CLAIMS

What is claimed is:

1. A compound, comprising a modified oligonucleotide consisting of 12 to 30 linked nucleosides and having a nucleobase sequence comprising at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18, at least 19, or at least 20 consecutive nucleobases of any of the nucleobase sequences of SEQ ID NOs: 11-165.

2. The compound of claim 2, wherein the nucleobase sequence of the modified oligonucleotide is at least 80%, at least 81%, at least 82%, at least 83%, at least 84%, at least 85%, at least 86%, at least 87%, at least 88%, at least 89%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or 100% complementary to SEQ ID NO: 1, SEQ ID NO: 2, or SEQ ID NO: 3.

3. The compound of any preceding claim, consisting of a single-stranded modified oligonucleotide.

4. The compound of any preceding claim, wherein at least one internucleoside linkage is a modified internucleoside linkage.

5. The compound of claim 4, wherein at least one modified internucleoside linkage is a phosphorothioate internucleoside linkage.

6. The compound of claim 4, wherein each modified internucleoside linkage is a phosphorothioate internucleoside linkage.

7. The compound of any preceding claim, wherein at least one internucleoside linkage is a phosphodiester internucleoside linkage.

8. The compound of any preceding claim, wherein at least one internucleoside linkage is a phosphorothioate linkage and at least one internucleoside linkage is a phosphodiester linkage.

9. The compound of any preceding claim, wherein at least one nucleoside comprises a modified nucleobase.

10. The compound of claim 9, wherein the modified nucleobase is a 5-methylcytosine.

11. The compound of any preceding claim, wherein at least one nucleoside of the modified oligonucleotide comprises a modified sugar.

12. The compound of claim 11, wherein the at least one modified sugar is a bicyclic sugar.

13. The compound of claim 12, wherein the bicyclic sugar comprises a 4'-CH(R)-O-2' bridge

wherein R is, independently, H, C_1-C_{12} alkyl, or a protecting group.

14. The compound of claim 13, wherein R is methyl.

15. The compound of claim 13, wherein R is H.

16. The compound of claim 11, wherein the at least one modified sugar comprises a 2'-O-methoxyethyl group.

17. The compound of any preceding claim, wherein the modified oligonucleotide comprises:

a gap segment consisting of 10 linked deoxynucleosides;

a 5' wing segment consisting of 5 linked nucleosides; and

a 3' wing segment consisting of 5 linked nucleosides;

wherein the gap segment is positioned between the 5' wing segment and the 3' wing segment and wherein each nucleoside of each wing segment comprises a modified sugar.

18. The compound of any preceding claim, wherein the modified oligonucleotide consists of 20 linked nucleosides.

19. A composition comprising the compound of any preceding claim or salt thereof and at least one of a pharmaceutically acceptable carrier or diluent.

20. A method comprising administering to an animal the compound or composition of any preceding claim.

21. The method of claim 20, wherein the animal is a human.

22. The method of claims 20 and 21, wherein the administering the compound prevents, treats, ameliorates, or slows progression of an Ataxin 2 associated disease, disorder or condition.

23. The method of claim 22, wherein the disease, disorder or condition is spinocerebellar ataxia type 2 (SCA2), amyotrophic lateral sclerosis (ALS), or parkinsonism.

24. Use of the compound or composition of any preceding claim for the manufacture of a medicament for treating a neurodegenerative disorder.

CLAIMS:

What is claimed is:

1. A single-stranded modified oligonucleotide consisting of 12 to 30 linked nucleosides and having a nucleobase sequence comprising a portion of at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18 at least 19, or at least 20 contiguous nucleobases complementary to an equal length portion of nucleobases 1053-1109 of SEQ ID NO: 1, wherein the nucleobase sequence of the modified oligonucleotide is at least 90% complementary to SEQ ID NO: 1 or SEQ ID NO: 2, wherein the modified oligonucleotide comprises:

   a gap segment consisting of linked deoxynucleosides;
   a 5' wing segment consisting of linked nucleosides; and
   a 3' wing segment consisting of linked nucleosides;

   wherein the gap segment is positioned between the 5' wing segment and the 3' wing segment and wherein each nucleoside of each wing segment comprises a modified sugar moiety or each wing segment comprises nucleosides comprising a modified sugar moiety and nucleosides comprising an unmodified sugar moiety, and wherein the single-stranded modified oligonucleotide reduces Ataxin-2 mRNA and/or protein expression.

2. A single-stranded modified oligonucleotide consisting of 12 to 30 linked nucleosides and having a nucleobase sequence comprising at least 12, at least 13, at least 14, at least 15, at least 16, at least 17, at least 18, at least 19, or 20 consecutive nucleobases of any of the nucleobase sequences of SEQ ID NOs: 18, 19 or 98, wherein the nucleobase sequence of the modified oligonucleotide is at least 90% complementary to SEQ ID NO: 1 or SEQ ID NO: 2, wherein the modified oligonucleotide comprises:

   a gap segment consisting of linked deoxynucleosides;
   a 5' wing segment consisting of linked nucleosides; and
   a 3' wing segment consisting of linked nucleosides;

   wherein the gap segment is positioned between the 5' wing segment and the 3' wing segment and wherein each nucleoside of each wing segment comprises a modified sugar moiety, or each wing segment comprises nucleosides comprising a modified sugar moiety and nucleosides comprising an unmodified sugar moiety, and wherein the single-stranded modified oligonucleotide reduces Ataxin-2 mRNA and/or protein expression.

