CLAIMS

1. An antisense oligonucleotide comprising one or more of the sequences selected from:

ACAGCCGGAGUCACAGUGUCA;

CCAUCAGGUCACAGCCGGAGUCA;

CCAGACGCAUCCCUGAGGCC; and

CGCGGUGACACACAAACAUC,

or greater than a segment of five contiguous nucleotides thereof, characterized in that the sequence or segment: (i) specifically binds an ELAV-like RNA-binding protein 3 (ELAVL3) cryptic exon DNA or RNA sequence in a cell when introduced into the cell; and (ii) increases ELAVL3 protein expression in the cell relative to a cell in which the antisense oligonucleotide has not been introduced.

2. The antisense oligonucleotide of claim 1, wherein the antisense oligonucleotide comprises the RNA sequence ACAGCCGGAGUCACAGUGUCA, CCAUCAGGUCACAGCCGGAGUCA, or both ACAGCCGGAGUCACAGUGUCA and CCAUCAGGUCACAGCCGGAGUCA, or greater than a segment of five contiguous nucleotides thereof, further characterized in that the sequence or segment of five contiguous nucleotides increases stathmin-like 2 (STMN2) protein expression in the cell relative to a cell in which the antisense oligonucleotide has not been introduced.

3. The antisense oligonucleotide of claim 1 or 2, further comprising a ribose sugar modification.

4. The antisense oligonucleotide of claim 3, wherein the sugar modification comprises a 2'-O-methoxyethyl (MOE) modification on each ribose sugar.

5. The antisense oligonucleotide of claim 3, wherein the ribose sugar modification comprises 2'-O-methylribose, 2'-O-methoxyethyl ribose, or 2'fluororibose.

6. The antisense oligonucleotide of claim 3, wherein the sugar modification comprises a locked nucleic acid (LNA) modification.

7. The antisense oligonucleotide of claim 6, wherein the LNA is 1-(hydroxymethyl)-2,5-dioxabicyclo[2.2.1]heptan-7-ol.

8. The antisense oligonucleotide of any one of claims 1-7, wherein two or more adjacent nucleosides are connected via a modified phosphate linkage.

9. The antisense oligonucleotide of claim 8, wherein the phosphate linkage is a phosphorothioate, methylphosphonate, or phosphorodiamidate linkage.

10. The antisense oligonucleotide of any one of claims 1-9, wherein the antisense oligonucleotide is characterized in that two or more adjacent nucleosides are connected via a phosphate linkage, and the antisense oligonucleotide comprises a ribose sugar modification.

11. The antisense oligonucleotide of any one of claims 1-10, wherein two or more adjacent nucleosides are connected by a phosphorothioate linkage, and wherein the antisense oligonucleotide comprises 2'-O-methoxyethyl (MOE) modifications on each ribose sugar.

12. The antisense oligonucleotide of any one of claims 1-11, further comprising a nucleobase modification.

13. The antisense oligonucleotide of claim 12, wherein the nucleobase modification comprises a G-clamp nucleotide.

14. The antisense oligonucleotide of claim 13, wherein the G-clamp nucleotide is selected from [9-(2-aminoethoxy)-3H-benzo[b]pyrimido[4,5-e][l,4]oxazin- 2(10H)-one] nucleobase, l-(2-((2-oxo-2,10-dihydro-3H-benzo[b]pyrimido [4,5-e][l,4]oxazin-9-yl)oxy)ethyl)guanidine nucleobase, and 8-(3-aminopropoxy)-3H-benzo [b]pyrimido[4,5-e][l,4]oxazin-2(10H)-one nucleobase, or analogues thereof.

15. A recombinant vector encoding the antisense oligonucleotide of any one of claims 1-14.

16. A lipid particle comprising the antisense oligonucleotide of any one of claims 1-14.

17. A pharmaceutical composition comprising the antisense oligonucleotide of any one of claims 1-14.

18. The antisense oligonucleotide of any one of claims 1-14, the recombinant vector encoding the antisense oligonucleotide of any one of claims 1-14, or a pharmaceutical composition comprising either or both of the antisense oligonucleotide and the recombinant vector for use in treating a neurodegenerative disease.

19. An antisense oligonucleotide comprising the RNA sequence ACAGCCGGAGUCACAGUGUCA, wherein two or more adjacent nucleosides of the antisense oligonucleotide are connected via a modified phosphate linkage, and wherein the antisense oligonucleotide comprises an MOE modification.

20. The antisense oligonucleotide of claim 19, a recombinant vector encoding the antisense oligonucleotide of claim 19, or a pharmaceutical composition comprising either or both of the antisense oligonucleotide and the recombinant vector for use in treating a neurodegenerative disease.

21. An antisense oligonucleotide comprising one or more of the DNA sequences selected from:

SEQ ID NO: 6;

SEQ ID NO: 7;

SEQ ID NO: 8; and

SEQ ID NO: 9,

or greater than a segment of five contiguous nucleotides thereof, characterized in that the sequence or segment: (i) specifically binds an ELAV-like RNA-binding protein 3 (ELAVL3) cryptic exon DNA or RNA sequence in a cell when introduced into the cell; and (ii) increases ELAVL3 protein expression in the cell relative to a cell in which the antisense oligonucleotide has not been introduced.

22. The antisense oligonucleotide of claim 21, a recombinant vector encoding the antisense oligonucleotide of claim 21, or a pharmaceutical composition comprising either or both of the antisense oligonucleotide and the recombinant vector for use in treating a neurodegenerative disease.