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(54) Title: CAMK2D ANTISENSE OLIGONUCLEOTIDES AND USES THEREOF

(57) Abstract: The present disclosure relates to antisense oligonucleotides, which target CAMK2D mRNA in a cell, leading to reduced expression of CAMK2D protein. Reduction of CAMK2D protein expression is beneficial for the treatment of certain medical disorders, e.g., cardiovascular-related diseases or disorders.

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CAMK2D ANTISENSE OLIGONUCLEOTIDES AND USES THEREOF

REFERENCE TO SEQUENCE LISTING SUBMITTED ELECTRONICALLY VIA EFS-WEB

[0001] The content of the electronically submitted sequence listing (Name: 3338_102PC04_SequenceListing_ST25.txt, Size: 746,302 bytes; and Date of Creation: February 20, 2019) submitted in this application is incorporated herein by reference in its entirety.

FIELD OF DISCLOSURE

[0002] The present disclosure relates to antisense oligomeric compounds (ASOs) that target calcium/calmodulin-dependent protein kinase type II delta (*CAMK2D*) transcript in a cell, leading to reduced expression of CAMK2D protein. Reduction of CAMK2D protein expression can be beneficial for a range of medical disorders, such as cardiovascular-related diseases or disorders.

BACKGROUND

[0003] Calcium/calmodulin (Ca^{2+}/CaM)-dependent serine/threonine kinases (CaMKs) constitute a family of 81 proteins in the human proteasome that play a central role in cellular signaling by transmitting Ca^{2+} signals. Four CaMKII isozymes (α, β, γ, and δ), in addition to about 30 splice variants, are expressed in humans. Braun, A.P., *et al.*, *Annual Review of Physiology* 57:417-445 (1995). Of these, CaMKIIδ ("CAMK2D") protein is the most abundant isoform in the heart and plays an important role in the excitation-contraction coupling (ECC) and relaxation processes of normal cardiac physiology. Mattiazzi A., *et al.*, *Am J Physiol Heart Circ Physiol* 308:H1177-H1191 (2015). CAMK2D activity has also been described as being important in the recovery process after certain heart related injury (*e.g.*, ischemia-reperfusion injury). Said M., *et al.*, *Am J Physiol Heart Circ Physiol* 285:H1198-205 (2003).

[0004] Despite various scientific advancements, heart-related diseases remain the leading cause of death for both men and women worldwide. The American Heart Association estimates that by 2030, nearly 40% of the U.S. population would have some form of a cardiovascular disease and the direct medical costs are projected to reach $818 billion.

See Benjamin, E.J., *et al.*, *Circulation* 135:e146-e603 (2017). However, Mattiazzi *et al*. notes that "[t]he ubiquitous nature of CaMKII and its effects on different protein targets challenge the use of CaMKII inhibitors as a therapeutic tool." *Am J Physiol Heart Circ Physiol* 308:H1177-H1191 (2015). Therefore, new treatment options that are much more robust and cost-effective are highly desirable. It is an object of the invention to go some way to satisfying this desire; and/or to at least provide the public with a useful choice.

[0004a] In this specification where reference has been made to patent specifications, other external documents, or other sources of information, this is generally for the purpose of providing a context for discussing the features of the invention. Unless specifically stated otherwise, reference to such external documents is not to be construed as an admission that such documents, or such sources of information, in any jurisdiction, are prior art, or form part of the common general knowledge in the art.

SUMMARY OF DISCLOSURE

[0004b] In a first aspect, the invention provides a an antisense oligonucleotide (ASO) comprising a contiguous nucleotide sequence of 10 to 30 nucleotides in length, wherein the ASO is capable of reducing a calcium/calmodulin-dependent protein kinase type II delta (*CAMK2D*) protein and/or *CAMK2D* transcript expression in a cell expressing the CAMK2D protein and/or *CAMK2D* transcript, and wherein the contiguous nucleotide sequence comprises the sequence set forth in SEQ ID NO: 1688, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 27, SEQ ID NO: 114, SEQ ID NO: 158, SEQ ID NO: 190, SEQ ID NO: 327, SEQ ID NO: 463, SEQ ID NO: 513, SEQ ID NO: 516, SEQ ID NO: 519, SEQ ID NO: 657, SEQ ID NO: 659, SEQ ID NO: 822, SEQ ID NO: 827, SEQ ID NO: 981, SEQ ID NO: 982, SEQ ID NO: 983, SEQ ID NO: 984, SEQ ID NO: 986, SEQ ID NO: 989, SEQ ID NO: 1247, SEQ ID NO: 1249, SEQ ID NO: 1326, SEQ ID NO: 1359, SEQ ID NO: 1363, SEQ ID NO: 1371, SEQ ID NO: 1387, SEQ ID NO: 1389, SEQ ID NO: 1390, SEQ ID NO: 1409, SEQ ID NO: 1415, SEQ ID NO: 1420, SEQ ID NO: 1429, SEQ ID NO: 1524, SEQ ID NO: 1530, SEQ ID NO: 1659, SEQ ID NO: 1662, SEQ ID NO: 1663, SEQ ID NO: 1676, SEQ ID NO: 1685, SEQ ID NO: 1686, SEQ ID NO: 1687, or SEQ ID NO: 1690;

and wherein the ASO comprises at least one nucleoside analog and is a gapmer.

