WHAT IS CLAIMED IS:

1. A pharmaceutical composition comprising a sialidase conjugated to a serum half-life enhancer that increases the serum half-life of the sialidase when administered to a subject.

2. The pharmaceutical composition of claim 1, wherein the sialidase is not conjugated to a cancer antigen targeting agent that binds a cancer antigen associated with a cancerous cell.

3. The pharmaceutical composition of claims 1-2, wherein the sialidase is a functional fragment of a full-length sialidase that exhibits at least 50% of the activity of the full-length sialidase.

4. The pharmaceutical composition of any one of claims 1-3, wherein the sialidase is a variant that exhibits at least 50% of the activity of the wild-type sialidase.

5. The pharmaceutical composition of any one of claims 1-4, wherein the sialidase and the serum half-life enhancer are covalently linked together in a fusion protein.

6. The pharmaceutical composition of any one of claims 1-4, wherein the sialidase and serum half-life enhancer are chemically conjugated together.

7. The pharmaceutical composition of claims 1-6, wherein the serum half-life enhancer is selected from the group consisting of an Fc domain, transferrin, albumin, XTEN, a homo-amino acid polymer (HAP), a proline-alanine-serine polymer (PAS), an elastin-like peptide (ELP), albumin binding domain, CTP fusion, GLK fusion, and a polyethylene glycol.

8. The pharmaceutical composition of claims 1-7, wherein the serum half-life enhancer is an Fc domain.

9. The pharmaceutical composition of claims 1-7, wherein the serum half-life enhancer is not an Fc domain or polyethylene glycol.

10. The pharmaceutical composition of claims 1-9, wherein the sialidase comprises one or more mutations relative to a template, wild-type sialidase.

11. The pharmaceutical composition of claims 1-10, wherein the sialidase comprises:

(a) a substitution or deletion of a methionine residue at a position corresponding to position 1 of wild-type human Neu2 (M1);

(b) a substitution of a valine residue at a position corresponding to position 6 of wild-type human Neu2 (V6);

(c) a substitution of an isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 (I187); or

(d) a substitution of a cysteine residue at a position corresponding to position 332 of wild-type human Neu2 (C332);

or a combination of any of the foregoing substitutions.

12. The pharmaceutical compositions of claim 11, wherein, in the sialidase:

(a) the methionine residue at a position corresponding to position 1 of wild-type human Neu2 is deleted (ΔM1), is substituted by alanine (M1A), or is substituted by aspartic acid (M1D);

(b) the valine residue at a position corresponding to position 6 of wild-type human Neu2 is substituted by tyrosine (V6Y);

(c) the isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 is substituted by lysine (I187K); or

(d) the cysteine residue at a position corresponding to position 332 of wild-type human Neu2 is substituted by alanine (C332A);

or the sialidase comprises a combination of any of the foregoing substitutions.

13. The pharmaceutical composition of claims 1-11, wherein the sialidase comprises:

(a) a substitution or deletion of a methionine residue at a position corresponding to position 1 of wild-type human Neu2 (M1);

(b) a substitution of a valine residue at a position corresponding to position 6 of wild-type human Neu2 (V6);

(c) a substitution of an proline residue at a position corresponding to position 62 of wild-type human Neu2 (P62);

(d) a substitution of an alanine residue at a position corresponding to position 93 of wild-type human Neu2 (A93);

(e) a substitution of an isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 (I187);

(f) a substitution of a glutamine residue at a position corresponding to position 126 of wild-type human Neu2 (Q126);

(g) a substitution of an alanine residue at a position corresponding to position 242 of wild-type human Neu2 (A242);

(h) a substitution of a glutamine residue at a position corresponding to position 270 of

wild-type human Neu2 (Q270);

(i) a substitution of a serine residue at a position corresponding to position 301 of wild-type human Neu2 (S301);

(j) a substitution of a tryptophan residue at a position corresponding to position 302 of wild-type human Neu2 (W302);

(k) a substitution of a cysteine residue at a position corresponding to position 332 of wild-type human Neu2 (C332);

(l) or a combination of any of the foregoing substitutions.

14. The pharmaceutical composition of any preceding claim, wherein the sialidase comprises a combination of substitutions selected from the group consisting of:

(a) M1D, V6Y, P62G, A93E, I187K, C332A;

(b) M1D, V6Y, P62G, A93E, I187K, S301A, W302R, C332A;

(c) M1D, V6Y, P62G, A93E, Q126Y, I187K, A242F, Q270T, C332A;

(d) M1D, V6Y, P62G, A93E, Q126Y, I187K, C332A; and

(e) A93E, Q126Y, I187K, A242F, Q270T, C332A.

