

What is Claimed:

1. A method for treating nail or scalp psoriasis, comprising administering a composition comprising an antibody or fragment thereof to a patient wherein the antibody specifically binds to IL-17 Receptor A (IL-17RA) and has an antagonistic activity.
2. A method according to claim 1, wherein the antibody or fragment thereof is selected from:
 - a. an antibody, comprising a light chain variable domain comprising the amino acid sequence of SEQ ID NO:7 and a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO:8;
 - b. an antibody comprising the full length light chain amino acid sequence of SEQ ID NO: 9 and a full length heavy chain amino acid sequence of SEQ ID NO: 10 and
 - c. an antibody, comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO:1, a light chain CDR2 comprising the amino acid sequence of SEQ ID NO:2, a light chain CDR3 comprising the amino acid sequence of SEQ ID NO:3, a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO:4, a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO:5, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO:6.
3. The method of claim 1 or 2, wherein the antibody or fragment thereof inhibits binding of IL-17A to said IL-17RA.
4. The method of any of the preceding claims wherein the patient is suffering from psoriasis.
5. The method of any of the preceding claims wherein the patient is suffering from plaque psoriasis, pustular psoriasis or psoriatic erythroderma.
6. The method of any of the preceding claims wherein the patient has a NAPSI score of at least 6 or a modified NAPSI score of at least 2 on one or more nails.
7. The method of any of the preceding claims wherein the patient has a PSSI score of at least 15.
9. The method of any of the preceding claims where the patient has a SSA score of at least 30%.

10. The method of treating nail psoriasis according to any of preceding claims, wherein the composition is administered at a dose of antibody or fragment thereof effective to reduce or maintain a NAPSI score of 6 or less or a mNAPSI score of 3 or less on an affected nail.
11. The method of treating scalp psoriasis according to any of preceding claims wherein the composition is administered at a dose of antibody or fragment thereof effective to reduce and maintain a PSSI score of 15 or less.
12. The method of any of the preceding claims wherein the composition administered comprises a dose of antibody that is 70 mg, 140mg, 210 mg or 280 mg.
13. A method of treating nail or scalp psoriasis or any of the preceding claims wherein the patient has less than 10% body surface area affected by psoriasis and additionally having nail or scalp psoriasis.
14. The method of any of the preceding claims wherein the patient has less than 10% body surface area affected by moderate to severe psoriasis, plaque psoriasis, pustular psoriasis or psoriatic erythroderma.
15. The method of claim 13 or 14 wherein the patient has about 7% or less body surface area affected by psoriasis.
16. The method of claim 13 or 14 wherein the patient has about 5% or less body surface area affected by psoriasis.
17. The method of claim 13 or 14 wherein the patient has about 3% or less body surface area affected by psoriasis.
18. The method of claim 13 or 14 wherein the patient has about 1% or less body surface area affected by psoriasis.
19. The method any one of the preceding claims, further comprising administering to said patient a second treatment.

20. The method of claim 19, wherein said second treatment is administered prior to, concurrent with, or subsequent to administration of said composition comprising said antibody.
21. The method of claim 19 or 20 wherein the second treatment is a topical treatment.
22. The method of claim 21 where in the topical treatment is selected from the group consisting fluorouracil, dithranol, tazarotene, cyclosporine, calcineurin inhibitors, triamcinolone, fluocinonide, topical steroids, vitamin D₃, vitamin D₃ analogs, betamethasone dipropionate, betamethasone valerate, calcipotriol, clobetasol, XAMIOL, DAIVOBET, coal tar, urea, corticosteroids, retinoids, anthralin, topical methatrexate, keratolytics, salicylic acid, tofacitinab, apremilast, topical JAK inhibitors or a combination thereof.
23. The method of any one of claims 20-22, wherein the second treatment is selected from the group consisting of retinoids, acitretin cyclosporine, methotrexate, apremilast, tofacitinib, oral JAK inhibitors, oral PI3 kinase inhibitors, oral MAP kinase inhibitors, Fumaderm, fumarates, dimethyl fumarate, sulfasalazine, leflunomide, calcineurin inhibitors, azathioprine, thioguanine, hydroxyurea, hydroxychloroquine, sulfasalazine, antifungals or a combination thereof.
24. The method of any one of claims 20-23, wherein the second treatment an antibody or chimeric protein specific for TNF IL-17 IL-12/23 or IL-23.
25. The method of claim 24, wherein the antibody or chimeric protein is infliximab, adalimumab, etanercept, alefacept, ustekinumab, secukinumab, ixekizumab, guselkumab, antifungals or a combination thereof.
26. The method of any one of claims 20-25, wherein the second treatment is selected from the group consisting of is triamcinolone acetone photochemotherapy, laser therapy, Excimer laser, oral/topical psoralen with UVA (PUVA), pulsed dye laser, radiation therapy, superficial radiotherapy, electron beam therapy, Grenz ray therapy, dermatome shaving, aloe vera extract, narrow band UV therapy UV therapy or a combination thereof.