[0004c] In a second aspect, the invention provides a conjugate comprising the ASO of the first aspect of the invention, wherein the ASO is covalently attached to at least one non-

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nucleotide or non-polynucleotide moiety, wherein the non-nucleotide or non-polynucleotide moiety comprises a protein, a fatty acid chain, a sugar residue, a glycoprotein, a polymer, or any combinations thereof.

[0004d] In a third aspect, the invention provides a pharmaceutical composition comprising the ASO of the first aspect of the invention or the conjugate of the second aspect of the invention, and a pharmaceutically acceptable diluent, carrier, salt, or adjuvant, wherein the pharmaceutically acceptable salt comprises a sodium salt, a potassium salt, an ammonium salt, or any combination thereof.

[0004e] In another aspect, the invention provides a kit comprising the ASO of the first aspect of the invention, the conjugate of the second aspect of the invention, or the pharmaceutical composition of the third aspect of the invention, and instructions for use.

[0004f] Also described is a diagnostic kit comprising the ASO of the first aspect of the invention, the conjugate of the second aspect of the invention, or the pharmaceutical composition of the third aspect of the invention, and instructions for use.

[0004g] In another aspect, the invention provides a method of inhibiting or reducing CAMK2D protein expression in a cell, comprising administering the ASO of the first aspect of the invention, the conjugate of the second aspect of the invention, or the pharmaceutical composition of the third aspect of the invention to the cell expressing CAMK2D protein, wherein the CAMK2D protein expression in the cell is inhibited or reduced after the administration.

[0004h] In another aspect, the invention provides a method of reducing, ameliorating, or treating one or more symptoms of a cardiovascular disease or disorder in a subject in need thereof, comprising administering an effective amount of the ASO of the first aspect of the invention, the conjugate of the second aspect of the invention, or the pharmaceutical composition of the third aspect of the invention to the subject.

[0004i] In another aspect, the invention provides use of the ASO of the first aspect of the invention, the conjugate of the second aspect of the invention, or the pharmaceutical composition of the third aspect of the invention for the manufacture of a medicament for the treatment of a cardiovascular disease or disorder in a subject in need thereof.

[0004j] In the description in this specification reference may be made to subject matter which is not within the scope of the claims of the current application. That subject matter should be readily identifiable by a person skilled in the art and may assist in putting into practice the invention as defined in the claims of this application.

[0004k] The term "comprising" as used in this specification and claims means "consisting at least in part of". When interpreting statements in this specification and claims which include the term "comprising", other features besides the features prefaced by this term in each statement can also be present. Related terms such as "comprise" and "comprises" are to be interpreted in similar manner.

[0005] The present disclosure is directed to an antisense oligonucleotide (ASO) comprising, consisting essentially of, or consisting of the contiguous nucleotide sequence of 10 to 30 nucleotides in length that is complementary, such as fully complementary, to a nucleic acid sequence within a calcium/calmodulin-dependent protein kinase type II delta (CAMK2D) transcript. In some embodiments, the ASO of the present disclosure, or contiguous nucleotide sequence thereof, is at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100% complementary to the nucleic acid sequence within the *CAMK2D* transcript. In some embodiments, the *CAMK2D* transcript is selected from the group consisting of SEQ ID NO: 1 and SEQ ID NO: 2.

[0006] In some embodiments, the ASO described herein is capable of reducing CAMK2D protein expression in a human cell (*e.g.*, HEK293 cell) which is expressing the CAMK2D protein. In some embodiments, the CAMK2D protein expression is reduced by at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100% compared to CAMK2D protein expression in a human cell that is not exposed to the ASO.

[0007] In some embodiments, the ASO is capable of reducing *CAMK2D* transcript (*e.g.*, mRNA) expression in a human cell (*e.g.*, HEK293 cell), which is expressing the CAMK2D transcript. In some embodiments, the *CAMK2D* transcript expression is reduced by at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100% compared to *CAMK2D* transcript expression in a human cell that is not exposed to the ASO.

