- 7. The method of any one of claims 1-6, wherein the antibody or antigen-binding fragment is administered once weekly.
- 8. The method of any one of claims 1-7, wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 300 mg to 500 mg.
- 9. The method of claim 8, wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 340 mg.
- 10. The method of any one of claims 1-7, wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 500 mg to 700 mg.
- 11. The method of claim 10, wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 680 mg.
- 12. The method of any one of claims 1-11, wherein the first effective amount of the antibody or antigen-binding fragment is administered for 12 weeks.

13. The method of any one of claims 1-12, further comprising administering a second therapeutically effective amount of the antibody or antigen-binding fragment to the patient.
14. The method of claim 13, wherein the second therapeutically effective amount is 340 mg.
15. The method of claim 13 or 14, wherein the second therapeutically effective amount of the antibody or antigen-binding fragment is administered for 12 weeks.
16. The method of any one of claims 13-15, further comprising administering a third therapeutically effective amount of the antibody or antigen-binding fragment to the patient.
17. The method of claim 16, wherein the third therapeutically effective amount is 340 mg.
18. The method of claim 16, wherein the third therapeutically effective amount is 680 mg.
19. The method of any one of claims 16-18, wherein the third therapeutically effective amount is administered for 4 weeks, 12 weeks, or 28 weeks.
20. The method of any one of claims 1-19, wherein the antibody, antigen-binding fragment, or pharmaceutical composition is administered in combination with at least one additional therapeutic agent.
21. A method of treating CIDP in a patient in need thereof, comprising administering to the patient a first therapeutically effective amount of an anti-FcRn antibody or an antigen-binding fragment thereof; wherein the antibody or antigen-binding fragment comprises:
 - (a) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 27, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 28, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 29; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 30, an

- LCDR2 comprising the amino acid sequence of SEQ ID No: 31, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 32; or
- (b) a heavy chain variable region comprising a HCDR1 comprising the amino acid sequence set forth in SEQ ID No: 49, a HCDR2 comprising the amino acid sequence set forth in SEQ ID No: 22, and a HCDR3 comprising the amino acid sequence set forth in SEQ ID No: 23; and a light chain variable region comprising an LCDR1 comprising the amino acid sequence set forth in SEQ ID No: 50, an LCDR2 comprising the amino acid sequence of SEQ ID No: 25, and an LCDR3 comprising the amino acid sequence set forth in SEQ ID No: 26; and
- wherein the first therapeutically effective amount of the antibody or antigen-binding fragment is 340 mg or 680 mg administered subcutaneously once weekly, optionally wherein the administering is for about 12 weeks or more.
22. The method of claim 21, further comprising administering a second therapeutically effective amount of the antibody or antigen-binding fragment to the patient, wherein the second therapeutically effective amount is 340 mg administered subcutaneously once weekly, optionally wherein the administering is for about 12 weeks or more.
23. The method of claim 22, further comprising administering a third therapeutically effective amount of the antibody or antigen-binding fragment to the patient, wherein the patient has relapsed CIDP, wherein the third therapeutically effective amount is 680 mg administered subcutaneously once weekly, optionally wherein the administering is for about 4 weeks or more; and optionally followed by administration of 340 mg subcutaneously once weekly for a period of time.
24. The method of any one of claims 1-23, wherein the patient is a human.