27. The method of any one of the preceding claims, wherein said antibody is selected from the group consisting of:

- a. a humanized antibody;
- b. a chimeric antibody;
- c. a monoclonal antibody;
- d. an antigen-binding antibody fragment;
- e. a single chain antibody;
- f. a diabody;
- g. a triabody;
- h. a tetrabody;
- i. a Fab fragment;
- j. a F(ab')₂ fragment;
- k. an IgD antibody;
- l. an IgE antibody;
- m. an IgM antibody;
- n. an IgG1 antibody;
- o. an IgG2 antibody;
- p. an IgG3 antibody; and
- q. an IgG4 antibody.

28. The method of any one of the preceding claims, wherein said composition is a pharmaceutical composition.

29. The method of any one of the preceding claims, wherein said pharmaceutical composition further comprises a pharmaceutically acceptable diluent.

30. The method of claim 28 or 29 wherein the pharmaceutical composition comprises an aqueous solution of a glutamic acid buffer comprising a) said glutamic acid buffer comprises a glutamic acid concentration of 5-30 mM, ± 0.2 mM; b) said glutamic acid buffer comprises a pH of 4.5-5.2, ± 0.2 ; c) said formulation further comprises 2-4% proline (w/v) and 0.005-0.02% (w/v) polysorbate 20 and d) the antibody or fragment thereof at a concentration of 100 to 150 mg/ml.

31. The method of claim 30 wherein the pharmaceutical composition has an osmolality of 275 to 325 osm.
32. The method of claim 30 or 31 wherein the pharmaceutical composition has a viscosity of 5 to 7 cP at 25°C.
33. The method of any one of the preceding claims, wherein said antibody is a human IgG2 monoclonal antibody.
34. Use of an antibody or fragment thereof for the preparation of a medicament for the treatment of nail or scalp psoriasis, wherein the antibody or fragment thereof specifically binds to IL-17receptor RA (IL-17RA) and has an antagonistic activity.
35. A composition for use in the treatment of nail or scalp psoriasis, wherein the composition comprises an antibody or fragment thereof that specifically binds to IL-17receptor RA (IL-17RA) and has an antagonistic activity.
36. The use or composition of claim 34 or 35, wherein the antibody or fragment thereof is selected from:
- a. an antibody, comprising a light chain variable domain comprising the amino acid sequence of SEQ ID NO:7 and a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO:8;
 - b. an antibody comprising the full length light chain amino acid sequence of SEQ ID NO: 9 and a full length heavy chain amino acid sequence of SEQ ID NO: 10 and
 - c. an antibody, comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO:1, a light chain CDR2 comprising the amino acid sequence of SEQ ID NO:2, a light chain CDR3 comprising the amino acid sequence of SEQ ID NO:3, a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO:4, a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO:5, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO:6.
37. The use or composition of any one of claims 34-36, wherein the antibody or fragment thereof inhibits binding of IL-17A to said IL-17RA.