15. The pharmaceutical composition of claim 14, wherein the sialidase conjugated to a serum half-life enhancer comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 115, 152, 180, 184, and 188, or an amino acid sequence that has at least 85%, 90%, 95%, 96%, 97%, 98%, or 99% to an amino acid sequence selected from the group consisting of SEQ ID NOs: 115, 152, 180, 184, and 188.

16. The pharmaceutical composition of any preceding claim, wherein the sialidase comprises:

(a) a substitution of a proline residue at a position corresponding to position 5 of wild-type human Neu2 (P5);

(b) a substitution of a lysine residue at a position corresponding to position 9 of wild-type human Neu2 (K9);

(c) a substitution of a lysine residue at a position corresponding to position 44 of wild-type human Neu2 (K44);

(d) a substitution of a lysine residue at a position corresponding to position 45 of wild-type human Neu2 (K45);

(e) a substitution of a leucine residue at a position corresponding to position 54 of wild-type human Neu2 (L54);

(f) a substitution of a proline residue at a position corresponding to position 62 of

wild-type human Neu2 (P62);

(g) a substitution of a glutamine residue at a position corresponding to position 69 of wild-type human Neu2 (Q69);

(h) a substitution of an arginine residue at a position corresponding to position 78 of wild-type human Neu2 (R78);

(i) a substitution of an aspartic acid residue at a position corresponding to position 80 of wild-type human Neu2 (D80);

(j) a substitution of an alanine residue at a position corresponding to position 93 of wild-type human Neu2 (A93);

(k) a substitution of a glycine residue at a position corresponding to position 107 of wild-type human Neu2 (G107);

(l) a substitution of a glutamine residue at a position corresponding to position 108 of wild-type human Neu2 (Q108);

(m) a substitution of a glutamine residue at a position corresponding to position 112 of wild-type human Neu2 (Q112);

(n) a substitution of a cysteine residue at a position corresponding to position 125 of wild-type human Neu2 (C125);

(o) a substitution of a glutamine residue at a position corresponding to position 126 of wild-type human Neu2 (Q126);

(p) a substitution of an alanine residue at a position corresponding to position 150 of wild-type human Neu2 (A150);

(q) a substitution of a cysteine residue at a position corresponding to position 164 of wild-type human Neu2 (C164);

(r) a substitution of an arginine residue at a position corresponding to position 170 of wild-type human Neu2 (R170);

(s) a substitution of an alanine residue at a position corresponding to position 171 of wild-type human Neu2 (A171);

(t) a substitution of a glutamine residue at a position corresponding to position 188 of wild-type human Neu2 (Q188);

(u) a substitution of an arginine residue at a position corresponding to position 189 of wild-type human Neu2 (R189);

(v) a substitution of an alanine residue at a position corresponding to position 213 of wild-type human Neu2 (A213);

(w) a substitution of a leucine residue at a position corresponding to position 217 of

wild-type human Neu2 (L217);

(x) a substitution of a glutamic acid residue at a position corresponding to position 225 of wild-type human Neu2 (E225);

(y) a substitution of a histidine residue at a position corresponding to position 239 of wild-type human Neu2 (H239);

(z) a substitution of a leucine residue at a position corresponding to position 240 of wild-type human Neu2 (L240);

(aa) a substitution of an arginine residue at a position corresponding to position 241 of wild-type human Neu2 (R241);

(bb) a substitution of an alanine residue at a position corresponding to position 242 of wild-type human Neu2 (A242);

(cc) a substitution of a valine residue at a position corresponding to position 244 of wild-type human Neu2 (V244);

(dd) a substitution of a threonine residue at a position corresponding to position 249 of wild-type human Neu2 (T249);

(ee) a substitution of an aspartic acid residue at a position corresponding to position 251 of wild-type human Neu2 (D251);

(ff) a substitution of a glutamic acid residue at a position corresponding to position 257 of wild-type human Neu2 (E257);

(gg) a substitution of a serine residue at a position corresponding to position 258 of wild-type human Neu2 (S258);

(hh) a substitution of a leucine residue at a position corresponding to position 260 of wild-type human Neu2 (L260);

(ii) a substitution of a valine residue at a position corresponding to position 265 of wild-type human Neu2 (V265);

