

WHAT IS CLAIMED IS:

1. Use of a BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for reducing, inhibiting or decreasing TNF signaling in a patient.
2. Use of an agent that modulates expression or amount of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for treating a patient suffering from, or at risk of developing, inflammation.
3. Use of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for reducing, inhibiting, or decreasing inflammation or an inflammatory response in a patient.
4. The use according to claim 1, wherein the TNF signaling occurs in the pulmonary system, lung, cardiovascular system, central nervous system, bone, skeletal joints, skeletal muscle, gastrointestinal system, stomach, small intestine, large intestine, liver, kidney or pancreas.
5. The use according to claims 2 or 3, wherein the inflammation or inflammatory response affects the pulmonary system, lung, cardiovascular system, central nervous system, bone, skeletal joints, skeletal muscle, gastrointestinal system, stomach, small intestine, large intestine, liver, kidney or pancreas.
6. The use according to claims 2 or 3, wherein the inflammation or inflammatory response comprises chronic inflammatory disease, chronic inflammatory demyelinating polyneuropathy, primary immune thrombocytopenia, geriatric anorexia, gut inflammation, inflammatory bowel disease, ulcerative colitis, Crohn's disease, lupus, rheumatoid arthritis, chronic myocarditis, chronic myocarditis after Covid 19 infection, psoriasis, psoriatic arthritis or ankylosing spondylitis.
7. Use of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for modulating PARP1 levels, expression, or activity in a patient.

8. Use of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for reducing, inhibiting or decreasing PARP1 levels, expression or activity in a patient.

9. Use of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for reducing, inhibiting, decreasing or stabilizing amounts of alpha-synuclein, expression or activity in a patient.

10. Use of BCL2-associated athanogene 3 (BAG3) encoding nucleic acid, BAG3 protein or BAG3 peptide in the manufacture of a medicament for reducing, inhibiting or decreasing the worsening or severity of one or more symptoms of Parkinson's disease in a patient.

11. The use according to any one of claims 1-10, wherein the BAG3 encoding nucleic acid comprises an expression vector expressing a BAG3 protein or active BAG3 peptide thereof.

12. The use according to claim 11, wherein the expression vector further comprises a promoter, the promoter comprising an inducible promoter, a constitutive promoter, bicistronic promoter, tissue specific promoter or cardiac specific promoter.

13. The use according to claim 11 or 12, wherein the expression vector comprises a viral vector, cardiotropic vector, plasmid, or a yeast vector.

14. The use according to claim 13, wherein the viral or cardiotropic vector comprises an adenovirus vector, an adeno-associated virus vector (AAV), a coxsackie virus vector, cytomegalovirus vector, Epstein-Barr virus vector, parvovirus vector, or hepatitis virus vector.

15. The use according to claim 14, wherein the AAV vector comprises a capsid protein having 90% or more sequence identity to any of AAV1, AAV2, AAV3, AAV4, AAV5, AAV6, AAV7, AAV8, AAV9, AAV10, AAV11 or AAV12.
16. The use according to claim 12 or 13, wherein the expression vector is a pseudotyped viral vector.
17. The use according to any one of claims 2-16, wherein the inflammation or inflammatory response is induced or increased by a cytokine.
18. The use according to claim 17, wherein the cytokine comprises tumor necrosis factor (TNF).
19. The use according to any one of claims 1-18, wherein the patient expresses lower than normal levels of BAG3 in a tissue or organ or does not detectably express or produce functional BAG3.
20. The use according to any one of claims 2-3, wherein the inflammation or inflammatory response occurs in the pulmonary system, lung, cardiovascular system, central nervous system, bone, skeletal joints, skeletal muscle, gastrointestinal system, stomach, small intestine, large intestine, liver, kidney or pancreas.
21. The use according to any one of claims 11-20, wherein the expression vector further comprises a promoter, the promoter optionally comprising an inducible promoter, a constitutive promoter, bicistronic promoter or tissue specific promoter.
22. The use according to claim 21, wherein the promoter confers expression in the pulmonary system, lung, cardiovascular system, central nervous system, bone, skeletal joints, skeletal muscle, gastrointestinal system, stomach, small intestine, large intestine, liver, kidney or pancreas.
23. The use according to any one of claims 11-23, wherein the expression vector further comprises an AAV inverted terminal repeat (ITR).

24. The use according to any one of claims 11-23, wherein the expression vector further comprises a polyadenylation sequence and/or stop codon.
25. The use according to any one of claims 1-24, wherein the patient is human.
26. The use according to any one of claims 1-25, wherein the patient or human has a mutation in their endogenous BAG3 polynucleotide or polypeptide.
27. The use according to any one of claims 1-26, wherein the patient or human has reduced expression or activity of endogenous BAG3 polynucleotide or polypeptide.
28. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector at a dose from about 0.1×10^{12} vector genomes (vg)/weight of the patient in kilograms (vg/kg) to about 1.0×10^{14} vg/kg.
29. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector at a dose from about 1.0×10^{12} vg/kg to about 0.5×10^{14} vg/kg.
30. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector at a dose from about 3.0×10^{12} vg/kg to about 1.0×10^{13} vg/kg.
31. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector at a dose from about 3.0×10^{12} vg/kg to about 9.0×10^{12} vg/kg.

32. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector at a dose from about 3.0×10^{12} vg/kg to about 8.0×10^{12} vg/kg.

33. The use according to any one of claims 13-27, wherein the medicament is to be administered to the patient, the patient thereby receiving the viral vector is at a dose from about 3.0×10^{12} vg/kg to about 5.0×10^{12} vg/kg.