[0008] In some embodiments, the ASO disclosed herein is a gapmer. In some embodiments, the ASO has a design of $LLLD_nLLL$, $LLLLD_nLLLL$, or $LLLLLD_nLLLLL$, wherein the L is a nucleoside analog, the D is DNA, and n can be any integer between 4

and 24. In some embodiments, n can be any integer between 6 and 14. In some embodiments, n can be any integer between 8 and 12.

[0009] In some embodiments, the nucleoside analog of the ASO disclosed herein comprises a 2'-O-alkyl-RNA; 2'-O-methyl RNA (2'-OMe); 2'-alkoxy-RNA; 2'-O-methoxyethyl-RNA (2'-MOE); 2'-amino-DNA; 2'-fluro-RNA; 2'-fluoro-DNA; arabino nucleic acid (ANA); 2'-fluoro-ANA; or bicyclic nucleoside analog (LNA). In some embodiments, one or more of the nucleoside analog of the ASO is a sugar modified nucleoside. In some embodiments, the sugar modified nucleoside is an affinity enhancing 2' sugar modified nucleoside. In some embodiments, one or more of the nucleoside analog comprises a nucleoside comprising a bicyclic sugar. In some embodiments, the affinity enhancing 2' sugar modified nucleoside is an LNA. In some embodiments, the LNA is selected from the group consisting of constrained ethyl nucleoside (cEt), 2',4'-constrained 2′-O-methoxyethyl (cMOE), α-L-LNA, β-D-LNA, 2'-O,4'-C-ethylene-bridged nucleic acids (ENA), amino-LNA, oxy-LNA, thio-LNA, or any combination thereof. In some embodiments, the ASO comprises one or more 5'-methyl-cytosine nucleobases.

[0010] In some embodiments, the ASO described herein is capable of (i) reducing an mRNA level encoding CAMK2D inhuman Inducible Pluripotent Stem Cell-Derived Cardiomyocytes (hiPSC-CM); (ii) reducing a protein level of CAMK2D in hiPSC-CM; (iii) reducing, ameliorating, or treating one or more symptoms of a cardiovascular disease or disorder, and (iv) any combination thereof.

[0011] In some embodiments, the contiguous nucleotide sequence of the ASO is complementary to a nucleic acid sequence comprising (i) nucleotides 625 – 842 of SEQ ID NO: 1; (ii) nucleotides 1,398 – 59,755 of SEQ ID NO: 1; (iii) nucleotides 61,817 – 104,725 of SEQ ID NO: 1; (iv) nucleotides 112,162 – 118,021 of SEQ ID NO: 1; (v) nucleotides 119,440 – 135,219 of SEQ ID NO: 1; (vi) nucleotides 137,587 – 157,856 of SEQ ID NO: 1; (vii) nucleotides 159,191 – 266,174 of SEQ ID NO: 1; or (viii) nucleotides 272,788 – 310,949 of SEQ ID NO: 1. In some embodiments, the contiguous nucleotide sequence of the ASO is complementary to a nucleic acid sequence comprising (i) nucleotides 675 – 792 of SEQ ID NO: 1; (ii) nucleotides 1,448 – 59,705 of SEQ ID NO: 1; (iii) nucleotides 61,867 – 104,675 of SEQ ID NO: 1; (iv) nucleotides 112,212 – 117,971 of SEQ ID NO: 1; (v) nucleotides 119,490 – 135,169 of SEQ ID NO: 1; (vi) nucleotides 137,637 – 157,806 of SEQ ID NO: 1; (vii) nucleotides 159,241 – 266,124 of SEQ ID NO: 1; or (viii) nucleotides 272,838 – 310,899 of SEQ ID NO: 1. In some

embodiments, the contiguous nucleotide sequence of the ASO is complementary to a nucleic acid sequence comprising (i) nucleotides 725 – 742 of SEQ ID NO: 1; (ii) nucleotides 1,498 – 59,655 of SEQ ID NO: 1; (iii) nucleotides 61,917 – 104,625 of SEQ ID NO: 1; (iv) nucleotides 112,262 – 117,921 of SEQ ID NO: 1; (v) nucleotides 119,540 – 135,119 of SEQ ID NO: 1; (vi) nucleotides 137,687 – 157,756 of SEQ ID NO: 1; (vii) 159,291 – 266,074 of SEQ ID NO: 1; or (viii) nucleotides 272,888 – 310,849 of SEQ ID NO: 1.