38. The use or composition of any one of claims 34-37, wherein the medicament or composition is for administration to a patient suffering from psoriasis.
39. The use or composition of any one of claims 34-38, wherein the medicament or composition is for administration to a patient suffering from plaque psoriasis, pustular psoriasis or psoriatic erythroderma.
40. The use or composition of claim 38 or 39, wherein the patient has a NAPSI score of at least 6 or a modified NAPSI score of at least 2 or 3 on one or more nails.
41. The use or composition of any one of claims 38-40, wherein the patient has a PSSI score of at least 15.
42. The use or composition of any one of claims 34-41, where the patient has a SSA score of at least 30%.
43. The use or composition of any one of claims 34-42, wherein the medicament or the composition comprises a dose of antibody or fragment thereof effective to reduce and maintain a NAPSI score of 6 or less or a mNAPSI score of 3 or less on an affected nail.
44. The use or composition of any one of claims 34-43, wherein the medicament or composition comprises a dose of antibody or fragment thereof effective to reduce and maintain a PSSI score of 15 or less.
45. The use or composition of any one of claims 34-44, wherein the medicament or composition comprises a dose of antibody that is 70 mg, 140mg, 210 mg or 280 mg.
46. The use or composition of any one of claims 34-45, wherein the medicament or composition is for administration to a patient having less than 10% body surface area affected by psoriasis and additionally having nail or scalp psoriasis.
47. The use or composition of any one of claims 34-46, wherein the medicament or composition is for administration to a patient having less than 10% body surface area affected by moderate to severe psoriasis, plaque psoriasis, pustular psoriasis or psoriatic erythroderma.

48. The use or composition of any one of claims 34-46, wherein the medicament or composition is administered with a second treatment.
49. The use or composition of claim 48, wherein said second treatment is administered prior to, concurrent with, or subsequent to administration of said medicament or composition comprising said antibody.
50. The use or composition of claim 48 or 49, wherein the second treatment is a topical treatment.
51. The use or composition of claim 50, where in the topical treatment is selected from the group consisting fluorouracil, dithranol, tazarotene, cyclosporine, calcineurin inhibitors, triamcinolone, fluocinonide, topical steroids, vitamin D₃, vitamin D₃ analogs, betamethasone dipropionate, betamethasone valerate, calcipotriol, clobetasol, XAMIOL, DAIVOBET, coal tar, urea, corticosteroids, retinoids, anthralin, topical methatrexate, keratolytics, salicylic acid, tofacitinab, apremilast, topical JAK inhibitors or a combination thereof.
52. The use or composition of any one of claims 48-51, wherein the second treatment is selected from the group consisting of retinoids, acitretin cyclosporine, methotrexate, apremilast, tofacitinib, oral JAK inhibitors, oral PI3 kinase inhibitors, oral MAP kinase inhibitors, Fumaderm, fumarates, dimethyl fumarate, sulfasalazine, leflunomide, calcineurin inhibitors, azathioprine, thioguanine, hydroxyurea, hydroxychloroquine, sulfasalazine, antifungals or a combination thereof.
53. The use or composition of any one of claims 48-52, wherein the second treatment an antibody or chimeric protein specific for TNF, IL-17, IL-12/23 or IL-23.
54. The use or composition of claim 53, wherein the antibody or chimeric protein is infliximab, adalimumab, etanercept, alefacept, ustekinumab, secukinumab, ixekizumab, guselkumab, antifungals or a combination thereof.
55. The use or composition of any one of claims 48-54, wherein the second treatment is selected from the group consisting of is triamcinolone acetonide photochemotherapy, laser

therapy, Excimer laser, oral/topical psoralen with UVA (PUVA), pulsed dye laser, radiation therapy, superficial radiotherapy, electron beam therapy, Grenz ray therapy, dermatome shaving, aloe vera extract, narrow band UV therapy UV therapy or a combination thereof.

56. The use or composition of any one of claims 34-55, wherein said antibody is selected from the group consisting of:

- a. a humanized antibody;
- b. a chimeric antibody;
- c. a monoclonal antibody;
- d. an antigen-binding antibody fragment;
- e. a single chain antibody;
- f. a diabody;
- g. a triabody;
- h. a tetrabody;
- i. a Fab fragment;
- j. a F(ab')₂ fragment;
- k. an IgD antibody;
- l. an IgE antibody;
- m. an IgM antibody;
- n. an IgG1 antibody;
- o. an IgG2 antibody;
- p. an IgG3 antibody; and
- q. an IgG4 antibody.

