

CLAIMS

What is claimed is:

1. ~~A method~~ Use of an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R) in the manufacture of a medicament for treating asthma in a subject aged 6 years old and older,

wherein the subject has moderate-to-severe asthma with type 2 inflammation characterized by an eosinophilic phenotype and/or elevated fraction of exhaled nitric oxide (FeNO), or

wherein the subject has oral corticosteroid-dependent asthma,

~~comprising administering to the subject an~~ wherein the antibody or an antigen-binding fragment thereof ~~that specifically binds interleukin-4 receptor (IL-4R), is to be administered to the subject,~~

_____ wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively.

2. The ~~method~~ use of claim 1, wherein the antibody or antigen-binding fragment thereof is to be administered to the subject as an initial dose followed by one or more secondary doses.

3. The ~~method~~ use of claim 2, wherein the initial dose is about 100 mg and each secondary dose is about 100 mg.

4. The ~~method~~ use of claim 3, wherein the subject weighs 15 kg to less than 30 kg.

5. The ~~method~~ use of claim 2, wherein the initial dose is about 200 mg and each secondary dose is about 200 mg.

6. The ~~method~~ use of claim 5, wherein the subject weighs equal to or greater than 30 kg.

7. The ~~method~~use of claim 3 or 5, wherein the antibody or antigen-binding fragment thereof is to be administered to the subject once every other week (q2w).

8. The ~~method~~use of claim 2, wherein the initial dose is about 300 mg and each secondary dose is about 300 mg.

9. The ~~method~~use of claim 5, wherein the subject weighs 15 kg to less than 30 kg.

10. The ~~method~~use of claim 9, wherein the antibody or antigen-binding fragment thereof is to be administered to the subject once every four weeks (q4w).

11. The ~~method~~use of any one of claims 1 to 10, wherein the subject is less than 12 years old.

12. The ~~method~~use of any one of claims 1-11, wherein the FeNO level is $\geq$ 20 ppb.

~~13. The method of any one of claims 1-11, wherein the FeNO level is or $\geq$ 25 ppb.~~

~~14. A method for treating asthma in a subject aged 6 to 11 years old,
— wherein the subject has severe asthma with type 2 inflammation characterized by raised blood eosinophils and/or raised fraction of exhaled nitric oxide (FeNO);
— comprising administering to the subject~~

13. Use of an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R), in the manufacture of a medicament for treating asthma in a subject aged 6 years old to less than 12 years old,

wherein one or more doses of the antibody or antigen-binding fragment thereof is to be administered to the subject,

wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and

wherein the antibody or ~~an~~ antigen-binding fragment thereof is ~~administered as add-on maintenance treatment, and~~

~~— wherein the subject is inadequately controlled with medium to high dose inhaled corticosteroid (ICS) plus another medicinal product for the maintenance treatment.~~

~~15. The method of claim 14, wherein the antibody or antigen-binding fragment thereof is~~
~~be~~ administered to the subject as an initial dose followed by one or more secondary doses.

~~16~~14. The ~~method~~use of claim ~~15~~13, wherein ~~the initial dose is about 100 mg and each~~
secondary dose is ~~about 100 mg.~~

~~17. The method of claim 16, wherein the subject weighs 15 kg to less than 30 kg.~~

~~18. The method of claim 15, wherein the initial dose is about 200 mg and each secondary~~
~~dose is about 200 mg.~~

~~19. The method of claim 18, wherein the subject weighs 30 kg to less than 60 kg.~~

~~20. The method of claim 18, wherein the subject weighs 60 kg or more.~~

~~21. The method of claim 16 or 18, wherein the antibody or antigen-binding fragment~~
~~thereof is administered to the subject once every other week (q2w).~~

~~22. The method of claim 15, wherein the initial dose is about 300 mg and each secondary~~
~~dose is about 300 mg.~~

~~23. The method of claim 22, wherein the subject weighs 15 kg to less than 30 kg.~~

~~24. The method of claim 22, wherein the subject weighs 30 kg to less than 60 kg.~~