[0012] In some embodiments, the contiguous nucleotide sequence of the ASO comprises SEQ ID NO: 4 to SEQ ID NO: 1713 with one or two mismatches. In some embodiments, the contiguous nucleotide sequence of the ASO comprises the nucleotide sequence selected from the sequences in FIGs. 1A and 1B (SEQ ID NO: 4 to SEQ ID NO: 1713). In some embodiments, the contiguous nucleotide sequence of the ASO comprises SEQ ID NO: 25, SEQ ID NO: 27, SEQ ID NO: 114, SEQ ID NO: 158, SEQ ID NO: 190, SEQ ID NO: 327, SEQ ID NO: 463, SEQ ID NO: 513, SEQ ID NO: 516, SEQ ID NO: 519, SEQ ID NO: 657, SEQ ID NO: 659, SEQ ID NO: 827, SEQ ID NO: 1249, SEQ ID NO: 1326, SEQ ID NO: 1409, SEQ ID NO: 1524, SEQ ID NO: 1530, SEQ ID NO: 1662, or SEQ ID NO: 1676. In some embodiments, the contiguous nucleotide sequence of the ASO comprises SEQ ID NO: 55, SEQ ID NO: 61, SEQ ID NO: 63, SEQ ID NO: 71, SEQ ID NO: 75, SEQ ID NO: 79, SEQ ID NO: 84, SEQ ID NO: 85, SEQ ID NO: 92, SEQ ID NO: 102, SEQ ID NO: 105, SEQ ID NO: 128, SEQ ID NO: 130, SEQ ID NO: 133, SEQ ID NO: 138, SEQ ID NO: 161, SEQ ID NO: 178, SEQ ID NO: 180, SEQ ID NO: 186, SEQ ID NO: 195, SEQ ID NO: 200, SEQ ID NO: 202, SEQ ID NO: 234, SEQ ID NO: 264, SEQ ID NO: 387, SEQ ID NO: 390, SEQ ID NO: 396, SEQ ID NO: 441, SEQ ID NO: 446, SEQ ID NO: 457, SEQ ID NO: 467, SEQ ID NO: 523, SEQ ID NO: 524, SEQ ID NO: 636, SEQ ID NO: 640, SEQ ID NO: 700, SEQ ID NO: 740, SEQ ID NO: 832, SEQ ID NO: 965, SEQ ID NO: 1015, SEQ ID NO: 1065, SEQ ID NO: 1071, SEQ ID NO: 1155, SEQ ID NO: 1475, SEQ ID NO: 1508, SEQ ID NO: 1685, SEQ ID NO: 1686, SEQ ID NO: 1687, SEQ ID NO: 1688, or SEQ ID NO: 1690.

[0013] In some embodiments, the ASO of the present disclosure has a design selected from the group consisting of the designs in FIG. 3, wherein the upper letter is a sugar modified nucleoside and the lower case letter is DNA.

[0014] In some embodiments, the ASO disclosed herein is capable of reducing expression of CAMK2D protein in a hiPSC-CM cell which is expressing the CAMK2D protein. In some embodiments, the expression of CAMK2D protein is reduced by at least about 20%,

at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, or about 100% compared to a cell not exposed to the ASO. In some embodiments, the ASO is capable of reducing expression of *CAMK2D* transcript (*e.g.*, mRNA) in a hiPSC-CM cell which is expressing the *CAMK2D* transcript. In some embodiments, the expression of *CAMK2D* transcript is reduced by at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, or about 100% compared to a cell not exposed to the ASO.

[0015] In some embodiments, the ASO has from 14 to 20 nucleotides in length. In some embodiments, the nucleotide sequence of the ASO comprises one or more modified internucleoside linkage. In some embodiments, at least 75%, at least 80%, at least 85%, at least 90%, at least 95%, or 100% of internucleoside linkages are modified. In certain embodiments, each of the internucleotide linkages in the ASO of the present disclosure is a phosphorothioate linkage.

[0016] The present disclosure also provides a conjugate comprising the ASO as disclosed herein, wherein the ASO is covalently attached to at least one non-nucleotide or non-polynucleotide moiety. In some embodiments, the non-nucleotide or non-polynucleotide moiety comprises a protein, a fatty acid chain, a sugar residue, a glycoprotein, a polymer, or any combinations thereof.

[0017] Also provided herein is a pharmaceutical composition comprising the ASO or the conjugate as disclosed herein and a pharmaceutically acceptable diluent, carrier, salt, or adjuvant. In certain embodiments, a pharmaceutically acceptable salt comprises a sodium salt, a potassium salt, or an ammonium salt. In some embodiments, the pharmaceutical composition further comprises at least one further therapeutic agent. In some embodiments, the further therapeutic agent is a CAMK2D antagonist. In some embodiments, the CAMK2D antagonist is an anti-CAMK2d antibody or fragment thereof.

[0018] The present disclosure further provides a kit comprising the ASO, the conjugate, or the pharmaceutical composition as disclosed herein, and instructions for use. Also disclosed is a diagnostic kit comprising the ASO, the conjugate, or the pharmaceutical composition of the present disclosure, and instructions for use.