(jj) a substitution of a glutamine residue at a position corresponding to position 270 of wild-type human Neu2 (Q270);

(kk) a substitution of a tryptophan residue at a position corresponding to position 292 of wild-type human Neu2 (W292);

(ll) a substitution of a serine residue at a position corresponding to position 301 of wild-type human Neu2 (S301);

(mm) a substitution of a tryptophan residue at a position corresponding to position 302 of wild-type human Neu2 (W302);

(nn) a substitution of a cysteine residue at a position corresponding to position 332 of

wild-type human Neu2 (C332);

(oo) a substitution of a valine residue at a position corresponding to position 363 of wild-type human Neu2 (V363); or

(pp) a substitution of a leucine residue at a position corresponding to position 365 of wild-type human Neu2 (L365);

or a combination of any of the foregoing substitutions.

17. The pharmaceutical composition of claims 1-16, wherein the sialidase is selected from the group consisting of a bacterial sialidase, a viral sialidase, and a mammalian sialidase.

18. The pharmaceutical composition of claim 17, wherein the mammalian sialidase is a human sialidase.

19. The pharmaceutical composition of claim 18, wherein the human sialidase is selected from the group consisting of neu1, neu2, neu3, and neu4.

20. The pharmaceutical composition of claim 19, wherein the human sialidase is neu2.

21. The pharmaceutical composition of any one of claims 1-20, comprising from about 0.01 mg/kg to about 100 mg/kg of the sialidase.

22. The pharmaceutical composition of any one of claims 1-21 wherein the pharmaceutical composition comprises a second therapeutic agent.

23. The pharmaceutical composition of claim 22, wherein the second therapeutic agent is selected from the group consisting of an anti-inflammatory agent, anti-angiogenic agent, anti-fibrotic agent, or an anti-proliferative compound (*e.g.*, a cytotoxic agent or a checkpoint inhibitor).

24. The pharmaceutical composition of any one of claims 1-23, wherein the pharmaceutical composition further comprises a stabilizing amount of a sialidase stabilizing agent.

25. The pharmaceutical composition of claim 24, wherein the sialidase stabilizing agent is a cation.

26. The pharmaceutical composition of claim 25, wherein the cation is selected from the group consisting of calcium and magnesium.

27. The pharmaceutical composition of any one of claims 1-26, wherein the pharmaceutical composition is disposed in a sterile container (*e.g.*, bottle or vial).

28. The pharmaceutical composition of claim 27, wherein the pharmaceutical composition is lyophilized in the sterile container.

29. The pharmaceutical composition of claim 28, wherein the pharmaceutical composition is present as a solution in the sterile container.

30. The pharmaceutical composition of any one of claims 27-29, wherein the sterile container is sealed with a septum.

31. The pharmaceutical composition of any one of claims 27-30, wherein the sterile container has a label disposed thereon identifying the pharmaceutical composition contained in the container.

32. A method of treating a sialic acid-related disorder in a subject in need thereof, the method comprising administering to the subject a pharmaceutical composition comprising an effective amount of a sialidase and a serum half-life enhancer that increases the serum half-life of the sialidase when administered to a subject, thereby to treat the disorder.

33. The method of claim 32, wherein the sialic acid-related disorder is cancer.

34. The method of claim 33, wherein the sialidase is not conjugated to a cancer antigen targeting agent that binds a cancer antigen associated with a cancerous cell.

35. The method of any one of claims 32-34, wherein the sialidase is a functional fragment of a full-length sialidase that exhibits at least 50% of the activity of the full-length sialidase.

36. The method of any one of claims 32-35, wherein the sialidase is a variant that exhibits at least 50% of the activity of the wild-type sialidase.

37. The method of any one of claims 32-36, wherein the sialidase and the serum half-life enhancer are covalently linked together in a fusion protein.

38. The method of any one of claims 32-36, wherein the sialidase and serum half-life enhancer are chemically conjugated together.

39. The method of any one of claims 32-37, wherein the serum half-life enhancer is selected from the group consisting of an Fc domain, transferrin, albumin, XTEN, a homo-amino acid polymer (HAP), a proline-alanine-serine polymer (PAS), an elastin-like peptide (ELP), and a polyethylene glycol.

40. The method of any one of claims 32-39, wherein the serum half-life enhancer is an Fc domain.

41. The method of any one of claims 32-39, wherein the serum half-life enhancer is not an Fc domain or polyethylene glycol.

42. The method of any one of claims 32-41, wherein the sialidase comprises one or more mutations relative to a template, wild-type sialidase.

