

WHAT IS CLAIMED IS:

1. An antibody or an antigen binding fragment thereof that binds to integrin alpha 5 ($\alpha 5$), comprising:

a) a heavy chain variable region (VH) comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 136, and/or a light chain variable region (VL) comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 139;

b) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 136, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 137;

c) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 138, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 139;

d) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 138, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 137;

e) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 135, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 26;

f) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 25, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 26;

g) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 42, and/or a VL comprising a VL CDR1, a

VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 43;

h) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 51, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 52;

i) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 77, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 78;

j) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 91, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 92;

k) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 109, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 110;

l) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 140, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 141;

m) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 142, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 143;

n) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 144, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 145; or

o) a VH comprising a VH CDR1, a VH CDR2, and a VH CDR3 as set forth in a VH comprising the amino acid sequence of SEQ ID NO: 146, and/or a VL comprising a VL CDR1, a VL CDR2, and a VL CDR3 as set forth in a VL comprising the amino acid sequence of SEQ ID NO: 147.

2. The antibody or antigen binding fragment thereof of claim 1, wherein:

(a) the VH comprises a VH CDR1, a VH CDR2, and a VH CDR3 amino acid sequence as set forth in Figures 2C, 2E, and 2G and Tables 1-6;

and/or

(b) the VL comprises a VL CDR1, a VL CDR2, and a VL CDR3 amino acid sequence as set forth in Figures 2D, 2F, and 2H and Tables 1-6.

3. The antibody or antigen binding fragment thereof of claim 1 or 2, wherein:

a) the VH comprises:

(i) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18;

(2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20; or

(ii) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18;

(2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or VIWSDGSTTYNSSLKS; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20;

and

b) the VL comprises:

(i) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH;

(2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAT, or LWIYSTSNRA; and

(3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23; or

(ii) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH;

(2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAS, or LWIYSTSNRA; and

(3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23.

4. The antibody or antigen binding fragment thereof of claim 3, wherein

a) the VH comprises (i) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18, (ii) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28, and (iii) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20; and

b) the VL comprises (i) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH, (ii) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAT, or LWIYSTSNRA, and (iii) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23.

5. The antibody or antigen binding fragment thereof of claim 3, wherein

a) the VH comprises (i) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18, (ii) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28, and (iii) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20; and

b) the VL comprises (i) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH, (ii) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAS, or LWIYSTSNRA,

and (iii) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23.

6. The antibody or antigen binding fragment thereof of claim 3, wherein

a) the VH comprises (i) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18, (ii) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or VIWSDGSTTYNSSLKS, and (iii) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20; and

b) the VL comprises (i) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH, (ii) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAT, or LWIYSTSNRA, and (iii) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23.

7. The antibody or antigen binding fragment thereof of claim 3, wherein

a) the VH comprises (i) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18, (ii) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or VIWSDGSTTYNSSLKS, and (iii) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20; and

b) the VL comprises (i) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 10, SEQ ID NO: 16, SEQ ID NO: 21, or RASSRVSSNSLH, (ii) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 11, STSNRAS, or LWIYSTSNRA, and (iii) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23.

8. The antibody or antigen binding fragment thereof of claim 1, wherein:

(a) the VH comprising:

- (i) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18;
 - (2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28; and
 - (3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20;
- (ii) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18;
 - (2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 2, SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, or SEQ ID NO: 24; and
 - (3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20;
- (iii) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 27, SEQ ID NO: 31, SEQ ID NO: 34, SEQ ID NO: 35, or SEQ ID NO: 38;
 - (2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28; and
 - (3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 29, SEQ ID NO: 32, SEQ ID NO: 36, or SEQ ID NO: 39;
- (iv) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 12, SEQ ID NO: 13, or SEQ ID NO: 18;
 - (2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 2, SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, or SEQ ID NO: 24; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 3, SEQ ID NO: 9, SEQ ID NO: 15, or SEQ ID NO: 20;

(v) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 53, SEQ ID NO: 59, SEQ ID NO: 64, SEQ ID NO: 65, or SEQ ID NO: 70;

(2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 54, SEQ ID NO: 60, SEQ ID NO: 66, SEQ ID NO: 71, or SEQ ID NO: 76; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 55, SEQ ID NO: 61, SEQ ID NO: 67, or SEQ ID NO: 72;

(vi) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 53, SEQ ID NO: 59, SEQ ID NO: 64, SEQ ID NO: 65, or SEQ ID NO: 70;

(2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 79, SEQ ID NO: 82, SEQ ID NO: 84, SEQ ID NO: 87, or SEQ ID NO: 90; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 80, SEQ ID NO: 83, SEQ ID NO: 85, or SEQ ID NO: 88; or

(vii) (1) a VH CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 93, SEQ ID NO: 97, SEQ ID NO: 100, SEQ ID NO: 101, or SEQ ID NO: 105;

(2) a VH CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 8, SEQ ID NO: 14, SEQ ID NO: 19, SEQ ID NO: 24, or SEQ ID NO: 28; and

(3) a VH CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 94, SEQ ID NO: 98, SEQ ID NO: 102, or SEQ ID NO: 106;

and

(b) the VL comprises:

(i) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 4, SEQ ID NO: 10, SEQ ID NO: 16, or SEQ ID NO: 21;