57. The use or composition of any one of claims 34-56, wherein said medicament or composition further comprises a pharmaceutically acceptable diluent.

58. The use or composition of any one of claims 34-57, wherein said medicament or composition comprises an aqueous solution of a glutamic acid buffer comprising a) said glutamic acid buffer comprises a glutamic acid concentration of 5-30 mM, $\pm$ 0.2 mM; b) said glutamic acid buffer comprises a pH of 4.5-5.2, $\pm$ 0.2; c) said formulation further comprises 2-4% proline (w/v) and 0.005-0.02% (w/v) polysorbate 20 and d) the antibody or fragment thereof at a concentration of 100 to 150 mg/ml.

59. The use or composition of claim 58, wherein the medicament or composition has an osmolarity of 275 to 325 osm.
60. The use or composition of claim 58 or 59, wherein the medicament or composition has a viscosity of 5 to 7 cP at 25°C.
61. The use or composition of any one of claims 34-60, wherein said antibody is a human IgG2 monoclonal antibody.

What is Claimed:

1. Use of an antibody or fragment thereof for the preparation of a medicament for the treatment of nail or scalp psoriasis, wherein the antibody or fragment thereof specifically binds to IL-17receptor RA (IL-17RA) and has an antagonistic activity.
2. A composition for use in the treatment of nail or scalp psoriasis, wherein the composition comprises an antibody or fragment thereof that specifically binds to IL-17receptor RA (IL-17RA) and has an antagonistic activity.
3. The use or composition of claim 1 or 2, wherein the antibody or fragment thereof is selected from:
 - a. an antibody, comprising a light chain variable domain comprising the amino acid sequence of SEQ ID NO:7 and a heavy chain variable domain comprising the amino acid sequence of SEQ ID NO:8;
 - b. an antibody comprising the full length light chain amino acid sequence of SEQ ID NO: 9 and a full length heavy chain amino acid sequence of SEQ ID NO: 10 and
 - c. an antibody, comprising a light chain CDR1 comprising the amino acid sequence of SEQ ID NO:1, a light chain CDR2 comprising the amino acid sequence of SEQ ID NO:2, a light chain CDR3 comprising the amino acid sequence of SEQ ID NO:3, a heavy chain CDR1 comprising the amino acid sequence of SEQ ID NO:4, a heavy chain CDR2 comprising the amino acid sequence of SEQ ID NO:5, and a heavy chain CDR3 comprising the amino acid sequence of SEQ ID NO:6.
4. The use or composition of any one of claims 1-3, wherein the antibody or fragment thereof inhibits binding of IL-17A to said IL-17RA.
5. The use or composition of any one of claims 1-4, wherein the medicament or composition is for administration to a patient suffering from psoriasis.
6. The use or composition of any one of claims 1-5, wherein the medicament or composition is for administration to a patient suffering from plaque psoriasis, pustular psoriasis or psoriatic erythroderma.

7. The use or composition of claim 5 or 6, wherein the patient has a NAPI score of at least 6 or a modified NAPI score of at least 2 or 3 on one or more nails.
8. The use or composition of any one of claims 5-7, wherein the patient has a PSSI score of at least 15.
9. The use or composition of any one of claims 1-8, where the patient has a SSA score of at least 30%.
10. The use or composition of any one of claims 1-9, wherein the medicament or the composition comprises a dose of antibody or fragment thereof effective to reduce and maintain a NAPI score of 6 or less or a mNAPI score of 3 or less on an affected nail.
11. The use or composition of any one of claims 1-10, wherein the medicament or composition comprises a dose of antibody or fragment thereof effective to reduce and maintain a PSSI score of 15 or less.
12. The use or composition of any one of claims 1-11, wherein the medicament or composition comprises a dose of antibody that is 70 mg, 140mg, 210 mg or 280 mg.
13. The use or composition of any one of claims 1-12, wherein the medicament or composition is for administration to a patient having less than 10% body surface area affected by psoriasis and additionally having nail or scalp psoriasis.
14. The use or composition of any one of claims 1-13, wherein the medicament or composition is for administration to a patient having less than 10% body surface area affected by moderate to severe psoriasis, plaque psoriasis, pustular psoriasis or psoriatic erythroderma.
15. The use or composition of any one of claims 1-13, wherein the medicament or composition is to be administered with a second treatment.
16. The use or composition of claim 15, wherein said second treatment is to be administered prior to, concurrent with, or subsequent to administration of said medicament or composition comprising said antibody.

