

What is claimed is:

1. An antisense oligonucleotide comprising:
 - a. PMO-002 (SEQ ID NO:2)
 - b. PMO-424 (SEQ ID NO:224); Stereopattern: SSSSSSSSSSSSSSSSSSSSS; or
 - c. MOE-307 (SEQ ID NO:252); Stereopattern: SSOSSSSSSSSSSSOSSS.
2. The antisense oligonucleotide of claim 1, wherein the antisense oligonucleotide comprises PMO-002 (SEQ ID NO:2).
3. The antisense oligonucleotide of claim 1, wherein the antisense oligonucleotide comprises PMO-424 (SEQ ID NO:224); Stereopattern: SSSSSSSSSSSSSSSSSSSSS.
4. The antisense oligonucleotide of claim 1, wherein the antisense oligonucleotide comprises MOE-307 (SEQ ID NO:252); Stereopattern: SSOSSSSSSSSSSSOSSS.
5. The antisense oligonucleotide of claim 1, wherein the antisense oligonucleotide is 18-30 nucleotides in length, 21-30 nucleotides in length, 21-25 nucleotides in length, 18-21 nucleotides in length, 18-25 nucleotides in length, 25-30 nucleotides in length, 21 nucleotides in length, 25 nucleotides in length, or 18 nucleotides in length.
6. An antisense oligonucleotide consisting of:
 - a. PMO-002 (5'-CCTCACCTGTCACATGCACAGAGAG-3') (SEQ ID NO:2);
 - b. PMO-424 (5'-CCTCACCTGTCACATGCACAG-3') (SEQ ID NO:224); Stereopattern: SSSSSSSSSSSSSSSSSSSSS; or
 - c. MOE-307 (5'-CCGAAAGAAGTATGAACC-3') (SEQ ID NO:252); Stereopattern: SSOSSSSSSSSSSSOSSS.
7. The antisense oligonucleotide of claim 6, wherein the antisense oligonucleotide is PMO-002 (SEQ ID NO:2).
8. The antisense oligonucleotide of claim 6, wherein the antisense oligonucleotide is PMO-424 (SEQ ID NO:224); Stereopattern: SSSSSSSSSSSSSSSSSSSSS.

9. The antisense oligonucleotide of claim 6, wherein the antisense oligonucleotide is MOE-307 (SEQ ID NO:252); Stereopattern: SSOSSSSSSSSSSSOSSS.
10. The antisense oligonucleotide of any one of claims 1-9, wherein the antisense oligonucleotide comprises at least one non-natural internucleotide linkage.
11. The antisense oligonucleotide of claim 10, wherein the internucleotide linkages are phosphorodiamidate linkages or phosphorothioate linkages.
12. The antisense oligonucleotide of any one of claims 1-11, wherein the antisense oligonucleotide has a *CD33* Exon-2 skipping efficiency of 30% or greater according to a Standard Exon-Skipping Efficiency Assay for PMO ASOs when the antisense oligonucleotide comprises phosphorodiamidate morpholino oligomers or according to a Standard Exon-Skipping Efficiency Assay for MOE ASOs when the antisense oligonucleotide comprises methoxyethyl ribose oligomers.
13. The antisense oligonucleotide of any one of claims 1-12, wherein the antisense oligonucleotide comprises modified nucleobases, wherein the modified nucleobase is a 5-substituted pyrimidine, a 6-azapyrimidine, an N-2 substituted purine, an N-6 substituted purine, an O-6 substituted purine, a 2-aminopropyladenine, a 5-propynyluracil, a 5-propynylcytosine, or a 5-methylcytosine.
14. A composition comprising the antisense oligonucleotide of any one of claims 1-13 and a pharmaceutically acceptable carrier or excipient.
15. A method of inducing Exon-2 skipping in the *CD33* gene during pre-mRNA splicing, comprising introducing into a cell the antisense oligonucleotide of any one of claims 1-13 or the composition of claim 14.
16. An antisense oligonucleotide according to any one of claims 1-13, or a composition according to claim 14, for use as a medicament in inducing Exon-2 skipping in the *CD33* gene during pre-mRNA splicing, comprising introducing into a cell the antisense oligonucleotide of any one of claims 1-13, or the composition of claim 14, wherein the antisense oligonucleotide

hybridizes to a target region of the *CD33* gene and induces Exon-2 skipping during pre-mRNA splicing of the *CD33* gene.

17. The method of claim 15, or the use of claim 16, wherein the cell is an animal cell.
18. The method of claim 15, or the use of claim 16, wherein the cell is a human cell.
19. The method of claim 15, or the use of claim 16, wherein the method is performed *in vitro*.
20. The method of claim 15, or the use of claim 16, wherein the method is performed *in vivo*.
21. An antisense oligonucleotide according to any one of claims 1-13, or the composition of claim 14 for use in treating Alzheimer's disease, wherein a therapeutically effective amount of the antisense oligonucleotide of any one of claims 1-13, or the composition of claim 14 is to be administered to said subject.