WHAT IS CLAIMED IS:

1. A method for producing recombinant adeno-associated virus (rAAV) vector particles at high recovery or high titer said method comprising the steps of:

(a) harvesting cells and/or cell culture supernatant comprising rAAV vector particles;

(b) optionally concentrating said cells and/or said cell culture supernatant harvested in step (a), optionally via tangential flow filtration, to produce a concentrated harvest;

(c) lysing said harvest produced in step (a) or said concentrated harvest produced in step (b) optionally by microfluidization to produce a lysate;

(d) filtering said lysate produced in step (c) to produce a clarified lysate;

(e) subjecting said clarified lysate produced in step (d) to ion exchange column chromatography to produce a column eluate comprised of purified rAAV vector particles, and optionally concentrating said column eluate by tangential flow filtration to produce a concentrated column eluate;

(f) mixing said column eluate or said concentrated column eluate produced in step (e) with cesium chloride to produce a mixture, and subjecting said mixture to gradient ultracentrifugation to substantially separate *bona fide* rAAV vector particles from empty capsid AAV particles and other AAV vector related impurities;

(g)(1) collecting said *bona fide* rAAV vector particles separated in step (f) and (g)(2) formulating said collected *bona fide* rAAV vector particles in a buffer with a non-ionic surfactant;

(h) subjecting said *bona fide* rAAV vector particles in step (g)(2) to a buffer exchange by tangential flow filtration to produce an AAV vector formulation; and

(i) filtering said AAV vector formulation produced in step (h) thereby producing a formulation of *bona fide* rAAV vector particles at high recovery or high titer.

2. A method according to claim 1, wherein said buffer of step (g)(1) comprises sodium chloride, and/or sodium phosphate.

3. A method according to claim 1, wherein said buffer of step (g)(1) comprises sodium chloride from a concentration of about 5mM to a concentration of about 500 mM.

4. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) comprises a polyalkylene glycol.

5. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) comprises a block co-polymer comprising at least one polyethylene glycol block and at least one polypropylene glycol block.

6. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) comprises an alkyl polyglycoside, cetostearyl alcohol, cetyl alcohol, cocamide DEA, cocamide MEA, decyl glucoside, ethoxylate , IGEPAL CA-630, Isoceteth-20, glucosides, maltosides, monolaurin, nonidet P-40, nonoxynols such as nonoxynol-9, NP-40, octaethylene glycol monododecyl ether, N-octyl beta-D-thioglucopyranosides, octyl glucosides, oleyl alcohol, PEG-10 sunflower glycerides, pentaethylene glycol monododecyl ether, poloxamers such as poloxamer 407, poloxamer 188 (poly(ethylene oxide-co-polypropylene oxide)), polyglycerol polyricinoleate, sorbitans, stearyl alcohol, Triton X-100, and Tween 80.

7. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) comprises cetomacrogol 1000, polysorbates such as polysorbate 20 (polyoxyethylene (20) sorbitan monolaurate), polysorbate 40 (polyoxyethylene (20) sorbitan monopalmitate), polysorbate 60 (polyoxyethylene (20) sorbitan monostearate), polysorbate 80 (polyoxyethylene (20) sorbitan monooleate); polyglycerol polyricinoleate, octadecanoic acid [2-[(2R,3S,4R)-3,4-dihydroxy-2-tetrahydrofuranyl]-2-hydroxyethyl] ester, octadecanoic acid [(2R,3S,4R)-2-[1,2-bis(1-oxooctadecoxy)ethyl]-4-hydroxy-3-tetrahydrofuranyl] ester; C8 to C22 long chain alcohols such as 1-octadecanol, cetylstearyl alcohol, Hexadecan-1-ol and cis-9-octadecen-1-ol; substituted or unsubtituted octylphenol in which the substituents can include a polyethoxyethanol group (e.g., to form octylphenoxypolyethoxyethanol) or any other substituent that will form a non-ionic surfactant with octylphenol; polyethylene glycol monoisohexadecyl ether; dodecanoic acid 2,3-dihydroxypropyl ester; glucosides may include lauryl glucoside, octylglucoside and decyl glucoside; fatty acid amides such as cocamide diethanolamine and cocamide monoethanolamine; and nonionic surfactants that have a hydrophilic polyethylene oxide chain and an aromatic hydrocarbon lipophilic or hydrophilic group, such as Nonoxynol-9 and Triton X-100.

8. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) comprises a polyethylene glycol-block-polypropylene glycol-block-polyethylene glycol or a triblock copolymer composed of a central hydrophobic chain of polyoxypropylene

(poly(propylene oxide)) flanked by two hydrophilic chains of polyoxyethylene (poly(ethylene oxide)).

9. A method according to claim 1, wherein said non-ionic surfactant of step (g)(2) has a concentration of about 0.0001% to a concentration of about 0.1%.

10. A method according to claim 1, wherein said *bona fi*de rAAV vector particles are present in said formulation produced in step (i) at a concentration of about 10^{15} particles per mL to about a concentration of 10^{18} *bona fi*de rAAV vector particles per mL.

11. A method according to claim 1, wherein the yield of said *bona fide* rAAV vector particles in step (i) is at least about $5x10^{12}$ *bona fide* rAAV vector particles/ml.

12. A method according to claim 1, wherein the recovery of said *bona fide* rAAV vector particles in step (i) is at least about 60% of the total rAAV vector particles of step (a).