~~25. The method of claim 22, wherein the antibody or antigen-binding fragment thereof is administered to the subject once every four weeks (q4w).~~

~~26. The method of any one of claims 14-25, wherein the FeNO level is ≥ 20 ppb.~~

~~27. The method of any one of claims 14-25, wherein the FeNO level is ≥ 25 ppb.~~

~~28. The method of any one of claims 14-27, wherein the blood eosinophil level is greater than or equal to 150 cells/ μ L.~~

~~29. The method of any one of claims 14-27, wherein the blood eosinophil level is greater than or equal to 300 cells/ μ L.~~

~~30. The method of any one of claims 1 to 29, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

~~31. The method of claim 30, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~32. The method of any one of claims 1 to 31, wherein the antibody or antigen-binding fragment thereof is administered using an autoinjector, a needle and syringe, or a pen.~~

~~33. The method of any one of claims 1 to 31, wherein the antibody or antigen-binding fragment thereof is administered subcutaneously.~~

~~34. The method of any one of claims 1 to 31, wherein the treatment results in an improvement in one or any combination of antigen-specific IgE, antigen-specific IgG4, and antigen-specific IgE/IgG4 ratio.~~

~~35. The method of any one of claims 1 to 31, wherein the treatment results in an improvement in one or more patient-reported outcomes (PROs) selected from the group consisting of Pediatric Asthma Quality of Life Questionnaire (PAQLQ) score, Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ) score, Pediatric Rhinoconjunctivitis Quality of Life Questionnaire (PRQLQ) score, Pediatric Rhinoconjunctivitis Quality of Life Questionnaire Interviewer Administered (PRQLQ-IA) score, EuroQol 5-level questionnaire (EQ-5D-5L) score, EuroQol 5 dimension youth questionnaire (EQ-5D-Y) score, Asthma Control Questionnaire Interviewer Administered, 5-question Version (ACQ-5-IA) score, Asthma Control Questionnaire Interviewer Administered, 7-question Version (ACQ-7-IA) score, healthcare resource utilization (HCRU) score, morning (AM) symptom score, evening (PM) symptom score, number of nocturnal awakenings, and reliever medication use frequency.~~

~~36. The method of any one of claims 1 to 31, wherein the treatment results in an improvement of slope of % predicted FEV1.~~

~~37. The method of any one of claims 1 to 31, wherein the treatment results in an improvement in lung function as measured by forced expiratory volume (FEV1), by forced vital capacity (FVC), by forced expiratory flow at 25-75% of the pulmonary volume (FEF25-75%), by morning peak expiratory flow (AM PEF), by evening peak expiratory flow (PM PEF) or any combination thereof.~~

~~38. The method of any one of claims 1 to 31, wherein the subject is administered a background therapy selected from the group consisting of: a TNF inhibitor, an IL-1 inhibitor, an IL-5 inhibitor, an IL-8 inhibitor, an IgE inhibitor, a leukotriene inhibitor, a~~

corticosteroid, a methylxanthine, an NSAID, nedocromil sodium, cromolyn sodium, a long-acting beta2 agonist and an anti-fungal agent or any combinations thereof.

39. The method of any one of claims 1 to 31, wherein the subject is administered a background therapy comprising inhaled corticosteroid (ICS) optionally in combination with a second controller medication.

40. The method of any one of claims 1 to 31, wherein the second controller medication is selected from the group consisting of a long-acting β 2-agonist (LABA), a leukotriene receptor antagonist (LTRA), a long-acting muscarinic antagonist (LAMA), and a methylxanthine.

41. The method of claim 39, wherein the ICS is administered at high dose or at a medium dose.

42. The method of any one of claims 1 to 31, wherein the subject has a comorbid Type 2 inflammatory condition in addition to asthma.

43. The method of claim 42, wherein the comorbid Type 2 inflammatory condition is selected from the group consisting of atopic dermatitis, allergic conjunctivitis, allergic rhinitis, eosinophilic esophagitis, food allergy, hives and any combination thereof.

