rhinosinusitis and nasal polyposis (Plager, Kahl et al. 2010) and eosinophilic bronchitis (Oshikawa, Kuroiwa et al. 2001).

[0006] Additional evidence linking the IL-33/ST2 pathway to human disease is provided by genetic studies, which have identified IL-33 and/or ST2 gene polymorphisms in the general population that are significantly associated with increased risk of disease or parameters of disease severity. Several large genome-wide association studies have linked genetic variation in ST2 (IL1RL1) or IL-33 with increased risk of asthma (Gudbjartsson, Bjornsdottir et al. 2009; Moffatt, Gut et al. 2010; Wu, Romieu et al. 2010) and other studies have genetically linked this pathway to increased asthma severity (Ali, Zhang et al. 2009) and bronchial hyper responsiveness (Reijmerink, Postma et al. 2008). Similar findings have genetically implicated this pathway in allergic disorders such as atopic dermatitis (Shimizu, Matsuda et al. 2005), rhinosinusitis (Sakashita, Yoshimoto et al. 2008; Castano R 2009) as well as nasal polyposis (Buysschaert, Grulois et al. 2010).

[0007] Collectively, these links to several human diseases and the ability of this cytokine axis to promote many forms of harmful inflammation imply this is a useful target for therapeutic intervention.

SUMMARY

[0008] The present disclosure provides anti-ST2 antigen binding proteins, e.g., antibodies and functional fragments thereof, having properties amenable to commercial production and therapeutic use in humans. The anti-ST2 antigen binding proteins are particularly useful in methods of treating diseases and disorders associated with the IL-33/ST2 axis. Provided herein are ST2-binding antibodies that bind ST2 with high affinity and effectively block IL-33-binding, thereby reducing IL-33-mediated signaling in the cell.

[0009] In one aspect, there is provided an isolated ST2 antibody comprising a light chain variable domain that comprises an LCDR1 as set forth in SEQ ID NO:107; an LCDR2 sequence as set forth in SEQ ID NO:118; and an LCDR3 sequence as set forth in SEQ ID NO:129; and a heavy chain variable domain that comprises an HCDR1 as set forth in SEQ ID NO:41; an HCDR2 sequence as set forth in SEQ ID NO:52; and an HCDR3 sequence as set forth in SEQ ID NO:63.~~ST2 antibody comprising: a) a light chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:96; b) a heavy chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:30; or c) a light chain variable domain of a) and a heavy chain variable domain of b).~~ In a first example, the ST2 antigen binding protein comprises a) a light chain variable domain having at least 90% identity, at least 95% identity, or is identical to the amino acid sequence set forth in SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:163, SEQ ID NO:164, or SEQ ID NO:165; b) a heavy chain variable domain having at least 90% identity, at least 95% identity, or is identical to the amino acid sequence set forth in SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID

NO:38, SEQ ID NO:39, SEQ ID NO:145, SEQ ID NO:146, or SEQ ID NO:147; or c) the light chain variable domain of a) and the heavy chain variable domain of b).

forth in SEQ ID NO:163 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:145; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:164 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:146; and those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:165 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:147.

[0013] ~~In another aspect, there is provided an isolated ST2 antibody comprising: a) a light chain variable domain comprising an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:107; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:118; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:129; and b) a heavy chain variable domain comprising an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:41; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:52; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:63.~~ In a third example, the ST2 antigen binding protein contains a light chain variable domain comprising a) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:106; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:117; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:128; b) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:107; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:118; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:129; c) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:108; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:119; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:130; d) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:109; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:120; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:131; e) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:110; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:121; and an LCDR3 having no more than three amino

chain variable domain amino acid sequence as set forth in SEQ ID NO:39 (e.g., Ab11); an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:163 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:145 (e.g., Ab30); an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:164 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:146 (e.g., Ab32); or an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:165 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:147 (e.g., Ab33). In preferred examples, the ST2 antigen binding protein inhibits binding of IL-33 to ST2. In particularly preferred examples, the autoimmune or inflammatory disorder is asthma, inflammatory bowel disease, rheumatoid arthritis, psoriasis, atopic dermatitis, fibrosis, chronic obstructive pulmonary disease, systemic lupus erythematosus, sclerosis, Wegener's granulomatosis, Behchet disease, rhinosinusitis, nasal polyposis, eosinophilic bronchitis, and cardiovascular disease.