13. A method according to claim 1, wherein said bona fide rAAV vector particles are derived from an AAV selected from the group consisting of AAV1, AAV2, AAV3, AAV4, AAV5, AAV6, AAV7, AAV8, AAV9, AAV10 and Rh74.

14. A method according to claim 1, wherein said *bona fide* rAAV particles comprise a transgene that encodes an inhibitory nucleic acid.

15. A method according to claim 14, wherein said inhibitory nucleic acid is selected from the group consisting of siRNA, an antisense molecule, miRNA, ribozyme and shRNA.

16. A method according to claim 1, wherein said *bona fide* rAAV particles comprise a transgene that encodes a gene product selected from the group consisting of insulin, glucagon, growth hormone (GH), parathyroid hormone (PTH), growth hormone releasing factor (GRF), follicle stimulating hormone (FSH), luteinizing hormone (LH), human chorionic gonadotropin (hCG), vascular endothelial growth factor (VEGF), angiopoietins, angiostatin, granulocyte colony stimulating factor (GCSF), erythropoietin (EPO), connective tissue growth factor (CTGF), basic fibroblast growth factor (bFGF), acidic fibroblast growth factor (aFGF), epidermal growth factor (EGF), transforming growth factor α (TGFα),

platelet-derived growth factor (PDGF), insulin growth factors I and II (IGF-I and IGF-II), TGFβ, activins, inhibins, bone morphogenic protein (BMP), nerve growth factor (NGF), brain-derived neurotrophic factor (BDNF), neurotrophins NT-3 and NT4/5, ciliary neurotrophic factor (CNTF), glial cell line derived neurotrophic factor (GDNF), neurturin, agrin, netrin-1 and netrin-2, hepatocyte growth factor (HGF), ephrins, noggin, sonic hedgehog and tyrosine hydroxylase.

17. A method according to claim 1, wherein said *bona fide* rAAV particles comprise a transgene that encodes a gene product selected from the group consisting of thrombopoietin (TPO), interleukins (IL1 through IL-17), monocyte chemoattractant protein, leukemia inhibitory factor, granulocyte-macrophage colony stimulating factor, Fas ligand, tumor necrosis factors α and β, interferons α, β, and γ, stem cell factor, flk-2/flt3 ligand, IgG, IgM, IgA, IgD and IgE, chimeric immunoglobulins, humanized antibodies, single chain antibodies, T cell receptors, chimeric T cell receptors, single chain T cell receptors, class I and class II MHC molecules.

18. A method according to claim 1, wherein said *bona fide* rAAV vector particles comprise a transgene encoding a protein useful for correction of in born errors of metabolism selected from the group consisting of carbamoyl synthetase I, ornithine transcarbamylase, arginosuccinate synthetase, arginosuccinate lyase, arginase, fumarylacetacetate hydrolase, phenylalanine hydroxylase, alpha- 1 antitrypsin, glucose-6-phosphatase, porphobilinogen deaminase, factor V, factor VIII, factor IX, cystathione beta-synthase, branched chain ketoacid decarboxylase, albumin, isovaleryl-coA dehydrogenase, propionyl CoA carboxylase, methyl malonyl CoA mutase, glutaryl CoA dehydrogenase, insulin, beta-glucosidase, pyruvate carboxylate, hepatic phosphorylase, phosphorylase kinase, glycine decarboxylase, RPE65, H-protein, T-protein, a cystic fibrosis transmembrane regulator (CFTR) sequence, and a dystrophin cDNA sequence.

19. A method according to claim 1, wherein said *bona fide* rAAV vector particles comprise a transgene encoding a protein useful for correction of neurodegenerative diseases.

20. A method according to claim 19, wherein said protein is tripeptidyl peptidase 1 (TPP1).

21. A method according to claim 1, comprising collecting the empty capsid particles separately in step (f).

22. A method according to claim 1, wherein purity of said *bona fide* rAAV vector particles in said filtrate of step (i) is at least about 80%.

23. A method according to claim 1, wherein said empty capsid particles are present in said filtrate of step (i) in an amount of 10% or less.

24. A method according to claim 1, wherein said filtrate of step (i) has no greater than about 10% aggregated rAAV particles.

25. A method according to claim 1, wherein said centrifugation in step (f) is conducted in a single step.

26. A method according to claim 1, wherein said centrifugation in step (f) is density gradient ultracentrifugation.

27. A method according to claim 1, wherein said column eluate in step (e) is concentrated by tangential flow filtration to produce a concentrated column eluate.

28. A method according to claim 1, further comprising adding a nuclease to the lysate produced in step (c).

29. A method according to any of claims 1-28, wherein the method produces rAAV vector particles having a higher titer than rAAV vector particles produced where a nonionic surfactant is added to the AAV vector formulation after buffer exchange by tangential flow filtration of step (h).

30. A method according to any of claims 1-28, wherein the collected *bona fide* rAAV vector particles of step (g)(1) are diluted to a concentration of less than about $5x10^{12}$ rAAV vector particles/ml, prior to, substantially simultaneously or after step (g)(2).

31. A method according to any of claims 1-28, wherein the tangential flow filtration of step (b), (e) and/or (h) is carried out at a trans-membrane pressure of between about 2-15 psig.

32. A method according to any of claims 1-28, wherein the tangential flow filtration of step (b), (e) and/or (h) is carried out at a shear rate greater than about 3000 sec^{-1}.