44. The method of claims 1 to 31, wherein the subject has a baseline total serum IgE ≥ 30 IU/mL.

45. The method of claims 1 to 31, wherein the subject has a baseline allergen-specific IgE ≥ 0.35 kU/L for at least one aeroallergen.

46. The method of claims 1 to 31, wherein the subject has a baseline total serum IgE ≥ 30 IU/mL, and a baseline allergen-specific IgE ≥ 0.35 kU/L for at least one aeroallergen.

~~47. A method for treating a subject having asthma comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),~~

~~—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and~~

~~—wherein the subject has a body weight of greater than 30 kg and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 200 mg.~~

~~48. The method of claim 47, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~49. The method of claim 48, wherein the initial dose is about 200 mg and each secondary dose is about 200 mg.~~

~~50. The method of claim 47, wherein the subject is 6 years old to less than 12 years old.~~

~~51. The method of claim 47, wherein the asthma is uncontrolled persistent asthma.~~

~~52. The method of claim 47, wherein the asthma is uncontrolled moderate-to-severe asthma.~~

~~53. The method of claim 47, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~54. The method of claim 47, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

~~55. A method for treating a subject having asthma comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),~~

~~— wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and~~

~~— wherein the subject has a body weight of 30 kg or less and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 100 mg.~~

~~56. The method of claim 55, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~57. The method of claim 56, wherein the initial dose is about 100 mg and each secondary dose is about 100 mg.~~

~~58. The method of claim 55, wherein the subject is 6 years old to less than 12 years old.~~

~~59. The method of claim 55, wherein the subject has a body weight of at least 16 kg.~~

~~60. The method of claim 55, wherein the asthma is uncontrolled persistent asthma.~~

~~61. The method of claim 55, wherein the asthma is uncontrolled moderate to severe asthma.~~

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~~62. The method of claim 55, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

63.—The method of claim 55, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.

64.—A method for treating a subject aged 6 years old to less than 12 years old having uncontrolled moderate to severe asthma comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R);

—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and

—wherein the subject has a body weight of greater than 30 kg and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 200 mg.

65.—The method of claim 64, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.

66.—The method of claim 65, wherein the initial dose is about 200 mg and each secondary dose is about 200 mg.

67.—The method of claim 64, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.

68.—The method of claim 64, wherein the subject has a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.

69.—A method for treating a subject aged 6 years old to less than 12 years old having uncontrolled moderate to severe asthma comprising administering to the subject an

~~antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R);~~

~~—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and~~

~~—wherein the subject has a body weight of 30 kg or less and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 100 mg.~~

~~70. The method of claim 69, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~71. The method of claim 69, wherein the initial dose is about 100 mg and each secondary dose is about 100 mg.~~

~~72. The method of claim 69, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~73. The method of claim 69, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

~~74. A method for reducing or eliminating a subject's dependence on systemic corticosteroids (SCS), wherein the subject is aged 6 years old to less than 12 years old and has uncontrolled moderate-to-severe asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R);~~

~~—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively,~~

~~—wherein the subject has a body weight of greater than 30 kg and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 200 mg or about 300 mg, and~~

~~—wherein the dosage of SCS administered to the subject is gradually reduced or eliminated over the course of a treatment period.~~

~~75.—The method of claim 74, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~76.—The method of claim 75, wherein the initial dose is about 200 mg and each secondary dose is about 200 mg.~~

~~—~~
~~77.—The method of claim 74, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~78.—The method of claim 74, wherein the subject has a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

~~79.—The method of claim 74, wherein the dose is about 200 mg and is administered to the subject every other week.~~

~~80.—The method of claim 74, wherein the dose is about 300 mg and is administered to the subject every four weeks.~~

~~81.—A method for reducing or eliminating a subject's dependence on systemic corticosteroids (SCS), wherein the subject is aged 6 years old to less than 12 years old and has uncontrolled moderate-to-severe asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),~~