43. The method of any one of claims 32-42, wherein the sialidase comprises:

(a) a substitution or deletion of a methionine residue at a position corresponding to position 1 of wild-type human Neu2 (M1);

(b) a substitution of a valine residue at a position corresponding to position 6 of wild-type human Neu2 (V6);

(c) a substitution of an isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 (I187); or

(d) a substitution of a cysteine residue at a position corresponding to position 332 of wild-type human Neu2 (C332);

or a combination of any of the foregoing substitutions.

44. The method of claim 43, wherein, in the sialidase:

(a) the methionine residue at a position corresponding to position 1 of wild-type human Neu2 is deleted (ΔM1), is substituted by alanine (M1A), or is substituted by aspartic acid (M1D);

(b) the valine residue at a position corresponding to position 6 of wild-type human Neu2 is substituted by tyrosine (V6Y);

(c) the isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 is substituted by lysine (I187K); or

(d) the cysteine residue at a position corresponding to position 332 of wild-type human Neu2 is substituted by alanine (C332A);

or the sialidase comprises a combination of any of the foregoing substitutions.

45. The method of any one of claims 32-44, wherein the sialidase comprises:

(a) a substitution or deletion of a methionine residue at a position corresponding to position 1 of wild-type human Neu2 (M1);

(b) a substitution of a valine residue at a position corresponding to position 6 of wild-type human Neu2 (V6);

(c) a substitution of an proline residue at a position corresponding to position 62 of wild-type human Neu2 (P62);

(d) a substitution of an alanine residue at a position corresponding to position 93 of wild-type human Neu2 (A93);

(e) a substitution of an isoleucine residue at a position corresponding to position 187 of wild-type human Neu2 (I187);

(f) a substitution of a glutamine residue at a position corresponding to position 126 of wild-type human Neu2 (Q126);

(g) a substitution of an alanine residue at a position corresponding to position 242 of wild-type human Neu2 (A242);

(h) a substitution of a glutamine residue at a position corresponding to position 270 of wild-type human Neu2 (Q270);

(i) a substitution of a serine residue at a position corresponding to position 301 of wild-type human Neu2 (S301);

(j) a substitution of a tryptophan residue at a position corresponding to position 302 of wild-type human Neu2 (W302);

(k) a substitution of a cysteine residue at a position corresponding to position 332 of wild-type human Neu2 (C332);

(l) or a combination of any of the foregoing substitutions.

46. The method of any one of claims 32-45, wherein the sialidase comprises a combination of substitutions selected from the group consisting of:

(a) M1D, V6Y, P62G, A93E, I187K, C332A;

(b) M1D, V6Y, P62G, A93E, I187K, S301A, W302R, C332A;

(c) M1D, V6Y, P62G, A93E, Q126Y, I187K, A242F, Q270T, C332A;

(d) M1D, V6Y, P62G, A93E, Q126Y, I187K, C332A; and

(e) A93E, Q126Y, I187K, A242F, Q270T, C332A.

47. The method of claim 46, wherein the sialidase conjugated to a serum half-life enhancer comprises an amino acid sequence selected from the group consisting of SEQ ID NOs: 115, 152, 180, 184, and 188, or an amino acid sequence that has at least 85%, 90%, 95%, 96%, 97%, 98%, or 99% to an amino acid sequence selected from the group consisting of SEQ ID NOs: 115, 152, 180, 184, and 188.

48. The method of any one of claims 32-47, wherein the sialidase comprises:

(a) a substitution of a proline residue at a position corresponding to position 5 of wild-type human Neu2 (P5);

(b) a substitution of a lysine residue at a position corresponding to position 9 of wild-

type human Neu2 (K9);

(c) a substitution of a lysine residue at a position corresponding to position 44 of wild-type human Neu2 (K44);

(d) a substitution of a lysine residue at a position corresponding to position 45 of wild-type human Neu2 (K45);

(e) a substitution of a leucine residue at a position corresponding to position 54 of wild-type human Neu2 (L54);

(f) a substitution of a proline residue at a position corresponding to position 62 of wild-type human Neu2 (P62);

(g) a substitution of a glutamine residue at a position corresponding to position 69 of wild-type human Neu2 (Q69);

(h) a substitution of an arginine residue at a position corresponding to position 78 of wild-type human Neu2 (R78);

(i) a substitution of an aspartic acid residue at a position corresponding to position 80 of wild-type human Neu2 (D80);

