

CLAIMS

We claim:

1. A method of treating eosinophilic esophagitis (EoE) in a subject, comprising subcutaneously administering about 180 mg to about 360 mg of an IL-13 antibody, or antigen binding fragment thereof, to the subject weekly, thereby treating EoE in the subject.
2. The method of claim 1, wherein the IL-13 antibody, or antigen-binding fragment thereof, binds to IL-13 and prevents interaction between IL-13 and an IL-13 receptor.
3. The method of claim 1 or claim 2, wherein the IL-13 antibody, or antigen-binding fragment thereof, is a monoclonal antibody, or antigen-binding fragment thereof.
4. The method of claim 1 or claim 2, wherein the IL-13 antibody, or antigen-binding fragment thereof, is a human or humanized antibody, or antigen-binding fragment thereof.
5. The method of claim 1, wherein the antibody is 13C5.5, or an antigen-binding fragment thereof.
6. The method of claim 5, wherein the 13C5.5 antibody, or antigen-binding fragment thereof, comprises a heavy chain variable region comprising SEQ ID NO: 2 and a light chain variable region comprising SEQ ID NO: 3.
7. The method of claim 1, wherein the antibody is 6A1, 3G4, tralokinumab, lebrikizumab, QAZ-576, IMA-638 or IMA-026.
8. The method of claim 1, comprising subcutaneously administering about 180 mg of the IL-13 antibody, or antigen binding fragment thereof, to the subject weekly.
9. The method of claim 1, comprising subcutaneously administering about 360 mg of the IL-13 antibody, or antigen binding fragment thereof, to the subject weekly.

10. The method of claim 1, further comprising selecting a subject who exhibits at least one symptom associated with eosinophilic esophagitis (EoE).
11. The method of claim 10, wherein the symptom associated with EoE is selected from the group consisting of eosinophilic infiltration of the esophagus, thickening of the esophageal wall, food refusal, vomiting, abdominal pain, heartburn, regurgitation, dysphagia, and food impaction.
12. The method of claim 10, wherein the subject also has a disease or disorder selected from the group consisting of atopic dermatitis, asthma, allergic rhinitis, allergic conjunctivitis, and a combination thereof.
13. The method of claim 10, wherein the subject is selected based on an elevated level of a biomarker associated with eosinophilic esophagitis (EoE), wherein the biomarker selected from the group consisting of esophagus eosinophils, eotaxin-3, periostin, serum IgE, IL-13, IL-5, serum thymus and activation regulated chemokine (TARC; CCL17), thymic stromal lymphopoietin (TSLP), serum ECP, and eosinophil-derived neurotoxin (EDN) or a combination thereof.
14. The method of claim 10, wherein the subject is selected based on the mean esophageal eosinophil counts in a biopsy sample obtained from the subject during an esophageal endoscopy.
15. The method of claim 10, wherein the subject is selected based on peak eosinophil count of ≥ 15 per high powered field (HPF) in the esophagus.
16. The method of claim 1, wherein the subject exhibits at least 50% decrease in the number of eosinophils per HPF from the peak level after at least 16 weeks of administration of the IL-13 antibody, or antigen binding fragment thereof.
17. The method of any one of the previous claims, wherein the subject is a human subject.
18. The method of any one of the previous claims, wherein the subject is a steroid naïve subject who has not previously undergone steroid therapy.

19. The method of any one of claims 1-17, wherein the subject has previously undergone steroid therapy.
20. The method of claim 19, wherein the subject is non-steroid refractory.
21. The method of claim 19, wherein the subject is steroid-refractory.
22. The method of any one of the previous claims, wherein the antibody, or antigen-binding portion thereof, is administered to the subject for at least about 16 weeks.
23. The method of any one of the previous claims, wherein the antibody, or antigen-binding portion thereof, is administered to the subject for the duration of EoE disease.
24. The method of claim 1, further comprising determining a the mean esophageal eosinophil count measured in the 5 most inflamed high powered field (HPF) in the esophagus before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the mean esophageal eosinophil count after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the mean esophageal eosinophil count before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.
25. The method of claim 1, further comprising determining dysphagia clinical symptoms before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the dysphagia clinical symptoms after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the dysphagia clinical symptoms before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.
26. The method of claim 25, wherein the dysphagia clinical symptoms are assessed using the eosinophilic esophagitis activity index (EEsAI) and recorded as a daily symptom diary (DSD) score.
27. The method of claim 1, further comprising determining a dysphagia symptom questionnaire (DSQ) score before and after administration of the antibody, or antigen-binding

portion thereof, to the subject, wherein a decrease in the DSQ score after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the DSQ score before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.

28. The method of claim 1, further comprising determining mean eosinophilic esophagitis (EoE) endoscopic reference score (EREF) before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the EREF after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the EREF before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.

29. The method of claim 28, wherein the EREF is determined based on the presence of inflammatory markers in the esophagus, the presence of remodeling markers in the esophagus, or a combination thereof.

30. The method of claim 28, wherein the EREF is determined based on the presence or absence of plurality of features selected from the group consisting of edema, fixed rings, exudates, furrows and stricture, or a combination thereof.

31. The method of claim 1, further comprising determining a subject's global assessment of disease severity before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the subject's global assessment of disease severity after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the subject's global assessment of disease severity before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.

32. The method of claim 1, further comprising determining a clinician's global assessment of disease severity before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the clinician's global assessment of disease severity after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the clinician's global assessment of disease severity before

administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.