17. The use or composition of claim 15 or 16, wherein the second treatment is a topical treatment.
18. The use or composition of claim 17, where in the topical treatment is selected from the group consisting fluorouracil, dithranol, tazarotene, cyclosporine, calcineurin inhibitors, triamcinolone, fluocinonide, topical steroids, vitamin D₃, vitamin D₃ analogs, betamethasone dipropionate, betamethasone valerate, calcipotriol, clobetasol, XAMIOL, DAIVOBET, coal tar, urea, corticosteroids, retinoids, anthralin, topical methatrexate, keratolytics, salicylic acid, tofacitinab, apremilast, topical JAK inhibitors or a combination thereof.
19. The use or composition of any one of claims 15-18, wherein the second treatment is selected from the group consisting of retinoids, acitretin cyclosporine, methotrexate, apremilast, tofacitinib, oral JAK inhibitors, oral PI3 kinase inhibitors, oral MAP kinase inhibitors, Fumaderm, fumarates, dimethyl fumarate, sulfasalazine, leflunomide, calcineurin inhibitors, azathioprine, thioguanine, hydroxyurea, hydroxychloroquine, sulfasalazine, antifungals or a combination thereof.
20. The use or composition of any one of claims 15-19, wherein the second treatment is an antibody or chimeric protein specific for TNF, IL-17, IL-12/23 or IL-23.
21. The use or composition of claim 20, wherein the antibody or chimeric protein is infliximab, adalimumab, etanercept, alefacept, ustekinumab, secukinumab, ixekizumab, guselkumab, antifungals or a combination thereof.
22. The use or composition of any one of claims 15-21, wherein the second treatment is selected from the group consisting of is triamcinolone acetone photochemotherapy, laser therapy, Excimer laser, oral/topical psoralen with UVA (PUVA), pulsed dye laser, radiation therapy, superficial radiotherapy, electron beam therapy, Grenz ray therapy, dermatome shaving, aloe vera extract, narrow band UV therapy UV therapy or a combination thereof.
23. The use or composition of any one of claims 1-22, wherein said antibody is selected from the group consisting of:
- a. a humanized antibody;

- b. a chimeric antibody;
- c. a monoclonal antibody;
- d. an antigen-binding antibody fragment;
- e. a single chain antibody;
- f. a diabody;
- g. a triabody;
- h. a tetrabody;
- i. a Fab fragment;
- j. a F(ab')₂ fragment;
- k. an IgD antibody;
- l. an IgE antibody;
- m. an IgM antibody;
- n. an IgG1 antibody;
- o. an IgG2 antibody;
- p. an IgG3 antibody; and
- q. an IgG4 antibody.

24. The use or composition of any one of claims 1-23, wherein said medicament or composition further comprises a pharmaceutically acceptable diluent.

25. The use or composition of any one of claims 1-24, wherein said medicament or composition comprises an aqueous solution of a glutamic acid buffer comprising a) said glutamic acid buffer comprises a glutamic acid concentration of 5-30 mM. $\pm$ 0.2 mM; b) said glutamic acid buffer comprises a pH of 4.5-5.2. $\pm$ 0.2; c) said formulation further comprises 2-4% proline (w/v) and 0.005-0.02% (w/v) polysorbate 20 and d) the antibody or fragment thereof at a concentration of 100 to 150 mg/ml.

26. The use or composition of claim 25, wherein the medicament or composition has an osmolarity of 275 to 325 osm.

27. The use or composition of claim 25 or 26, wherein the medicament or composition has a viscosity of 5 to 7 cP at 25°C.

28. The use or composition of any one of claims 1-27, wherein said antibody is a human IgG2 monoclonal antibody.