[0019] The present disclosure is also directed method of inhibiting or reducing CAMK2D protein expression in a cell, comprising administering the ASO, the conjugate, or the pharmaceutical composition disclosed herein to the cell expressing CAMK2D protein,

wherein the CAMK2D protein expression in the cell is inhibited or reduced after the administration. In some aspect, the present disclosure is directed to an *in vitro* method of inhibiting or reducing CAMK2D protein expression in a cell, comprising contacting the ASO, the conjugate, or the pharmaceutical composition disclosed herein to the cell expressing CAMK2D protein, wherein the CAMK2D protein expression in the cell is inhibited or reduced after the contacting. In some embodiments, the ASO inhibits or reduces expression of *CAMK2D* transcript (*e.g.*, mRNA) in the cell after the administration. In some embodiments, the expression of *CAMK2D* transcript (*e.g.*, mRNA) is reduced by at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, or about 100% after the administration compared to a cell not exposed to the ASO. In some embodiments, the expression of CAMK2D protein is reduced by at least about 60%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or about 100% after the administration compared to a cell not exposed to the ASO. In some embodiments, the cell is a cardiac cell, *e.g.*, hiPSC-CM.

[0020] Provided herein is a method of reducing, ameliorating, or treating one or more symptoms of a cardiovascular disease or disorder in a subject in need thereof, comprising administering an effective amount of the ASO, the conjugate, or the pharmaceutical composition of the present disclosure to the subject. The present disclosure also provides the use of the ASO, the conjugate, or the pharmaceutical composition disclosed herein for the manufacture of a medicament. In some embodiments, the medicament is for the treatment of a cardiovascular disease or disorder in a subject in need thereof. In some embodiments, the ASO, the conjugate, or the pharmaceutical composition of the present disclosure is for use in therapy. In some embodiments, the ASO, the conjugate, or the pharmaceutical composition disclosed herein is for use in therapy of a cardiovascular disease or disorder in a subject in need thereof.

[0021] In some embodiments, the cardiovascular disease or disorder comprises a coronary artery disease, stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, heart arrhythmia, congenital heart disease, valvular heart disease carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, venous thrombosis, or any combination thereof. In some embodiments, the cardiovascular disease or disorder is a heart failure. In some embodiments, the heart failure comprises a left-sided heart failure, a right-sided heart failure, a congestive heart failure, a heart failure

with reduced ejection fraction (HFrEF), a heart failure with preserved ejection fraction (HFpEF), a heart failure with mid-range ejection fraction (HFmrEF), a hypertrophic cardiomyopathy (HCM), a hypertensive heart disease (HHD), or hypertensive hypertrophic cardiomyopathy.

[0022] In some embodiments, the subject is a human. In some embodiments, the ASO, the conjugate, or the pharmaceutical composition of the present disclosure is administered intracardially, orally, parenterally, intrathecally, intra-cerebroventricularly, pulmorarily, topically, or intraventricularly.

BRIEF DESCRIPTION OF FIGURES

[0023] FIGs. 1A and 1B show exemplary ASOs targeting the *CAMK2D* pre-mRNA. FIG. 1A shows the ASOs targeting a single site within the *CAMK2D* pre-mRNA. FIG. 1B shows the ASOs targeting multiple sites (*i.e.*, two or three) within the *CAMK2D* pre-mRNA. Each column of FIGs. 1A and 1B show the SEQ ID number designated for the sequence only of the ASO, the target start and end positions on the *CAMK2D* pre-mRNA sequence (for FIG. 1B, the multiple target sites are identified as #1, #2, or #3), the ASO sequence without any particular design or chemical structure, the ASO number (ASO No.), and the ASO sequence with a chemical structure.

[0024] FIG. 2 shows both the percent reduction of *CAMK2D* mRNA expression in HEK293 cells (y-axis) and the relative position of the ASOs on the *CAMK2D* transcript (x-axis). Each circle represents an individual ASO. As further described in Example 2, the HEK293 cells were treated with 25 μM of ASO and the *CAMK2D* mRNA expression (normalized to GAPDH) is shown as a percent of the control.

[0025] FIG. 3 shows certain exemplary ASOs with their design. Each column of FIG. 3 shows the SEQ ID NO for the ASO sequence only, the target start and end positions on the *CAMK2D* pre-mRNA sequence (where the ASO binds to multiple sites (*see* FIG. 1B), exemplary target start and end positions are provided), the ASO design number (DES No.), the ASO sequence with a design, and the ASO number (ASO No.).

[0026] FIG. 4 shows the percent reduction of *CAMK2D* mRNA expression in both HEK293 cells and human inducible pluripotent stem cell-derived cardiomyocytes (hiPSC-CM) after *in vitro* culture with various ASOs as described in Examples 2 and 3. The cells were treated with 25 μM (HEK293) or 500 nM (hiPSC-CM) of ASO and the *CAMK2D* mRNA expression (normalized to GAPDH) is shown as a percent of the

control. Where no value is provided, the particular ASO was not tested under the particular conditions.