~~—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively,~~

~~—wherein the subject has a body weight of 30 kg or less and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 100 mg or about 300 mg, and~~

~~—wherein the dosage of SCS administered to the subject is gradually reduced or eliminated over the course of a treatment period.~~

82. ~~The method of claim 81, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

83. ~~The method of claim 81, wherein the initial dose is about 100 mg and each secondary dose is about 100 mg.~~

84. ~~The method of claim 81, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

85. ~~The method of claim 81, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

86. ~~The method of claim 81, wherein the dose is about 100 mg and is administered to the subject every other week.~~

87. ~~The method of claim 81, wherein the dose is about 300 mg and is administered to the subject every four weeks.~~

~~88. — A method for decreasing an asthma exacerbation rate in a subject, wherein the subject is aged 6 years old to less than 12 years old and has uncontrolled moderate-to-severe asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),~~

~~—— wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and~~

~~—— wherein the subject has a body weight of greater than 30 kg and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 200 mg or about 300 mg.~~

~~89. — The method of claim 88, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~90. — The method of claim 89, wherein the initial dose is about 200 mg and each secondary dose is about 200 mg.~~

~~——~~

~~91. — The method of claim 88, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~92. — The method of claim 88, wherein the subject has a Type 2-inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

~~93. — The method of claim 88, wherein the dose is about 200 mg and is administered to the subject every other week.~~

~~94. — The method of claim 74, wherein the dose is about 300 mg and is administered to the subject every four weeks.~~

95. — ~~A method for decreasing an asthma exacerbation rate in a subject, wherein the subject is aged 6 years old to less than 12 years old and has uncontrolled moderate-to-severe asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),
— wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and
— wherein the subject has a body weight of 30 kg or less and the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 100 mg or about 300 mg.~~

96. — ~~The method of claim 95, wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

97. — ~~The method of claim 95, wherein the initial dose is about 100 mg and each secondary dose is about 100 mg.~~

98. — ~~The method of claim 95, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

99. — ~~The method of claim 95, wherein the subject has asthma with a Type 2-inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.~~

100. — ~~The method of claim 95, wherein the dose is about 100 mg and is administered to the subject every other week.~~

101. — ~~The method of claim 95, wherein the dose is about 300 mg and is administered to the subject every four weeks.~~

~~102. A method for treating a subject aged 6 years old to less than 12 years old having asthma, comprising administering to the subject one or more doses of an antibody or an antigen-binding fragment thereof that specifically binds interleukin-4 receptor (IL-4R),
— wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and
— wherein the antibody or antigen-binding fragment thereof is administered to the subject as an initial dose followed by one or more secondary doses.~~

~~103. The method of claim 102, wherein each secondary dose is~~ administered 1 to 4 weeks after the immediately preceding dose, and wherein:

(i) for a subject having a body weight of ≤ 30 kg, the initial dose of the antibody or antigen-binding fragment thereof is 100 mg and each secondary dose is 100 mg; or

(ii) for a subject having a body weight of >30 kg, the initial dose of the antibody or antigen-binding fragment thereof is 200 mg and each secondary dose is 200 mg.

~~104~~15. The ~~method~~use of claim ~~103~~, wherein the subject has ~~uncontrolled moderate to severe asthma~~.

~~105. The method of claim 103, wherein the subject has asthma with an eosinophilic phenotype that includes a baseline blood eosinophil count of greater than or equal to 300 cells/ μ L.~~

~~106. The method of claim 103~~13, wherein the subject has asthma with a Type 2 inflammatory phenotype that includes one or both of a baseline blood eosinophil count of greater than or equal to 150 cells/ μ L and a baseline FeNO of greater than or equal to 20 ppb.

