

CLAIMS**WHAT IS CLAIMED IS:**

1. A recombinant ADAMTS13 variant, wherein the ADAMTS13 variant comprises an amino acid sequence with at least one amino acid substitution as compared to an ADAMTS13 protein.
2. The recombinant ADAMTS13 variant of claim 1, wherein the single amino acid substitution is at amino acid Q97 as denoted in SEQ ID NO: 1, or the equivalent amino acid position in an ADAMTS13.
3. The recombinant ADAMTS13 variant of claim 2, wherein the single amino acid change is from a Q to a D, E, K, H, L, N, P, or R.
4. The recombinant ADAMTS13 variant of claim 2, wherein the single amino acid change is from a Q to an R.
5. The recombinant ADAMTS13 variant of claim 4, wherein the ADAMTS13 variant comprises the amino acid sequence of SEQ ID NO: 2, or an amino acid sequence having at least 80% sequence identity thereof.
6. The recombinant ADAMTS13 variant of claim 5, wherein the ADAMTS13 consists essentially of the amino acid sequence of SEQ ID NO: 2.
7. The recombinant ADAMTS13 variant of claim 5, wherein the ADAMTS13 consists of the amino acid sequence of SEQ ID NO: 2.
8. The recombinant ADAMTS13 variant of claim 1, wherein the ADAMTS13 protein is a human ADAMTS13.

9. The recombinant ADAMTS13 variant of claim 1, wherein the ADAMTS13 protein comprises the amino acid sequence of SEQ ID NO: 1.
10. The recombinant ADAMTS13 variant of any of the preceding claims, wherein at least one of the single amino acid substitutions is within the ADAMTS13 catalytic domain as compared to the ADAMTS13 protein.
11. The recombinant ADAMTS13 variant of any of the preceding claims, wherein the single amino acid substitution is not I⁷⁹M, V⁸⁸M, H⁹⁶D, R¹⁰²C, S¹¹⁹F, I¹⁷⁸T, R¹⁹³W, T¹⁹⁶I, S²⁰³P, L²³²Q, H²³⁴Q, D²³⁵H, A²⁵⁰V, S²⁶³C, and/or R²⁶⁸P as denoted in SEQ ID NO: 1, or the equivalent amino acid position in an ADAMTS13.
12. A pharmaceutical composition comprising at least one ADAMTS13 variant of any one of claims 1-7 and a pharmaceutically acceptable carrier or excipient.
13. The pharmaceutical composition of claim 12, further comprising an ADAMTS13 protein.
14. The pharmaceutical composition of claim 13, wherein the ADAMTS13 protein comprises the amino acid sequence of SEQ ID NO: 1, or an amino acid sequence having at least 80% sequence identity thereof.
15. The pharmaceutical composition of claim 13, wherein the ADAMTS13 protein consists of the amino acid sequence of SEQ ID NO: 1.
16. The pharmaceutical composition of any one of claims 13-15, wherein the ADAMTS13 protein is recombinantly produced.
17. The pharmaceutical composition of any one of claims 13-15, wherein the ADAMTS13 protein is plasma derived.

18. The pharmaceutical composition of any one of claims 13-15, wherein the ratio of ADAMTS13 variant to ADAMTS13 protein is about 1:1 to about 3:1, about 1:1 or about 3:2.
19. The pharmaceutical composition of any one of claims 13-18, wherein the ADAMTS13 variant constitutes between about 52% to about 72% or between about 47% to about 84% of total amount of all ADAMTS13 proteins and variants in the composition.
20. The pharmaceutical composition of claim 18 or claim 19, wherein the ratio or percentage is determined by peptide mapping method.
21. The pharmaceutical composition of claim 18 or claim 19, wherein the ratio or percentage is determined by HPLC analysis of tryptic peptides separated by liquid chromatography followed by mass spectrometry analysis.
22. The pharmaceutical composition of any one of claims 18-21, wherein the ratio or percentage is determined based on intensities in extracted ion chromatograms.
23. The pharmaceutical composition of any one of claims 18-22, wherein the ratio or percentage is determined based on the peak area of tryptic peptides of the ADAMTS13 variant in relation to the sum of the peak areas of all ADAMTS13 proteins and variants in the composition.
24. The pharmaceutical composition of claim 23, wherein the tryptic peptides of all ADAMTS13 proteins and variants in the composition being measured are specific to the at least one amino acid difference between the ADAMTS13 variant as compared to all other ADAMTS13 proteins and variants in the composition.
25. The pharmaceutical composition of claim 24, wherein the tryptic peptide(s) measured for the ADAMTS13 variant is AAGGILHLELLVAVGPDVFQAHR or a combination of AAGGILHLELLVAVGPDVFQAHR and EDTER.