(j) a substitution of an alanine residue at a position corresponding to position 93 of wild-type human Neu2 (A93);

(k) a substitution of a glycine residue at a position corresponding to position 107 of wild-type human Neu2 (G107);

(l) a substitution of a glutamine residue at a position corresponding to position 108 of wild-type human Neu2 (Q108);

(m) a substitution of a glutamine residue at a position corresponding to position 112 of wild-type human Neu2 (Q112);

(n) a substitution of a cysteine residue at a position corresponding to position 125 of wild-type human Neu2 (C125);

(o) a substitution of a glutamine residue at a position corresponding to position 126 of wild-type human Neu2 (Q126);

(p) a substitution of an alanine residue at a position corresponding to position 150 of wild-type human Neu2 (A150);

(q) a substitution of a cysteine residue at a position corresponding to position 164 of wild-type human Neu2 (C164);

(r) a substitution of an arginine residue at a position corresponding to position 170 of wild-type human Neu2 (R170);

(s) a substitution of an alanine residue at a position corresponding to position 171 of

wild-type human Neu2 (A171);

(t) a substitution of a glutamine residue at a position corresponding to position 188 of wild-type human Neu2 (Q188);

(u) a substitution of an arginine residue at a position corresponding to position 189 of wild-type human Neu2 (R189);

(v) a substitution of an alanine residue at a position corresponding to position 213 of wild-type human Neu2 (A213);

(w) a substitution of a leucine residue at a position corresponding to position 217 of wild-type human Neu2 (L217);

(x) a substitution of a glutamic acid residue at a position corresponding to position 225 of wild-type human Neu2 (E225);

(y) a substitution of a histidine residue at a position corresponding to position 239 of wild-type human Neu2 (H239);

(z) a substitution of a leucine residue at a position corresponding to position 240 of wild-type human Neu2 (L240);

(aa) a substitution of an arginine residue at a position corresponding to position 241 of wild-type human Neu2 (R241);

(bb) a substitution of an alanine residue at a position corresponding to position 242 of wild-type human Neu2 (A242);

(cc) a substitution of a valine residue at a position corresponding to position 244 of wild-type human Neu2 (V244);

(dd) a substitution of a threonine residue at a position corresponding to position 249 of wild-type human Neu2 (T249);

(ee) a substitution of an aspartic acid residue at a position corresponding to position 251 of wild-type human Neu2 (D251);

(ff) a substitution of a glutamic acid residue at a position corresponding to position 257 of wild-type human Neu2 (E257);

(gg) a substitution of a serine residue at a position corresponding to position 258 of wild-type human Neu2 (S258);

(hh) a substitution of a leucine residue at a position corresponding to position 260 of wild-type human Neu2 (L260);

(ii) a substitution of a valine residue at a position corresponding to position 265 of wild-type human Neu2 (V265);

(jj) a substitution of a glutamine residue at a position corresponding to position 270 of

wild-type human Neu2 (Q270);

(kk) a substitution of a tryptophan residue at a position corresponding to position 292 of wild-type human Neu2 (W292);

(ll) a substitution of a serine residue at a position corresponding to position 301 of wild-type human Neu2 (S301);

(mm) a substitution of a tryptophan residue at a position corresponding to position 302 of wild-type human Neu2 (W302);

(nn) a substitution of a cysteine residue at a position corresponding to position 332 of wild-type human Neu2 (C332);

(oo) a substitution of a valine residue at a position corresponding to position 363 of wild-type human Neu2 (V363); or

(pp) a substitution of a leucine residue at a position corresponding to position 365 of wild-type human Neu2 (L365);

or a combination of any of the foregoing substitutions.

49. The method of any one of claims 32-48, wherein the sialidase is selected from the group consisting of a bacterial sialidase, a viral sialidase, and a mammalian sialidase.

50. The method of claim 49, wherein the mammalian sialidase is a human sialidase.

51. The method of claim 50, wherein the human sialidase is selected from the group consisting of neu1, neu2, neu3, and neu4.

52. The method of claim 51, wherein the human sialidase is neu2.

53. The method of any one of claims 32-52, wherein from about 0.01 mg/kg to about 100 mg/kg of the sialidase is administered to the subject.

54. The method of any one of claims 32-53, wherein the cancer is a solid tumor, soft tissue tumor, hematopoietic tumor or metastatic lesion.