[0059] In another aspect, the present disclosure provides a method of making an ST2 antigen binding protein of any one of the first, second, third, fourth, fifth, sixth, sixth, seventh, or eighth examples by culturing a recombinant host cell of the eleventh example and isolating the ST2 antigen binding protein from said culture.

[0060] ~~In another aspect, there is provided an isolated ST2 antibody, wherein the ST2 antibody cross-competes with an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:85 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:19.~~In a fourteenth example, the present disclosure provides ST2 antigen binding proteins of any one of the first, second, third, fourth, fifth, sixth, sixth, seventh, or eighth examples that cross-compete with an antibody selected from the group consisting of:

[0061] a) an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:84 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:18;

[0062] b) an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:85 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:19;

[0063] c) an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:86 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:20;

[0064] d) an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:87 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:21;

2 of the polypeptide, wherein the single mutation is selected from the group consisting of L14R, I15R, S33R, E43R, V47R, A62R, G65R, T79R, D92R, D97R, V104R, G138R, N152R, and V176R. By "significantly inhibited" it is meant that the measured difference in binding is statistically significant. In preferred examples, binding is significantly inhibited for two or more members of the group including all members of the group. In certain examples of the fifteenth example, binding also is significantly activated when a single mutation is introduced into human ST2 domain 1 or domain 2 of the polypeptide, wherein the single mutation is selected from the group consisting of L53R, R72A, and S73R. By "significantly activated" it is meant that the measured difference in binding is statistically significant. In preferred examples, binding is significantly activated for all members of the group. In certain examples of the fifteenth example, the ST2 binding protein cross-competes for binding to human ST2 with an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:85 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:19. In particularly preferred examples, the antigen binding protein is an antigen binding protein of the first, second, third, fourth, fifth, sixth, seventh, or eighth example.

[0076] In yet another aspect, there is provided an isolated ST2 antibody, wherein said ST2 antibody binds an ST2 comprising amino acids 19-322 of SEQ ID NO:1 within amino acids 33-44 or 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis. ~~In yet another aspect, there is provided an isolated ST2 antibody which binds to ST2 creating an interface, wherein the interface created by said binding comprises ST2 residue K1, F2, P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, or Y81.~~ In a sixteenth example, the present disclosure provides an antigen binding protein of the first, second, third, fourth, fifth, sixth, seventh, eighth, fourtheenth, or fifteenth example wherein said ST2 binding protein preferably an antibody or antigen binding fragment thereof, binds a portion of ST2 comprising amino acids 33-44 and/or 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis.

[0077] In a seventeenth example, the present disclosure provides an antigen binding protein preferably an antibody or antigen binding fragment thereof, of the first, second, third, fourth, fifth, sixth, seventh, eighth, fourtheenth, fifteenth, or sixteenth example which binds to ST2 creating an interface, wherein the interface created by said binding comprises an ST2 residue selected from the group consisting of K1, F2, P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and Y81. In preferred embodiments of the seventeenth aspect, the interface created by said binding comprises ST2 residue P19, R20, Q21, G22, K23, and/or Y26, ST2 residue I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and/or Y81, or ST2 residues P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and Y81. The interface may be detrmined by solvent exposure difference between bound and unbound ST2 and interface residues are defined as those amino acids having a difference greater than 10% and those that form water-mediated hydrogen bonds with said antibody or determined by as those amino acids having at least one atom within 5 of the antibody.

What is claimed:

1. An ST2 antibody comprising a light chain variable domain that comprises an LCDR1 as set forth in SEQ ID NO:107; an LCDR2 sequence as set forth in SEQ ID NO:118; and an LCDR3 sequence as set forth in SEQ ID NO:129; and a heavy chain variable domain that comprises an HCDR1 as set forth in SEQ ID NO:41; an HCDR2 sequence as set forth in SEQ ID NO:52; and an HCDR3 sequence as set forth in SEQ ID NO:63.

