

CLAIMS

1. Use of an anti-CD154 antibody or antibody fragment which comprises a variable heavy chain polypeptide comprising the amino acid sequence of SEQ ID NO: 1, and a variable light chain polypeptide comprising the amino acid sequence of SEQ ID NO: 2, in the manufacture of a medicament for immunosuppression or treatment of an allergic, inflammatory, or autoimmune disorder; or for eliciting prolonged antigen specific immunosuppression, or for treating or preventing graft versus host disease (GVHD), in a subject in need thereof.
2. Use of an antibody or antibody fragment which comprises a variable heavy chain polypeptide comprising the amino acid sequence of SEQ ID NO: 1 and a variable light chain polypeptide comprising the amino acid sequence of SEQ ID NO: 2 in the manufacture of a medicament for treating a human condition, disorder or disease mediated in whole or in part by CD40 signaling.
3. The use of claim 2, which includes the use of a cell, antigen, tissue, organ or biologic which comprises an antigen against which prolonged immunosuppression is to be elicited.
4. The use of claim 1, wherein said anti-human CD154 antibody or antibody fragment comprises human IgG1, IgG2, IgG3 or IgG4 constant regions.
5. The use of claim 2, wherein said anti-human CD154 antibody or antibody fragment comprises human IgG1, IgG2, IgG3 or IgG4 constant regions.
6. The use of claim 1, wherein said anti-human CD154 antibody or antibody fragment comprises human IgG1 constant regions.
7. The use of claim 2, wherein said anti-human CD154 antibody or antibody fragment comprises human IgG1 constant regions.
8. The use of claim 1, wherein said anti-human CD154 antibody comprises human IgG1 constant regions which comprise a E269R mutation and a K322A mutation (wherein numbering is according to Kabat).

9. The use of claim 2, wherein said anti-human CD154 antibody comprises human IgG1 constant regions which comprise a E269R mutation and a K322A mutation (wherein numbering is according to Kabat).

10. The use of claim 1, wherein said anti-human CD154 antibody comprises heavy and light chain human IgG1 constant regions respectively comprising the amino acid sequence of SEQ ID NO:3 and the amino acid sequence of SEQ ID NO:4.

11. The use of claim 2, wherein said anti-human CD154 antibody comprises heavy and light chain human IgG1 constant regions respectively comprising the amino acid sequence of SEQ ID NO:3 and the amino acid sequence of SEQ ID NO:4.

12. The use of claim 1, wherein the treated subject is selected from the following:

- (i) a transplant recipient transplanted with donor tissue, organ, or cells which donor tissue, organ, or cells, which optionally are genetically engineered;
- (ii) a subject who has or is being treated with a drug or biologic optionally a therapeutic antibody, receptor, fusion protein, hormone, growth factor or cytokine which may elicit an allergic, autoimmune or inflammatory response;
- (iii) a subject being treated with are CAR-T or NK cells;
- (iv) a subject with a T-cell mediated autoimmune disorder;
- (v) a subject with a B-cell mediated autoimmune disorder;
- (vi) a subject with an allergic disorder;
- (vii) a subject with a condition selected from Sjogren's syndrome, rheumatoid arthritis, lupus, psoriasis, diabetes, multiple sclerosis, GVHD, oophoritis, asthma, an inflammatory bowel disorder, psoriatic arthritis, Crohn's disease, idiopathic thrombocytopenia purpura (ITP), thyroiditis, Myasthenia gravis, Graves' disease, hemolytic anemia, lupus nephritis, spondylarthritis, drug- induced lupus erythematosus , inflammatory bowel disease, drug-induced lupus or another drug-induced autoimmune disease;
- (viii) a subject with a fibrotic condition,
- (ix) a subject with a condition selected from allergic contact dermatitis, alopecia universalis, anaphylactoid purpura asthma, severe asthma, metabolic asthma, allergic asthma, atopic dermatitis, dermatitis herpetiformis, erythema elevatum diutinum, erythema marginatum, erythema multiforme, erythema nodosum, allergic granulomatosis, granuloma annulare, granulocytopenia, hypersensitivity pneumonitis, keratitis, nephrotic syndrome, overlap

syndrome, pigeon breeder's disease, idiopathic polyneuritis, urticaria, uveitis, juvenile dermatomyositis, and vitiligo;