~~107. The method of any of the preceding claims, wherein the antibody or antigen-binding fragment thereof is administered to the subject once every other week (q2w).~~

~~108.—The method of claim 107, wherein a first maintenance dose of antibody or antigen-binding fragment thereof is administered two weeks after an initial dose of antibody or antigen-binding fragment thereof.~~

~~109.—The method of claim 108, wherein the 16. The use of claim 13, wherein maintenance doses of the antibody or antigen-binding fragment thereof are to be administered for at least 24 weeks.~~

~~110. 17. The methoduse of any of the preceding claims, ~~wherein the antibody or antigen-binding fragment thereof is administered using an autoinjector, a needle and syringe, or a pen.~~~~

~~111. The method of claim 110, wherein the antibody or antigen-binding fragment thereof is administered using a prefilled device.~~

~~112. The method of claim 111, wherein the prefilled device is a prefilled syringe comprising the antibody or antigen-binding fragment thereof at a concentration of 150 mg/mL.~~

~~113. The method of claim 111, wherein the prefilled device is a prefilled syringe comprising the antibody or antigen-binding fragment thereof at a concentration of 175 mg/mL.~~

~~114. The method of claim 110, wherein the antibody or antigen-binding fragment thereof is administered subcutaneously.~~

~~115.—The method of any of the preceding claims, wherein the treatment results in an improvement in at least one biomarker level, wherein the at least one biomarker is selected from the group consisting of fractional exhaled nitric oxide (FeNO), thymus and activation regulated chemokine (TARC), urinary leukotriene E4 (LTE4), interleukin 5 (IL-5), and serum total IgE.~~

~~116. The method of any of the preceding claims, wherein the treatment results in an improvement in one or any combination of antigen-specific IgE, antigen-specific IgG4, and antigen-specific IgE/IgG4 ratio.~~

~~117. The method of any of the preceding claims, wherein the treatment results in an improvement in one or more patient-reported outcomes (PROs) selected from the group consisting of Pediatric Asthma Quality of Life Questionnaire (PAQLQ) score, Pediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ) score, Pediatric Rhinoconjunctivitis Quality of Life Questionnaire (PRQLQ) score, Pediatric Rhinoconjunctivitis Quality of Life Questionnaire-Interviewer Administered (PRQLQ-IA) score, EuroQol 5-level questionnaire (EQ-5D-5L) score, EuroQol 5-dimension youth questionnaire (EQ-5D-Y) score, Asthma Control Questionnaire-Interviewer Administered, 5-question Version (ACQ-5-IA) score, Asthma Control Questionnaire-Interviewer Administered, 7-question Version (ACQ-7-IA) score, healthcare resource utilization (HCRU) score, morning (AM)-symptom score, evening (PM)-symptom score, number of nocturnal awakenings, and reliever medication use frequency.~~

~~118. The method of any of the preceding claims, wherein the treatment results in an improvement of slope of % predicted FEV1.~~

~~119. The method of any of the preceding claims, wherein the treatment results in a reduction in annualized severe asthma exacerbations selected from:~~

~~—— (a) a deterioration of asthma requiring use of systemic corticosteroids for at least three days and/or hospitalization or emergency room visit requiring systemic corticosteroids; and~~

~~—— (b) loss of asthma control (LOAC) event defined by:~~

~~—— (i) ≥ 6 additional reliever puffs of salbutamol/albuterol or levosalbutamol/levalbuterol in a 24 hour period on two consecutive days;~~

~~—— (ii) an increase in ICS dose ≥ 4 times than a previous dose;~~

~~——(iii) a decrease in AM or PM peak flow of 30% or more on 2 consecutive days of treatment, based on the defined stability limit; or~~
~~——(iv) a severe exacerbation event.~~

~~120. The method of any of the preceding claims, wherein the treatment results in an improvement in lung function as measured by forced expiratory volume (FEV₁), by forced vital capacity (FVC), by forced expiratory flow at 25-75% of the pulmonary volume (FEF_{25-75%}), by morning peak expiratory flow (AM PEF), by evening peak expiratory flow (PM PEF) or any combination thereof.~~