2. The ST2 antibody of of claim 1, wherein the antibody specifically binds human ST2 with an affinity of less than or equal to 1×10^{-10} M.

3. The ST2 antibody of either of claims 1 or 2, wherein the antibody inhibits binding of human ST2 to human IL-33.

4. The ST2 antibody of any of claims 1-3, wherein the antibody reduces human IL-33-mediated ST2 signaling in human ST2-expressing cells.

5. The ST2 antibody of claim 4, wherein the antibody inhibits binding of cynomolgus monkey ST2 to cynomolgus monkey IL-33.

6 The ST2 antibody of claim 5, wherein the antibody reduces IL-33-mediated cynomolgus monkey ST2 signaling in cynomolgus monkey ST2-expressing cells.

7. The ST2 antibody of any of claims 1-6, wherein the antibody is a human antibody.

8. The ST2 antibody of claim 7 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:85 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:19.

9. An isolated nucleic acid encoding an antibody of any of claims 1-8.

10. An isolated nucleic acid encoding a light chain variable domain and a heavy chain variable domain of an antibody of any of claims 1-8.

11. An expression vector comprising the isolated nucleic acid of any of claims 9-10.

12. A recombinant host cell comprising an isolated nucleic acid of any of claims 9-10 operably linked to a promoter.

13. The recombinant host cell of claim 12, wherein the host cell secretes an antibody that binds ST2.

14. The recombinant host cell of any of claims 12-13, wherein the cell is of mammalian origin.

15. The recombinant host cell of claim 14, wherein the cell is a Chinese hamster ovary (CHO) cell line.

16. Use of a ST2 antibody of any one of claims 1-8 in the manufacture of a medicament for treating an autoimmune or inflammatory disorder to a patient in need thereof.

17. The use of claim 16, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:96 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:30.

18. The use of claim 17, wherein the antibody comprises a light chain amino acid sequence as set forth in SEQ ID NO:85 and a heavy chain amino acid sequence as set forth in SEQ ID NO:19.

19. The use of any of claims 16-18, wherein the antibody inhibits binding of IL-33 to ST2.

20. The use of claim 19, wherein the autoimmune or inflammatory disorder is asthma, atopic dermatitis, chronic obstructive pulmonary disease, pulmonary fibrosis, sepsis and trauma, systemic lupus erythematosus, inflammatory bowel disease, rheumatoid arthritis, sclerosis, Wegener's granulomatosis, Behchet disease, cardiovascular disease, rhinosinusitis, nasal polyposis, or eosinophilic bronchitis.

21. A method of making an ST2 antibody, the method comprising:
    a) culturing a recombinant host cell of any one of claims 12-15; and
    b) isolating the ST2 antibody from said culture.

22. An isolated ST2 antibody comprising an ST2 antibody of any of claims 1-8.

23. The isolated ST2 antibody of claim 22, wherein said ST2 antibody binds an ST2 comprising amino acids 19-322 of SEQ ID NO:1 within amino acids 33-44 or 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis.

24. The isolated ST2 antibody of claim 23, wherein said ST2 antibody binds within amino acids 33-44 and 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis.

What is claimed:

1. An isolated ST2 antibody comprising:

a) a light chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:96;

b) a heavy chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:30; or

c) a light chain variable domain of a) and a heavy chain variable domain of b).

2. The ST2 antibody of claim 1, wherein the light chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:96.

3. The ST2 antibody of claim 1 or 2, wherein the heavy chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:30.

4. An isolated ST2 antibody, comprising:

a) a light chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:96;

b) a heavy chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:30; or

c) the light chain variable domain of a) and the heavy chain variable domain of b).

5. The ST2 antibody of claim 4, wherein the light chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:96.

6. The ST2 antibody of claim 4 or 5, wherein the heavy chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:30.

7. The ST2 antibody of claim 1-6, wherein the light chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:96.

8. The ST2 antibody of claim 1-7, wherein the heavy chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:30.

9. An isolated ST2 antibody comprising:

a) a light chain variable domain comprising an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:107; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:118; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:129; and

b) a heavy chain variable domain comprising an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:41; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:52; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:63.