55. The method of claim 54, wherein the solid tumor is a sarcoma, adenocarcinoma, or carcinoma.

56. The method of claim 54 or 55, wherein the solid tumor is a head and neck (*e.g.,* pharynx), thyroid, lung (*e.g.,* small cell or non-small cell lung carcinoma (NSCLC)), breast, lymphoid, gastrointestinal (*e.g.*, oral, esophageal, stomach, liver, pancreas, small intestine, colon and rectum, anal canal), genital or genitourinary tract (*e.g.*, renal, urothelial, bladder,

ovarian, uterine, cervical, endometrial, prostate, testicular), CNS (*e.g.,* neural or glial cell, *e.g.*, neuroblastoma or glioma), or skin (*e.g.,* melanoma) tumor.

57. The method of claim 56, wherein the hematopoietic tumor is a leukemia, acute leukemia, acute lymphoblastic leukemia (ALL), B-cell, T-cell or FAB ALL, acute myeloid leukemia (AML), chronic myelocytic leukemia (CML), chronic lymphocytic leukemia (CLL), *e.g.*, transformed CLL, diffuse large B-cell lymphoma (DLBCL), follicular lymphoma, hairy cell leukemia, myelodyplastic syndrome (MDS), lymphoma, Hodgkin's disease, malignant lymphoma, non-Hodgkin's lymphoma, Burkitt's lymphoma, multiple myeloma, or Richter's Syndrome (Richter's Transformation).

58. The method of claim 56, wherein the cancer is breast cancer.

59. The method of any one of claims 56, wherein the cancer is lymphoma.

60. The method of any one of claims 32-59, wherein administration of the pharmaceutical composition increases expression of granzyme B, IFNγ, IL-10, IL-6, or IL-17A in the subject.

61. The method of any one of claims 32-60, wherein the pharmaceutical composition is administered to the subject in combination with another therapeutic agent.

62. The method of claim 61, wherein the therapeutic agent is selected from the group consisting of an anti-inflammatory agent, anti-angiogenic agent, anti-fibrotic agent, or an anti-proliferative compound (*e.g.*, a cytotoxic agent or a checkpoint inhibitor).

63. The method of any one of claims 32-62, wherein the pharmaceutical composition further comprises a stabilizing amount of a sialidase stabilizing agent.

64. The method of claim 63, wherein the sialidase stabilizing agent is a cation.

65. The method of claim 64, wherein the cation is selected from the group consisting of calcium and magnesium.

66. The method of any one of claims 65, wherein the pharmaceutical composition, prior to administration, is disposed in a sterile container (*e.g.*, bottle or vial).

67. A method of treating cancer in a subject in need thereof, the method comprising administering an effective amount of the pharmaceutical composition of any one of claims 1-31 to the subject.

68. A method of removing sialic acid from a cell in a subject, the method comprising administering to the subject an effective amount of the pharmaceutical composition of any one of claims 1-31 thereby to remove sialic acid from the cell.

69. The method of claim 68, wherein the cell is a tumor cell, dendritic cell (DC) or monocyte.

70. The method of claim 69, wherein the cell is a monocyte, and the method results in increased expression of an MHC-II molecule on the monocyte.

71. A method of increasing phagocytosis of a tumor cell in a subject, the method comprising administering to the subject an effective amount of the pharmaceutical composition of any one of claims 1-31 in an amount effective to remove sialic acid from the tumor cell, thereby increasing phagocytosis of the tumor cell.

72. A method of activating a dendritic cell (DC) in a subject, the method comprising administering to the subject an amount of the pharmaceutical composition of any one of claims 1-31 effective to remove sialic acid from a tumor cell in the subject, thereby to activate the DC in the subject.

73. A method of reducing Siglec-15 binding activity, thereby increasing anti-tumor activity in a tumor microenvironment of a patient, the method comprising administering to the subject an effective amount of the pharmaceutical composition of any one of claims 1-31, thereby increasing anti-tumor activity (*e.g.*, T cell activity) in the subject.

74. A method of expressing a recombinant sialidase, the method comprising:

(a) providing a cell comprising a nucleic acid encoding the recombinant sialidase; and

(b) expressing the recombinant sialidase in the presence of a stabilizing agent.

75. The method of claim 74, wherein the method further comprises purifying the recombinant sialidase produced in step (b).

76. The method of claim 75, wherein the purification is performed in the presence of a stabilizing agent.

77. The method of any one of claims 74-76, wherein the stabilizing agent is a cation.

78. The method of claim 77, wherein the cation is selected from the group consisting of calcium and magnesium.