[0027] FIG. 5 shows the potency of exemplary ASOs on *CAMK2D* mRNA expression level in C57BL/6JBom mice one week after subcutaneous administration. *CAMK2D* mRNA expression level was normalized to GAPDH and then shown relative to the control group (*i.e.*, saline treated samples).

DETAILED DESCRIPTION OF DISCLOSURE

I. Definitions

[0028] It is to be noted that the term "a" or "an" entity refers to one or more of that entity; for example, "a nucleotide sequence," is understood to represent one or more nucleotide sequences. As such, the terms "a" (or "an"), "one or more," and "at least one" can be used interchangeably herein.

[0029] Furthermore, "and/or" where used herein is to be taken as specific disclosure of each of the two specified features or components with or without the other. Thus, the term "and/or" as used in a phrase such as "A and/or B" herein is intended to include "A and B," "A or B," "A" (alone), and "B" (alone). Likewise, the term "and/or" as used in a phrase such as "A, B, and/or C" is intended to encompass each of the following aspects: A, B, and C; A, B, or C; A or C; A or B; B or C; A and C; A and B; B and C; A (alone); B (alone); and C (alone).

[0030] It is understood that wherever aspects are described herein with the language "comprising," otherwise analogous aspects described in terms of "consisting of" and/or "consisting essentially of" are also provided.

[0031] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this disclosure is related. For example, the Concise Dictionary of Biomedicine and Molecular Biology, Juo, Pei-Show, 2nd ed., 2002, CRC Press; The Dictionary of Cell and Molecular Biology, 3rd ed., 1999, Academic Press; and the Oxford Dictionary Of Biochemistry And Molecular Biology, Revised, 2000, Oxford University Press, provide one of skill with a general dictionary of many of the terms used in this disclosure.

[0032] Units, prefixes, and symbols are denoted in their Système International de Unites (SI) accepted form. Numeric ranges are inclusive of the numbers defining the range. Unless otherwise indicated, nucleotide sequences are written left to right in 5' to 3'

orientation. Amino acid sequences are written left to right in amino to carboxy orientation. The headings provided herein are not limitations of the various aspects of the disclosure, which can be had by reference to the specification as a whole. Accordingly, the terms defined immediately below are more fully defined by reference to the specification in its entirety.

[0033] The term "about" is used herein to mean approximately, roughly, around, or in the regions of. When the term "about" is used in conjunction with a numerical range, it modifies that range by extending the boundaries above and below the numerical values set forth. In general, the term "about" can modify a numerical value above and below the stated value by a variance of, *e.g.*, 10 percent, up or down (higher or lower). For example, if it is stated that "the ASO reduces expression of CAMK2d protein in a cell following administration of the ASO by at least about 60%," it is implied that the CAMK2D levels are reduced by a range of 50% to 70%.

[0034] The term "nucleic acids" or "nucleotides" is intended to encompass plural nucleic acids. In some embodiments, the term "nucleic acids" or "nucleotides" refers to a target sequence, *e.g.,* pre-mRNAs, mRNAs, or DNAs *in vivo* or *in vitro*. When the term refers to the nucleic acids or nucleotides in a target sequence, the nucleic acids or nucleotides can be naturally occurring sequences within a cell. In other embodiments, "nucleic acids" or "nucleotides" refer to a sequence in the ASOs of the disclosure. When the term refers to a sequence in the ASOs, the nucleic acids or nucleotides are not naturally occurring, *i.e.,* chemically synthesized, enzymatically produced, recombinantly produced, or any combination thereof. In one embodiment, the nucleic acids or nucleotides in the ASOs are produced synthetically or recombinantly, but are not a naturally occurring sequence or a fragment thereof. In another embodiment, the nucleic acids or nucleotides in the ASOs are not naturally occurring because they contain at least one nucleotide analog that is not naturally occurring in nature. The term "nucleic acid" or "nucleoside" refers to a single nucleic acid segment, *e.g.*, a DNA, an RNA, or an analog thereof, present in a polynucleotide. "Nucleic acid" or "nucleoside" includes naturally occurring nucleic acids or non-naturally occurring nucleic acids. In some embodiments, the terms "nucleotide", "unit" and "monomer" are used interchangeably. It will be recognized that when referring to a sequence of nucleotides or monomers, what is referred to is the sequence of bases, such as A, T, G, C or U, and analogs thereof.