10. The isolated ST2 antibody of any of claim 1-9, wherein said light chain variable region comprises D28 or a conservative substitution thereof, I29 or a conservative substitution thereof, S30 or a conservative substitution thereof, N31 or a conservative substitution thereof, Y32 or a conservative substitution thereof, Y49 or a conservative substitution thereof, D50 or a conservative substitution thereof, N53 or a conservative substitution thereof, E55 or a conservative substitution thereof, T56 or a conservative substitution thereof, D91 or a conservative substitution thereof, D92 or a conservative substitution thereof, N93 or a conservative substitution thereof, F94 or a conservative substitution thereof, or L96 or a conservative substitution thereof.

11. The isolated ST2 antibody of claim 10, wherein said light chain variable region comprises D28 or a conservative substitution thereof, N31 or a conservative substitution thereof, D50 or a conservative substitution thereof, N53 or a conservative substitution thereof, E55 or a conservative substitution thereof, D91 or a conservative substitution thereof, and D92 or a conservative substitution thereof.

12. The isolated ST2 antibody of claim 11, wherein said light chain variable region comprises D28, N31, D50, N53, E55, D91, and D92.

13. The isolated ST2 antibody of any of claim 1-12, wherein said heavy chain variable region comprises W33 or a conservative substitution thereof, I50 or a conservative substitution thereof, D57 or a conservative substitution thereof, R59 or a conservative substitution thereof, H99 or a conservative substitution thereof, G100 or a conservative substitution thereof, T101 or a conservative substitution thereof, S102 or a conservative substitution thereof, S103 or a conservative substitution thereof, D104 or a conservative substitution thereof, Y105 or a conservative substitution thereof, or Y106 or a conservative substitution thereof.

14. The isolated ST2 antibody of claim 13, wherein said heavy chain variable region comprises S102 or a conservative substitution thereof, S103 or a conservative substitution thereof, D104 or a conservative substitution thereof, and Y105 or a conservative substitution thereof.

15. The isolated ST2 antibody of claim 14, wherein said heavy chain variable region comprises S102, S103, D104, and Y105.

16. The ST2 antibody of any of claims 1-15, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:107; an LCDR2 sequence as set forth in SEQ ID NO:118; and an LCDR3 sequence as set forth in SEQ ID NO:129; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:41; an HCDR2 sequence as set forth in SEQ ID NO:52; and an HCDR3 sequence as set forth in SEQ ID NO:63.

17. The ST2 antibody of any of claims 1-15, wherein the antibody specifically binds human ST2 with an affinity of less than or equal to 1×10^{-10} M.

18. The ST2 antibody of any of claims 1-17, wherein the antibody inhibits binding of human ST2 to human IL-33.

19. The ST2 antibody of any of claims 1-18, wherein the antibody reduces human IL-33-mediated ST2 signaling in human ST2-expressing cells.

20. The ST2 antibody of claim 18, wherein the antibody inhibits binding of cynomolgus monkey ST2 to cynomolgus monkey IL-33.

21. The ST2 antibody of claim 20, wherein the antibody reduces IL-33-mediated cynomolgus monkey ST2 signaling in cynomolgus monkey ST2-expressing cells.

22. The ST2 antibody of any of claims 1-21, wherein the antibody is a human antibody.

23. The ST2 antibody of claim 22 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:85 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:19.

24. An isolated nucleic acid encoding a light chain variable domain of an antibody of any of claims 1-23.

25. An isolated nucleic acid encoding a heavy chain variable domain of an antibody of any of claims 1-23.

26. An isolated nucleic acid encoding a light chain variable domain and a heavy chain variable domain of an antibody of any of claims 1-23.