3. The single-stranded modified oligonucleotide of claim 1 or 2, wherein the nucleobase sequence of the modified oligonucleotide is at least 95%, or 100% complementary to SEQ ID NO: 1 or

SEQ ID NO: 2.

4. The single-stranded modified oligonucleotide of any one of claims 1-3, wherein at least one internucleoside linkage is a modified internucleoside linkage; optionally wherein:

a) at least one modified internucleoside linkage is a phosphorothioate internucleoside linkage; or

b) each modified internucleoside linkage is a phosphorothioate internucleoside linkage.

5. The single-stranded modified oligonucleotide of any one of claims 1-4, wherein:

a) at least one internucleoside linkage is a phosphodiester internucleoside linkage; and/or

b) at least one internucleoside linkage is a phosphorothioate linkage and at least one internucleoside linkage is a phosphodiester linkage.

6. The single-stranded modified oligonucleotide of any one of claims 1-5, wherein at least one nucleoside comprises a modified nucleobase; optionally wherein the modified nucleobase is a 5-methylcytosine.

7. The single-stranded modified oligonucleotide of any one of claims 1-6, wherein each nucleoside of each wing segment comprises a modified sugar moiety.

8. The single-stranded modified oligonucleotide of any one of claims 1-7, wherein at least one modified sugar moiety is a bicyclic sugar moiety; optionally wherein the bicyclic sugar moiety comprises a 4'-CH(R)-O-2' bridge wherein R is, independently, H, C_1-C_4 alkyl, or a protecting group; further optionally wherein:

a) R is methyl; or

b) R is H.

9. The single-stranded modified oligonucleotide of any one of claims 1-7, wherein at least one modified sugar moiety comprises a 2'-O-methoxyethyl group or a 2'-O-CH_3 group.

10. The single-stranded modified oligonucleotide of any one of claims 1-9, wherein the modified oligonucleotide comprises:

a gap segment consisting of 10 linked deoxynucleosides;
a 5' wing segment consisting of 5 linked nucleosides; and
a 3' wing segment consisting of 5 linked nucleosides;

wherein the gap segment is positioned between the 5' wing segment and the 3' wing segment and wherein each nucleoside of each wing segment comprises a modified sugar moiety.

11. The single-stranded modified oligonucleotide of any one of claims 1-10, wherein the modified oligonucleotide consists of 20 linked nucleosides.

12. The single-stranded modified oligonucleotide of any one of claims 1-11, wherein the modified oligonucleotide comprises a conjugate group.

13. A single-stranded modified oligonucleotide consisting of 20 linked nucleosides and having a nucleobase sequence comprising at least 15 consecutive nucleobases of SEQ ID NO: 18, wherein the nucleobase sequence of the modified oligonucleotide is 100% complementary to SEQ ID NO: 1 or SEQ ID NO: 2, wherein at least one nucleoside of the modified oligonucleotide comprises a modified sugar moiety, wherein the at least one modified sugar moiety comprises a 2'-O-methoxyethyl group, wherein at least one nucleoside comprises a modified nucleobase that is a 5-methylcytosine, wherein at least one internucleoside linkage is a phosphorothioate linkage and at least one internucleoside linkage is a phosphodiester linkage, wherein the modified oligonucleotide comprises:

    a gap segment consisting of linked deoxynucleosides;
    a 5' wing segment consisting of linked nucleosides; and
    a 3' wing segment consisting of linked nucleosides;

    wherein the gap segment is positioned between the 5' wing segment and the 3' wing segment, wherein each nucleoside of each wing segment comprises a modified sugar moiety, and wherein the single-stranded modified oligonucleotide reduces Ataxin-2 mRNA and/or protein expression.

14. A single-stranded modified oligonucleotide consisting of 20 linked nucleosides and having a nucleobase sequence comprising at least 19 consecutive nucleobases of SEQ ID NO: 19, wherein the nucleobase sequence of the modified oligonucleotide is 100% complementary to SEQ ID NO: 1 or SEQ ID NO: 2, wherein at least one nucleoside of the modified oligonucleotide comprises a modified sugar moiety, wherein the at least one modified sugar moiety comprises a 2'-O-methoxyethyl group, wherein at least one nucleoside comprises a modified nucleobase that is a 5-methylcytosine, wherein at least one internucleoside linkage is a phosphorothioate linkage and at least one internucleoside linkage is a phosphodiester linkage, wherein the modified oligonucleotide comprises:

    a gap segment consisting of linked deoxynucleosides;
    a 5' wing segment consisting of linked nucleosides; and
    a 3' wing segment consisting of linked nucleosides;

wherein the gap segment is positioned between the 5’ wing segment and the 3’ wing segment, wherein each nucleoside of each wing segment comprises a modified sugar moiety, and wherein the single-stranded modified oligonucleotide reduces Ataxin-2 mRNA and/or protein expression.

15. A composition comprising the single-stranded modified oligonucleotide of any one of claims 1-14 and at least one of a pharmaceutically acceptable carrier or diluent.

16. The composition of claim 15 wherein the pharmaceutically acceptable diluent is phosphate-buffered saline (PBS); and/or wherein the modified oligonucleotide is a sodium salt or a potassium salt.