33. The method of claim 1, further comprising determining a histology grade and a mean stage-adjusted score before and after administration of the antibody, or antigen-binding portion thereof, to the subject, wherein a decrease in the histology grade or the mean stage-adjusted score after administration of the antibody, or antigen-binding portion thereof, to the subject as compared to the histology grade or the mean stage-adjusted score before administration indicates that the antibody, or antigen-binding portion thereof, is effective in treating the subject.

34. The method of any one of the previous claims, further comprising administering an additional agent to the subject.

35. The method of claim 34, wherein the additional agent is a steroid.

36. The method of claim 35, wherein the steroid is budesonide.

37. The method of claim 34, wherein the additional agent is selected from the group consisting of: a therapeutic agent, an imaging agent, a cytotoxic agent, an angiogenesis inhibitor, a kinase inhibitor, a co-stimulation molecule blocker, an adhesion molecule blocker, an anti-cytokine antibody or functional fragment thereof; methotrexate, a cyclosporin, a rapamycin, an FK506, a detectable label or reporter, a TNF antagonist, an anti-rheumatic, a muscle relaxant, a narcotic, a non-steroid anti-inflammatory drug (NSAID), an analgesic, an anesthetic, a sedative, a local anesthetic, a neuromuscular blocker, an antimicrobial, an antipsoriatic, a corticosteroid, an anabolic steroid, an erythropoietin, an immunization, an immunoglobulin, an immunosuppressive, a growth hormone, a hormone replacement drug, a radiopharmaceutical, an antidepressant, an antipsychotic, a stimulant, an asthma medication, a beta agonist, an inhaled steroid, an oral steroid, an epinephrine or analog, a cytokine, and a cytokine antagonist.

38. A method of treating or preventing asthma in a subject, comprising subcutaneously administering about 180 mg to about 360 mg of an IL-13 antibody, or antigen binding fragment thereof, to the subject weekly, thereby treating asthma in the subject.

39. The method of claim 38, wherein the IL-13 antibody, or antigen-binding fragment thereof, binds to IL-13 and prevents interaction between IL-13 and an IL-13 receptor.
40. The method of claim 38 or claim 39, wherein the IL-13 antibody, or antigen-binding fragment thereof, is a monoclonal antibody, or antigen-binding fragment thereof.
41. The method of claim 38 or claim 39, wherein the IL-13 antibody, or antigen-binding fragment thereof, is a human or humanized antibody, or antigen-binding fragment thereof.
42. The method of claim 38, wherein the antibody is 13C5.5, or an antigen-binding fragment thereof
43. The method of claim 42, wherein the 13C5.5 antibody, or antigen-binding fragment thereof, comprises a heavy chain variable region comprising SEQ ID NO: 2 and a light chain variable region comprising SEQ ID NO: 3.
44. The method of claim 38, wherein the antibody is 6A1, 3G4, tralokinumab, lebrikizumab, QAZ-576, IMA-638 or IMA-026.
45. The method of claim 38, wherein the asthma is mild to moderate asthma.
46. The method of claim 38, comprising subcutaneously administering about 180 mg of the IL-13 antibody, or antigen binding fragment thereof, to the subject weekly.
47. The method of claim 38, comprising subcutaneously administering about 360 mg of the IL-13 antibody, or antigen binding fragment thereof, to the subject weekly.
48. The method of claim 38, further comprising selecting a subject who exhibits at least one symptom associated with asthma.
49. The method of claim 48, wherein the symptom associated with asthma is selected from the group consisting of secretion or build-up of sticky mucus or phlegm, coughing, wheezing, shortness of breath, chest tightness, chest pain and chest pressure.

50. The method of any one of the previous claims 38–49, wherein the subject is a human subject.
51. The method of any one of the previous claims 38–50, wherein the subject is a steroid naïve subject who has not previously undergone steroid therapy.
52. The method of any one of claims 38–50, wherein the subject has previously undergone steroid therapy.
53. The method of claim 52, wherein the subject is non-steroid refractory.
54. The method of claim 52, wherein the subject is steroid-refractory.
55. The method of any one of the previous claims 38–54, wherein the antibody, or antigen-binding portion thereof, is administered to the subject for at least about 16 weeks.
56. The method of any one of the previous claims 38–54, wherein the antibody, or antigen-binding portion thereof, is administered to the subject for the duration of asthma disease.
57. The method of claim 38, further comprising determining a biomarker associated with asthma.
58. The method of any one of the previous claims 38–57, further comprising administering an additional agent to the subject.
59. The method of claim 58, wherein the additional agent is a steroid.
60. The method of claim 59, wherein the steroid is budesonide.
61. The method of claim 58, wherein the additional agent is selected from the group consisting of: a therapeutic agent, an imaging agent, a cytotoxic agent, an angiogenesis inhibitor, a kinase inhibitor, a co-stimulation molecule blocker, an adhesion molecule blocker, an anti-cytokine antibody or functional fragment thereof; methotrexate, a

cyclosporin, a rapamycin, an FK506, a detectable label or reporter, a TNF antagonist, an anti-rheumatic, a muscle relaxant, a narcotic, a non-steroid anti-inflammatory drug (NSAID), an analgesic, an anesthetic, a sedative, a local anesthetic, a neuromuscular blocker, an antimicrobial, an antipsoriatic, a corticosteroid, an anabolic steroid, an erythropoietin, an immunization, an immunoglobulin, an immunosuppressive, a growth hormone, a hormone replacement drug, a radiopharmaceutical, an antidepressant, an antipsychotic, a stimulant, an asthma medication, a beta agonist, an inhaled steroid, an oral steroid, an epinephrine or analog, a cytokine, and a cytokine antagonist.