(x) a subject with a condition selected from allergic bronchopulmonary aspergillosis, autoimmune hemolytic anemia, acanthosis nigricans, allergic contact dermatitis, Addison's disease, atopic dermatitis, alopecia areata, alopecia universalis, amyloidosis, anaphylactoid purpura, anaphylactoid reaction, aplastic anemia, angioedema, hereditary, angioedema, idiopathic, ankylosing spondylitis, arteritis, cranial, arteritis, giant cell, arteritis, Takayasu's, arteritis, temporal, asthma, ataxia-telangiectasia, autoimmune oophoritis, autoimmune orchitis, autoimmune polyendocrine failure, Behcet's disease, Berger's disease, bullous pemphigus, candidiasis, chronic mucocutaneous, Caplan's syndrome, post-myocardial infarction syndrome, post-pericardiotomy syndrome, carditis, celiac sprue, Chagas's disease, Chédiak-Higashi syndrome, Churg-Strauss disease, Cogan's syndrome, cold agglutinin disease, crest syndrome, Crohn's disease, cryoglobulinemia, cryptogenic fibrosing alveolitis, dermatitis herpetiformis, dermatomyositis, diabetes mellitus, Diamond-Blackfan syndrome, DiGeorge syndrome, discoid lupus erythematosus, eosinophilic fasciitis, episcleritis, erythema elevatum diutinum, erythema marginatum, erythema multiforme, erythema nodosum, familial Mediterranean fever, Felty's syndrome, fibrosis pulmonary, glomerulonephritis, anaphylactoid, glomerulonephritis, autoimmune, glomerulonephritis, post-streptococcal, glomerulonephritis, post-transplantation, glomerulopathy, membranous, Goodpasture's syndrome, graft-vs.-host disease, granulocytopenia, immune-mediated, granuloma annulare, granulomatosis, allergic, granulomatous myositis, grave's disease, Hashimoto's thyroiditis, hemolytic disease of the newborn, hemochromatosis, idiopathic, Henoch-Schönlein purpura, hepatitis, chronic active and chronic progressive, histiocytosis x, hypereosinophilic syndrome, idiopathic thrombocytopenic purpura, job's syndrome, juvenile dermatomyositis, juvenile rheumatoid arthritis (juvenile chronic arthritis), Kawasaki's disease, keratitis, keratoconjunctivitis sicca, Landry-Guillain-Barre-Strohl syndrome, leprosy, lepromatous, Loeffler's syndrome, Lyell's syndrome, Lyme disease, lymphomatoid granulomatosis, mastocytosis, systemic, mixed connective tissue disease, mononeuritis multiplex, Muckle-Wells syndrome, mucocutaneous lymph node syndrome, mucocutaneous lymph node syndrome, multicentric reticulohistiocytosis, multiple sclerosis, myasthenia gravis, mycosis fungoides, necrotizing vasculitis, systemic, nephrotic syndrome, overlap syndrome, panniculitis, paroxysmal cold hemoglobinuria, paroxysmal nocturnal hemoglobinuria, pemphigoid, pemphigus, pemphigus erythematosus, pemphigus foliaceus, pemphigus vulgaris, pigeon breeder's disease, pneumonitis, hypersensitivity, polyarteritis nodosa, polymyalgia rheumatica, polymyositis,

polyneuritis, idiopathic, Portuguese familial polyneuropathics, pre-eclampsia/eclampsia, primary biliary cirrhosis, progressive systemic sclerosis (scleroderma), psoriasis, psoriatic arthritis, pulmonary alveolar proteinosis, pulmonary fibrosis, Raynaud's syndrome, Reidel's thyroiditis, Reiter's syndrome, relapsing polychondritis, rheumatic fever, rheumatoid arthritis, sarcoidosis, scleritis, sclerosing cholangitis, serum sickness, Sézary syndrome, Sjögren's syndrome, Stevens-Johnson syndrome, Still's disease, subacute sclerosing panencephalitis, sympathetic ophthalmia, systemic lupus erythematosus, transplant rejection, ulcerative colitis, undifferentiated connective tissue disease, urticaria, chronic, urticaria, cold, uveitis, vitiligo, Weber-Christian disease, Wegener's granulomatosis, and Wiskott-Aldrich syndrome, or
(xi) a subject with a condition selected from Sjogren's syndrome, rheumatoid arthritis, lupus, psoriasis and multiple sclerosis.

13. The use of claim 12, wherein said anti-human CD154 antibody comprises human IgG1 constant regions which comprise a E269R mutation and a K322A mutation (wherein numbering is according to Kabat).

14. The use of claim 1, wherein the allergic, inflammatory, or autoimmune disorder is selected from Sjögren's syndrome, rheumatoid arthritis, lupus, psoriasis and multiple sclerosis.

15. The use of claim 14, wherein said anti-human CD154 antibody or antibody fragment comprises human IgG1 constant regions.

16. The use of claim 14, wherein said anti-human CD154 antibody comprises human IgG1 constant regions which comprise a E269R mutation and a K322A mutation (wherein numbering is according to Kabat).

17. The use of claim 14, wherein said anti-human CD154 antibody comprises heavy and light chain human IgG1 constant regions respectively comprising the amino acid sequence of SEQ ID NO:3 and the amino acid sequence of SEQ ID NO:4.

18. The use of claim 17, wherein the allergic, inflammatory, or autoimmune disorder is Sjogren's syndrome.

19. The use of claim 17, wherein the allergic, inflammatory, or autoimmune disorder is rheumatoid arthritis.

20. The use of claim 17, wherein the allergic, inflammatory, or autoimmune disorder is lupus.

21. The use of claim 17, wherein the allergic, inflammatory, or autoimmune disorder is psoriasis.

22. The use of claim 17, wherein the allergic, inflammatory, or autoimmune disorder is multiple sclerosis.