[0035] The term "nucleotide" as used herein, refers to a glycoside comprising a sugar moiety, a base moiety and a covalently linked group (linkage group), such as a phosphate

or phosphorothioate internucleotide linkage group, and covers both naturally occurring nucleotides, such as DNA or RNA, and non-naturally occurring nucleotides comprising modified sugar and/or base moieties, which are also referred to as "nucleotide analogs" herein. Herein, a single nucleotide (unit) can also be referred to as a monomer or nucleic acid unit. In certain embodiments, the term "nucleotide analogs" refers to nucleotides having modified sugar moieties. Non-limiting examples of the nucleotides having modified sugar moieties (*e.g.,* LNA) are disclosed elsewhere herein. In other embodiments, the term "nucleotide analogs" refers to nucleotides having modified nucleobase moieties. The nucleotides having modified nucleobase moieties include, but are not limited to, 5-methyl-cytosine, isocytosine, pseudoisocytosine, 5-bromouracil, 5-propynyluracil, 6-aminopurine, 2-aminopurine, inosine, diaminopurine, and 2-chloro-6-aminopurine.

[0036] The term "nucleoside" as used herein is used to refer to a glycoside comprising a sugar moiety and a base moiety, and can therefore be used when referring to the nucleotide units, which are covalently linked by the internucleotide linkages between the nucleotides of the ASO. In the field of biotechnology, the term "nucleotide" is often used to refer to a nucleic acid monomer or unit. In the context of an ASO, the term "nucleotide" can refer to the base alone, *i.e.*, a nucleobase sequence comprising cytosine (DNA and RNA), guanine (DNA and RNA), adenine (DNA and RNA), thymine (DNA) and uracil (RNA), in which the presence of the sugar backbone and internucleotide linkages are implicit. Likewise, particularly in the case of oligonucleotides where one or more of the internucleotide linkage groups are modified, the term "nucleotide" can refer to a "nucleoside." For example the term "nucleotide" can be used, even when specifying the presence or nature of the linkages between the nucleosides.

[0037] The term "nucleotide length" as used herein means the total number of the nucleotides (monomers) in a given sequence. For example, the sequence of tacatattatattactcctc (SEQ ID NO: 158) has 20 nucleotides; thus the nucleotide length of the sequence is 20. The term "nucleotide length" is therefore used herein interchangeably with "nucleotide number."

[0038] As one of ordinary skill in the art would recognize, the 5' terminal nucleotide of an oligonucleotide does not comprise a 5' internucleotide linkage group, although it can comprise a 5' terminal group.

[0039] As used herein, the term "alkyl", alone or in combination, signifies a straight-chain or branched-chain alkyl group with 1 to 8 carbon atoms, particularly a straight or

branched-chain alkyl group with 1 to 6 carbon atoms and more particularly a straight or branched-chain alkyl group with 1 to 4 carbon atoms. Examples of straight-chain and branched-chain C_1-C_8 alkyl groups are methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl, the isomeric pentyls, the isomeric hexyls, the isomeric heptyls and the isomeric octyls, particularly methyl, ethyl, propyl, butyl and pentyl. Particular examples of alkyl are methyl. Further examples of alkyl are mono, di or trifluoro methyl, ethyl or propyl, such as cyclopropyl (cPr), or mono, di or tri fluoro cycloproyl.

[0040] The term "alkoxy", alone or in combination, signifies a group of the formula alkyl-O- in which the term "alkyl" has the previously given significance, such as methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, sec.butoxy and tert.butoxy. Particular "alkoxy" are methoxy.

[0041] The term "oxy", alone or in combination, signifies the -O- group.

[0042] The term "alkenyl", alone or in combination, signifies a straight-chain or branched hydrocarbon residue comprising an olefinic bond and up to 8, preferably up to 6, particularly preferred up to 4 carbon atoms. Examples of alkenyl groups are ethenyl, 1-propenyl, 2-propenyl, isopropenyl, 1-butenyl, 2-butenyl, 3-butenyl and isobutenyl.

[0043] The term "alkynyl", alone or in combination, signifies a straight-chain or branched hydrocarbon residue comprising a triple bond and up to 8, preferably up to 6, particularly preferred up to 4 carbon atoms.

[0044] The terms ""halogen"" or ""halo"", alone or in combination, signifies fluorine, chlorine, bromine or iodine and particularly fluorine, chlorine or bromine, more particularly fluorine and chlorine, such as fluorine. The term "halo", in combination with another group, denotes the substitution of said group with at least one halogen, particularly substituted with one to five halogens, particularly one to four halogens, *i.e.*, one, two, three or four halogens. The terms "hydroxyl" and "hydroxy", alone or in combination, signify the -OH group.

[0045] The terms "thiohydroxyl" and "thiohydroxy", alone or in combination, signify the -SH group.

