Claims

WHAT IS CLAIMED IS:

1. A recombinant adeno-associated virus (rAAV) expression vector, comprising a gene encoding a TRIM72 protein or its variant or functional fragment thereof, wherein said recombinant AAV expression vector comprises a neuron-specific promoter.
2. The rAAV expression vector of claim 1, wherein said neuron-specific promoter comprises a human derived promoter.
3. The rAAV expression vector of any one of claims 1-2, wherein said promoter is selected one or more from the group consisting of: an excitatory neuron-specific promoter, a brain neocortical and hippocampal excitatory neuron-specific promoter, a short neuron-specific promoter, a Dopaminergic neuron-specific promoter, a Glutaminergic neuron-specific promoter, a GABAergic neuron-specific promoter, a Cholinergic neuron-specific promoter and a Serotoninergic neuron-specific promoter.
4. The rAAV expression vector of any one of claims 1-3, wherein said promoter is selected from a group selected from: human synapsin (hSyn), Calcium/calmodulin-dependent kinase IIa (CamKIIa), c-fos, methyl CpG-binding protein 2 (Mecp2), Neuron-specific enolase (NSE), somatostatin (SST), human vesicular GABA (Gamma-Aminobutyric Acid) transporter (hVGAT), choline acetyltransferase (ChAT), Serotonin transporter (SERT) and tyrosine hydroxylase (TH).
5. The rAAV expression vector of any one of claims 1-4, wherein the serotype of AAV vector is selected from AAV1, AAV2, AAV5, AAV6, AAV8, AAV9, AAVrh, AAVDJ, and AAVhull.
6. The rAAV expression vector of any one of claims 1-5, wherein said TRIM72 protein or its variant or functional fragment thereof comprises a full-length TRIM72 protein or a TRIM72 truncated protein.
7. The rAAV expression vector of claim 6, wherein said TRIM72 truncated protein at least comprises the PRYSPRY domain or its functional fragment of a TRIM72 protein.
8. The rAAV expression vector of claim 7, wherein said PRYSPRY domain comprises the amino acid sequence as set forth in SEQ ID NO: 6.

9. The rAAV expression vector of any one of claims 6-8, wherein said TRIM72 protein or its variant or functional fragment thereof comprises the amino acid sequence as set forth in SEQ ID NO: 2, 6, 7, 8, 9 or 11.
10. The rAAV expression vector of any one of claims 1-9, wherein said TRIM72 protein or its variant or functional fragment thereof comprises an amino acid mutation at position C14.
11. The rAAV expression vector of any one of claims 1-10, wherein said TRIM72 protein or its variant or functional fragment thereof comprises an amino acid mutation C14A.
12. The rAAV expression vector of any one of claims 1-11, wherein said TRIM72 protein or its variant or functional fragment thereof does not comprise an amino acid mutation at position C242.
13. The rAAV expression vector of any one of claims 1-12, is used for protect neurons by reducing oxidative stress.
14. A host cell, comprising said rAAV expression vector of any one of claims 1-13.
15. A pharmaceutical composition, comprises said rAAV expression vector of any one of claims 1-13or said host cell of claim 14, and a pharmaceutically accepted adjuvant.
16. A use of the rAAV expression vector of any one of claims 1-13, the host cell of claim 14 and/or the pharmaceutical composition of claim 15 in manufacture of a medicament for preventing and/or treating a nervous system disease.
17. The use of claim 16, wherein said nervous system disease comprising ALS, or Stroke.