~~121. The method of any of the preceding claims, wherein the subject is administered a background therapy selected from the group consisting of: a TNF inhibitor, an IL-1 inhibitor, an IL-5 inhibitor, an IL-8 inhibitor, an IgE inhibitor, a leukotriene inhibitor, a corticosteroid, a methylxanthine, an NSAID, nedocromil sodium, cromolyn sodium, a long-acting beta2 agonist and an anti-fungal agent or any combinations thereof.~~

~~122. The method of any of the preceding claims, wherein the subject is administered a background therapy comprising inhaled corticosteroid (ICS) optionally in combination with a second controller medication.~~

~~123. The method of claim 122, wherein the second controller medication is selected from the group consisting of a long-acting β 2 agonist (LABA), a leukotriene receptor antagonist (LTRA), a long-acting muscarinic antagonist (LAMA), and a methylxanthine.~~

~~124. The method of claim 122, wherein the ICS is administered at high dose or at a medium dose.~~

~~125. The method of claim 1, 14, 47, 55, 64, 69, 74, 81, 88, 95 or 102 wherein the antibody or antigen-binding fragment thereof comprises a heavy chain variable region (HCVR) sequence of SEQ ID NO: 1 and a light chain variable region (LCVR) sequence of SEQ ID NO: 2.~~

~~126. 18. The method use of claim 1, 14, 47, 55, 64, 69, 74, 81, 88, 95 or 102 any of the preceding claims, wherein the antibody is dupilumab.~~

~~127. — A method for treating a subject aged 6 years old to less than 12 years old having asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin 4 receptor (IL-4R),
— wherein~~

~~19. The use of any of the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively, and
— wherein the subject has a body weight of 30 kg or less,
— preceding claims, wherein the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 300 mg every four weeks (q4w).~~

~~128. — A method for treating a subject aged 6 years old to less than 12 years old having asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin 4 receptor (IL-4R), and
— wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively,
— wherein the antibody or antigen-binding fragment thereof is administered to the subject at a dose of about 300 mg every four weeks (q4w) regardless of body weight.~~

~~129. — A method for treating a subject aged 6 years old to less than 12 years old having asthma, comprising administering to the subject an antibody or an antigen-binding fragment thereof that specifically binds interleukin 4 receptor (IL-4R), and~~

~~—wherein the antibody or antigen-binding fragment thereof comprises three heavy chain CDR sequences comprising SEQ ID NOs: 3, 4, and 5, respectively, and three light chain CDR sequences comprising SEQ ID NOs: 6, 7, and 8, respectively,~~

~~—wherein the antibody or antigen-binding fragment thereof is administered to the subject at an initial loading dose of about 300 mg, and one or more maintenance doses of about 300 mg every four weeks (q4w), wherein a first maintenance dose is administered to the subject two weeks after the initial loading dose.~~

~~130. The method of any one of claims 127 to 129, wherein the subject aged 6 years old to less than 12 years old has an uncontrolled moderate to severe asthma or uncontrolled persistent asthma.~~

~~131. The method of any one of claims 127 to 129, wherein the antibody or antigen-binding fragment thereof is to be administered using an autoinjector, a needle and syringe, or a pen.~~

~~132. 20. The method use of claim 131 any of the preceding claims, wherein the antibody or antigen-binding fragment thereof is administered using a prefilled device.~~

~~133. The method of claim 132, wherein the prefilled device is a prefilled syringe comprising the antibody or antigen-binding fragment thereof at a concentration of 150 mg/mL.~~

~~134. The method of claim 132, wherein the prefilled device is a prefilled syringe comprising the antibody or antigen-binding fragment thereof at a concentration of 175 mg/mL.~~

~~135. ——— The method of claim 132, wherein the antibody or antigen-binding fragment thereof is to be administered subcutaneously.~~

~~136. The method of any one of claims 127 to 129, wherein the treatment results in an improvement in at least one biomarker level, wherein the at least one biomarker is selected~~

from the group consisting of fractional exhaled nitric oxide (FeNO), thymus and activation regulated chemokine (TARC), urinary leukotriene E4 (LTE4), interleukin 5 (IL-5), and serum total IgE.