26. The pharmaceutical composition of claim 24 or claim 25, wherein the tryptic peptide measured for the ADAMTS13 protein is AAGGILHLELLVAVGPDVFAQHQEDTER.
27. The pharmaceutical composition of claim 18 or claim 19, wherein the ratio or percentage is determined based on total weight of ADAMTS13 variant in relation to the sum total weight of all ADAMTS13 proteins and variants in the composition.
28. A method for treating or preventing a blood clotting disorder in a subject suffering from or at risk of suffering from a blood clotting disorder, comprising administering to the subject in need thereof a therapeutically effective amount of an ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.
29. The method of claim 28, wherein the blood clotting disorder is inherited TTP, acquired TTP, infarction, cerebral infarction, myocardial infarction, ischemic/reperfusion injury, deep vein thrombosis, or sepsis-related disseminated intravascular coagulation.
30. A method for treating or preventing a bleeding episode in a subject in a subject suffering from or at risk of suffering from a bleeding disorder, comprising administering to the subject in need thereof a therapeutically effective amount of an ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.
31. The method of claim 30, wherein the bleeding episode is associated with inherited TTP, acquired TTP, infarction, cerebral infarction, myocardial infarction, ischemic/reperfusion injury, deep vein thrombosis, or sepsis-related disseminated intravascular coagulation.
32. A method for treating or preventing a vaso-occlusive crisis in a subject suffering from sickle cell disease, comprising administering to the subject in need thereof a therapeutically effective amount of the ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.

33. A method for treating or preventing lung injury in a subject suffering from or at risk of suffering from acute lung injury (ALI) and/or acute respiratory distress syndrome (ARDS), the method comprising administering to the subject in need thereof a therapeutically effective amount of the ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.
34. A method for treating a cerebral infarction in a subject by recanalization of an occluded blood vessel in the subject, comprising administering to the subject in need thereof a therapeutically effective amount of the ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27, thereby recanalizing the occluded blood vessel.
35. A method for treating or preventing a blood clotting disorder associated with cardiovascular disease in a subject, comprising administering to the subject in need thereof a therapeutically effective amount of an ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.
36. The method of claim 35, wherein the blood clotting disorder associated with cardiovascular disease is associated with myocardial infarction, myocardial ischemia, deep vein thrombosis, peripheral vascular disease, stroke, transient ischemic attack, or medical device associated thrombosis.
37. A method for treating or preventing hematologic disease in a subject, comprising administering to the subject in need thereof a therapeutically effective amount of an ADAMTS13 variant of any one of claims 1-7 or pharmaceutical composition of any one of claims 12-27.
38. The method of any one of claims 28-37, wherein the ADAMTS13 variant and/or ADAMTS13 protein is recombinantly produced.
39. The method of any one of claims 28-38, wherein the subject is a mammal.
40. The method of any one of claims 28-38, wherein the subject is a human.

41. The method according to any one of claims 28-40, wherein the composition is lyophilized.
42. The method of claim 41, wherein the composition is reconstituted with a pharmaceutically acceptable vehicle suitable for injection prior to administration.
43. The method of any one of claims 28-40, wherein the composition is in a stable aqueous solution ready for administration.
44. A nucleic acid molecule encoding the ADAMTS13 variant of any one of any one of claims 1-7.
45. A vector comprising the nucleic acid molecule of claim 44.
46. The vector of claim 45, wherein the vector is an expression vector wherein the polynucleotide sequence encoding the ADAMTS13 variant is operably linked to a promoter that is capable of mediating expression of the ADAMTS13 variant in a host cell.
47. A host cell comprising the nucleic acid molecule of claim 44.
48. A host cell comprising the vector of claim 45 or claim 46.
49. A host cell line comprising cells modified to express the ADAMTS13 variant of any one of claims 1-12 and at least one ADAMTS13 protein.
50. The host cell line of claim 49, wherein the ADAMTS13 variant comprises the amino acid sequence of SEQ ID NO: 2, or an amino acid sequence having at least 80% sequence identity thereof
51. The host cell line of claim 49 or claim 50, wherein the amino acid sequence of the ADAMTS13 protein comprises the amino acid sequence of SEQ ID NO: 1, or an amino acid sequence having at least 80% sequence identity thereof.

52. The host cell line of any one of claims 49-51, wherein the amino acid sequence of the ADAMTS13 protein consists of the amino acid sequence of SEQ ID NO: 1.
53. The host cell line of any one of claims 49-53, wherein the ADAMTS13 variant and the ADAMTS13 protein are expressed in different cells in the host cell line.
54. The host cell line of any one of claims 49-53, wherein the ADAMTS13 variant and the ADAMTS13 protein are expressed in the same cell.
55. The host cell or host cell line of any one of claims 47-54, wherein the cell is a CHO, COS, HEK 293, BHK, SK-Hep, or HepG2 cell.
56. The host cell or host cell line of claim 55, wherein the CHO cell is a CHO DBX-11 or CHOZN cell line.
57. The host cell or host cell line of claim 56, wherein the CHOZN cell is a CHO DBX-11 cell line.
58. The host cell or host cell line of claim 56, wherein the CHOZN cell is a CHOZN glutamine synthetase (GS)^{-/-} cell line.