27. The isolated nucleic acid of claim 24, wherein the nucleic acid encodes an antibody light chain.

28. The isolated nucleic acid of claim 27, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:74.

29. The isolated nucleic acid of claim 27, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:74.

30. The isolated nucleic acid of claim 27, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:74.

31. The isolated nucleic acid of claim 27, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:74.

32. The isolated nucleic acid of claim 25, wherein the nucleic acid encodes an antibody heavy chain.

33. The isolated nucleic acid of claim 32, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:8.

34. The isolated nucleic acid of claim 32, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:8.

35. The isolated nucleic acid of claim 32, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:8.

36. The isolated nucleic acid of claim 32, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:8.

37. An expression vector comprising the isolated nucleic acid of any of claims 24-36.

38. A recombinant host cell comprising an isolated nucleic acid of any of claims 24-36 operably linked to a promoter.

39. A recombinant host cell comprising an expression vector of claim 37.

40. The recombinant host cell of claim 39, wherein the host cell secretes an antibody that binds ST2.

41. The recombinant host cell of any of claims 39-40, wherein the cell is of mammalian origin.

42. The recombinant host cell of claim 41, wherein the cell is a Chinese hamster ovary (CHO) cell line.

43. Use of a ST2 antibody of any one of claims 1-23 in the manufacture of a medicament for treating an autoimmune or inflammatory disorder to a patient in need thereof.

44. The use of claim 43, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:96 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:30.

45. The use of claim 44, wherein the antibody comprises a light chain amino acid sequence as set forth in SEQ ID NO:85 and a heavy chain amino acid sequence as set forth in SEQ ID NO:19.

46. The use of any of claims 43-45, wherein the antibody inhibits binding of IL-33 to ST2.

47. The use of claim 46, wherein the autoimmune or inflammatory disorder is asthma, atopic dermatitis, chronic obstructive pulmonary disease, pulmonary fibrosis, sepsis and trauma, systemic lupus erythematosus, inflammatory bowel disease, rheumatoid arthritis, sclerosis, Wegener's granulomatosis, Behchet disease, cardiovascular disease, rhinosinusitis, nasal polyposis, or eosinophilic bronchitis.

48. A method of making an ST2 antibody, the method comprising:

a) culturing a recombinant host cell of any one of claims 39-42; and

b) isolating the ST2 antibody from said culture.

49. An isolated ST2 antibody, wherein the ST2 antibody cross-competes with an antibody comprising a light chain comprising the amino acid sequence set forth in SEQ ID:85 and a heavy chain comprising the amino acid sequence set forth in SEQ ID NO:19.

50. The isolated ST2 antibody of claim 49, wherein said ST2 antibody is an ST2 antibody of any of claims 1-23.

51. An isolated ST2 antibody, wherein said ST2 antibody binds an ST2 comprising amino acids 19-322 of SEQ ID NO:1 within amino acids 33-44 or 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis.

52. The isolated ST2 antibody of claim 51, wherein said ST2 antibody binds within amino acids 33-44 and 88-94 of SEQ ID NO:1 as determined by hydrogen/deuterium exchange analysis.

53. The isolated ST2 antibody of claim 52, wherein said ST2 binding protein is an ST2 binding protein of any of claims 1-23.

54. An isolated ST2 antibody which binds to ST2 creating an interface, wherein the interface created by said binding comprises ST2 residue K1, F2, P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, or Y81.

55. The isolated ST2 antibody of claim 54, wherein the interface created by said binding comprises ST2 residue P19, R20, Q21, G22, K23, or Y26.

56. The isolated ST2 antibody of claim 55, wherein the interface created by said binding comprises ST2 residues P19, R20, Q21, G22, K23, and Y26.

57. The isolated ST2 antibody of claim 54, wherein the interface created by said binding comprises ST2 residue I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, or Y81.

58. The isolated ST2 antibody of claim 57, wherein the interface created by said binding comprises ST2 residues I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and Y81.

59. The isolated ST2 antibody of claim 54, wherein the interface created by said binding comprises ST2 residues P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and Y81.

60. The isolated ST2 antibody of claim 59, wherein the interface created by said binding comprises ST2 residues K1, F2, P19, R20, Q21, G22, K23, Y26, I70, V71, R72, S73, P74, T75, F76, N77, R78, T79, and Y81.

61. The isolated ST2 antibody of any of claim 54-60, wherein the interface is determined by solvent exposure difference between bound and unbound ST2 wherein interface residues are defined as those amino acids having a difference greater than 10% and those that form water-mediated hydrogen bonds with said antibody.

62. The isolated ST2 antibody of any of claim 54-60, wherein the interface residues are defined as those amino acids having at least one atom within 5 of said antibody.