137.—The method of any one of claims 127 to 129, wherein the treatment results in an improvement in one or any combination of antigen-specific IgE, antigen-specific IgG4, and antigen-specific IgE/IgG4 ratio.

138.—The method of any one of claims 127 to 129, wherein the treatment results in an improvement in one or more patient-reported outcomes (PROs) selected from the group consisting of PAQLQ score, PACQLQ score, PRQLQ score, PRQLQ-IA score, EQ-5D-5L score, EQ-5D-Y score, ACQ-5-IA score, ACQ-7-IA score, HCRU score, AM-symptom score, PM-symptom score, number of nocturnal awakenings, and reliever medication use frequency.

139.—The method of any one of claims 127 to 129, wherein the treatment results in an improvement of slope of % predicted FEV1.

140.—The method of any one of claims 127 to 129, wherein the treatment results in a reduction in annualized severe asthma exacerbations selected from:

——(a) a deterioration of asthma requiring use of systemic corticosteroids for at least three days and/or hospitalization or emergency room visit requiring systemic corticosteroids; and

——(b) loss of asthma control (LOAC) event defined by:

——(i) ≥ 6 additional reliever puffs of salbutamol/albuterol or levosalbutamol/levalbuterol in a 24 hour period on two consecutive days;

——(ii) an increase in ICS dose ≥ 4 times than a previous dose;

——(iii) a decrease in AM or PM peak flow of 30% or more on 2 consecutive days of treatment, based on the defined stability limit; or

——(iv) a severe exacerbation event.

~~141. The method of any one of claims 127 to 129, wherein the treatment results in an improvement in lung function as measured by FEV₁, by FVC, by FEF_{25-75%}, by AM PEF, by PM PEF or any combination thereof.~~

~~142. The method of any one of claims 127 to 129, wherein the subject is administered a background therapy selected from the group consisting of: a TNF inhibitor, an IL-1 inhibitor, an IL-5 inhibitor, an IL-8 inhibitor, an IgE inhibitor, a leukotriene inhibitor, a corticosteroid, a methylxanthine, an NSAID, nedocromil sodium, cromolyn sodium, a long-acting beta2 agonist and an anti-fungal agent or any combinations thereof.~~

~~143. The method of any one of claims 127 to 129, wherein the subject is administered a background therapy comprising inhaled corticosteroid (ICS) optionally in combination with a second controller medication.~~

~~144. The method of claim 143, wherein the second controller medication is selected from the group consisting of a long-acting β 2 agonist (LABA), a leukotriene receptor antagonist (LTRA), a long-acting muscarinic antagonist (LAMA), and a methylxanthine.~~

~~145. The method of claim 143, wherein the ICS is administered at high dose or at a medium dose.~~

~~146. The method of any one of claims 127 to 129, wherein the antibody or antigen-binding fragment thereof comprises a heavy chain variable region (HCVR) sequence of SEQ ID NO: 1 and a light chain variable region (LCVR) sequence of SEQ ID NO: 2.~~

~~147. The method of any one of claims 127 to 129, wherein the antibody is dupilumab.~~

~~148. The method of any one of the previous claims, wherein the subject has a comorbid Type 2 inflammatory condition in addition to asthma.~~

~~149. The method of claim 141, wherein the comorbid Type 2 inflammatory condition is selected from the group consisting of atopic dermatitis, allergic conjunctivitis, allergic rhinitis, eosinophilic esophagitis, food allergy, hives and any combination thereof.~~

~~150. The method of any one of the previous claims, wherein the subject has allergic asthma.~~

~~151. The method of claim 150, wherein the subject has a baseline total serum IgE ≥ 30 IU/mL.~~

~~152. The method of claim 150, wherein the subject has a baseline allergen-specific IgE ≥ 0.35 kU/L for at least one aeroallergen.~~

~~153. The method of claim 150, wherein the subject has a baseline total serum IgE ≥ 30 IU/mL, and a baseline allergen-specific IgE ≥ 0.35 kU/L for at least one aeroallergen.~~