CLAIMS

1. A composition comprising a population of recombinant human acid α-glucosidase (rhGAA) molecules for use in the treatment of Pompe disease in a subject in need thereof, wherein the rhGAA molecules are produced from Chinese hamster ovary (CHO) cells;

wherein the rhGAA molecules comprise seven potential N-glycosylation sites;

wherein the rhGAA molecules on average comprise 3-4 mannose-6-phosphate (M6P) residues;

wherein the rhGAA molecules on average comprise at least about 0.5 mol bis-mannose-6-phosphate (bis-M6P) per mol of rhGAA at the first potential N-glycosylation site as determined using liquid chromatography-tandem mass spectrometry (LC-MS/MS);

wherein the population of rhGAA molecules is administered concurrently or sequentially with a pharmacological chaperone, and wherein the pharmacological chaperone is miglustat or a pharmaceutically acceptable salt thereof;

wherein the population of rhGAA molecules is administered intravenously at a dose of about 20 mg/kg and the miglustat or pharmaceutically acceptable salt thereof is administered orally at a dose of about 260 mg; and wherein

(i) the subject is an ERT-switch patient, and, compared to baseline, the subject's pulmonary function, as measured by an upright forced vital capacity (FVC) test, is stable or improved at six months after treatment; and/or

(ii) the subject is an ambulatory ERT-switch patient and, compared to baseline, the subject's creatine kinase levels at six months after treatment are reduced at least 15%; and/or

(iii) the subject is a nonambulatory ERT-switch patient and, compared to baseline, the subject's creatine kinase levels at six months after treatment are reduced at least 20%; and/or

(iv) the subject is an ERT-switch patient, and, compared to baseline, the subject's levels of urine hexose tetrasaccharide at six months after treatment are reduced at least 35%.

2. The composition for use of claim 1, wherein the miglustat or pharmaceutically acceptable salt thereof is administered prior to administration of the rhGAA.

3. The composition for use of claim 1 or claim 2, wherein the rhGAA molecules comprise an amino acid sequence at least 95% identical to SEQ ID NO:1 or SEQ ID NO:5.

4. The composition for use of any one of claims 1 to 3, wherein the rhGAA molecules comprise on average from about 0.5 mol to about 7.0 mol of mono-M6P or bis-M6P per mol of rhGAA, as determined using LC-MS/MS.

5. The composition for use of any one of claims 1 to 4, wherein the rhGAA molecules comprise on average at least 2.5 mol M6P per mol of rhGAA and at least 4 mol sialic acid per mol of rhGAA, as determined using LC-MS/MS.

6. The composition for use of any one of claims 1 to 5, wherein, per mol of rhGAA, the rhGAA molecules comprise on average:

(a) about 0.4 to about 0.6 mol mono-M6P at the second potential N-glycosylation site;

(b) about 0.4 to about 0.6 mol bis-M6P at the fourth potential N-glycosylation site; and

(c) about 0.3 to about 0.4 mol mono-M6P at the fourth potential N-glycosylation site;

wherein (a)-(c) are determined using LC-MS/MS.

7. The composition for use of any one of claims 1to 6, wherein, per mol of rhGAA, the rhGAA molecules further comprise about 4 mol to about 7.3 mol sialic acid; and

wherein, per mol of rhGAA, the rhGAA molecules comprise on average:

(a) about 0.9 to about 1.2 mol sialic acid at the third potential N-glycosylation site;

(b) about 0.8 to about 0.9 mol sialic acid at the fifth potential N-glycosylation site; and

(c) about 1.5 to about 4.2 mol sialic acid at the sixth potential N-glycosylation site;

wherein (a)-(c) are determined using LC-MS/MS.

8. The composition for use of any one of claims 1 to 7, wherein the population of rhGAA molecules is formulated in a pharmaceutical composition, and wherein the pharmaceutical composition further comprises at least one buffer selected from the group consisting of a citrate, a phosphate, and a combination thereof, and at least one excipient selected from the group consisting of mannitol, polysorbate 80, and a combination thereof; wherein the pharmaceutical composition has a pH of about 5.0 to about 7.0.

9. The composition for use of any one of claims 1 to 8, wherein, in the pharmaceutical composition, the population of rhGAA molecules is present at a concentration of about 5-50 mg/mL, the at least one buffer is a sodium citrate buffer present at a concentration of about 10-100 mM, the at least one excipient is mannitol present at a concentration of about 10-50 mg/mL and polysorbate 80 present at a concentration of about 0.1-1 mg/mL, and the pharmaceutical composition further comprises water and optionally comprises an acidifying agent and/or alkalizing agent; wherein the pharmaceutical composition has a pH of about 6.0.