- (2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 5, SEQ ID NO: 11, or SEQ ID NO: 22; and
- (3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23;
- (ii) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 30, SEQ ID NO: 33, SEQ ID NO: 37, or SEQ ID NO: 40;
- (2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 5, SEQ ID NO: 11, or SEQ ID NO: 41; and
- (3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 6, SEQ ID NO: 17, or SEQ ID NO: 23;
- (iii) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 44, SEQ ID NO: 46, SEQ ID NO: 47, or SEQ ID NO: 49;
- (2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 5, SEQ ID NO: 11, or SEQ ID NO: 22; and
- (3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 45, SEQ ID NO: 48, or SEQ ID NO: 50;
- (iv) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 56, SEQ ID NO: 62, SEQ ID NO: 68, or SEQ ID NO: 73;
- (2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 57, SEQ ID NO: 63, or SEQ ID NO: 74; and
- (3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 58, SEQ ID NO: 69, or SEQ ID NO: 75;
- (v) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 56, SEQ ID NO: 62, SEQ ID NO: 68, or SEQ ID NO: 73;
- (2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 57, SEQ ID NO: 63, or SEQ ID NO: 74; and
- (3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 81, SEQ ID NO: 86, or SEQ ID NO: 89; or
- (vi) (1) a VL CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 95, SEQ ID NO: 99, SEQ ID NO: 103, or SEQ ID NO: 107;

(2) a VL CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 5, SEQ ID NO: 11, or SEQ ID NO: 22; and

(3) a VL CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 96, SEQ ID NO: 104, or SEQ ID NO: 108.

9. The antibody or antigen binding fragment thereof of any one of claims 1-8, wherein:

(i) the VH comprises the amino acid sequence set forth in SEQ ID NO: 136 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 139;

(ii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 136 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 137;

(iii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 138 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 139;

(iv) the VH comprises the amino acid sequence set forth in SEQ ID NO: 138 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 137;

(v) the VH comprises the amino acid sequence set forth in SEQ ID NO: 135 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 26;

(vi) the VH comprises the amino acid sequence set forth in SEQ ID NO: 25 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 26;

(vii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 42 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 43;

(viii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 51 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 52;

(ix) the VH comprises the amino acid sequence set forth in SEQ ID NO: 109 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 110;

(x) the VH comprises the amino acid sequence set forth in SEQ ID NO: 144 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 145;

(xi) the VH comprises the amino acid sequence set forth in SEQ ID NO: 146 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 147;

(xii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 77 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 78;

(xiii) the VH comprises the amino acid sequence set forth in SEQ ID NO: 91 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 92;

(xiv) the VH comprises the amino acid sequence set forth in SEQ ID NO: 140 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 141; or

(xv) the VH comprises the amino acid sequence set forth in SEQ ID NO: 142 and the VL comprises the amino acid sequence set forth in SEQ ID NO: 143.

10. The antibody or antigen binding fragment thereof of any one of claims 1-9, wherein the VH and/or VL region further comprises (a) human framework sequences; and/or (b) a framework 1 (FR1), a framework 2 (FR2), a framework 3 (FR3) and/or a framework 4 (FR4) sequence.

11. The antibody or antigen binding fragment thereof of any one of claims 1-10, wherein the antibody is

(a) a monoclonal antibody,

(b) a humanized antibody, a human antibody, or a chimeric antibody, and/or

(c) a single chain antibody molecule, a dual variable region antibody, a single variable region antibody, a linear antibody, a V region, or a multispecific antibody formed from antibody fragments.

12. The antibody or antigen binding fragment thereof of any one of claims 1-10, wherein the antigen binding fragment is a Fab, Fab', F(ab')₂, Fv, single chain variable fragment (scFv), or (scFv)₂.

13. The antibody or antigen binding fragment thereof of any one of claims 1-12, wherein the integrin $\alpha 5$ is human integrin $\alpha 5$.

14. A conjugate comprising the antibody or antigen binding fragment thereof of any one of claims 1-12, wherein the antibody or antigen binding fragment is conjugated or recombinantly fused to a diagnostic agent, a detectable agent or a therapeutic agent, optionally wherein the therapeutic agent is a chemotherapeutic agent, a cytotoxin, or a drug.

15. A binding agent that binds to essentially the same epitope as or competes for binding to integrin $\alpha 5$ with the antibody or antigen binding fragment thereof of any one of claims 1-13.

16. A polynucleotide encoding the antibody or antigen binding fragment thereof of any one of claims 1-13.

17. A vector comprising the polynucleotide of claim 16.

18. A cell comprising the vector of claim 17.

19. A composition comprising the antibody or antigen binding fragment thereof of any one of claims 1-13 or the conjugate of claim 14, optionally wherein the composition is a pharmaceutical composition further comprising a pharmaceutically acceptable carrier.

20. Use of the antibody or antigen binding fragment thereof of any one of claims 1-13, the conjugate of claim 14, or the composition of claim 19 in the manufacture of a medicament for treating an integrin $\alpha 5$ -mediated disease, disorder or condition in a subject, alleviating one or more symptoms associated with an integrin $\alpha 5$ -mediated disease, disorder or condition in a subject, treating a cancer or a tumor in a subject, alleviating one or more symptoms associated with a cancer or a tumor in a subject, an angiogenesis-mediated disease, disorder, or condition in a subject, alleviating one or more symptoms associated with a cancer or a tumor in a subject, treating an inflammatory disease, disorder, or condition in a subject, and/or alleviating one or more symptoms associated with an inflammatory disease, disorder, or condition in a subject.