[0046] The term "carbonyl", alone or in combination, signifies the -C(O)- group.

[0047] The term "carboxy" or "carboxyl", alone or in combination, signifies the -COOH group.

[0048] The term "amino", alone or in combination, signifies the primary amino group (-NH2), the secondary amino group (-NH-), or the tertiary amino group (-N-).

[0049] The term "alkylamino", alone or in combination, signifies an amino group as defined above substituted with one or two alkyl groups as defined above.

[0050] The term "aminocarbonyl, alone or in combination, signifies the -C(O)-NH2 group.

[0051] The term "sulfonyl", alone or in combination, means the -SO2 group.

[0052] The term "sulfinyl", alone or in combination, signifies the -SO- group.

[0053] The term "sulfanyl", alone or in combination, signifies the -S- group.

[0054] The term "cyano", alone or in combination, signifies the -CN group.

[0055] The term "azido", alone or in combination, signifies the -N3 group.

[0056] The term "nitro", alone or in combination, signifies the NO2 group.

[0057] The term "formyl" alone or in combination, signifies the -C(O)H group.

[0058] The term "aryl", alone or in combination, denotes a monovalent aromatic carbocyclic mono- or bicyclic ring system comprising 6 to 10 carbon ring atoms, optionally substituted with 1 to 3 substituents independently selected from halogen, hydroxyl, alkyl, alkenyl, alkynyl, alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl and formyl. Examples of aryl include phenyl and naphthyl. in particular phenyl.

[0059] The term "heteroaryl", alone or in combination, denotes a monovalent aromatic heterocyclic mono- or bicyclic ring system of 5 to 12 ring atoms, comprising 1, 2, 3 or 4 heteroatoms selected from N, O and S, the remaining ring atoms being carbon, optionally substituted with 1 to 3 substituents independently selected from halogen, hydroxyl, alkyl, alkenyl, alkynyl, alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl and formyl. Examples of heteroaryl include pyrrolyl, furanyl, thienyl, imidazolyl, oxazolyl, thiazolyl, triazolyl, oxadiazolyl, thiadiazolyl, tetrazolyl, pyridinyl, pyrazinyl, pyrazolyl, pyridazinyl, pyrimidinyl, triazinyl, azepinyl, diazepinyl, isoxazolyl, benzofuranyl, isothiazolyl, benzothienyl, indolyl, isoindolyl, isobenzofuranyl, benzimidazolyl, benzoxazolyl, benzoisoxazolyl, benzothiazolyl, benzoisothiazolyl, benzooxadiazolyl, benzothiadiazolyl, benzotriazolyl, purinyl, quinolinyl, isoquinolinyl, quinazolinyl, quinoxalinyl, carbazolyl, or acridinyl.

[0060] The term "heterocycle", alone or in combination, denotes a monovalent non-aromatic heterocyclic mono- or bicyclic ring system of 5 to 12 ring atoms, comprising 1, 2, 3 or 4 heteroatoms selected from N, O and S, the remaining ring atoms being carbon, optionally substituted with 1 to 3 substituents independently selected from halogen, hydroxyl, alkyl, alkenyl, alkynyl, alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl and formyl.

[0061] The term "protecting group", alone or in combination, signifies a group which selectively blocks a reactive site in a multifunctional compound such that a chemical reaction can be carried out selectively at another unprotected reactive site. Protecting groups can be removed. Exemplary protecting groups are amino-protecting groups, carboxy-protecting groups or hydroxy-protecting groups.

[0062] If one of the starting materials or compounds of the invention contain one or more functional groups which are not stable or are reactive under the reaction conditions of one or more reaction steps, appropriate protecting groups (as described *e.g.*, in "Protective Groups in Organic Chemistry" by T. W. Greene and P. G. M. Wuts, 3rd Ed., 1999, Wiley, New York) can be introduced before the critical step applying methods well known in the art. Such protecting groups can be removed at a later stage of the synthesis using standard methods described in the literature. Examples of protecting groups are tert-butoxycarbonyl (Boc), 9-fluorenylmethyl carbamate (Fmoc), 2-trimethylsilylethyl carbamate (Teoc), carbobenzyloxy (Cbz) and p-methoxybenzyloxycarbonyl (Moz).

[0063] The compounds described herein can contain several asymmetric centers and can be present in the form of optically pure enantiomers, mixtures of enantiomers such as, for example, racemates, mixtures of diastereoisomers, diastereoisomeric racemates or mixtures of diastereoisomeric racemates.

[0064] The term "asymmetric carbon atom" means a carbon atom with four different substituents. According to the Cahn-Ingold-Prelog Convention an asymmetric carbon atom can be of the "R" or "S" configuration.

[0065] As used herein, the term "bicyclic sugar" refers to a modified sugar moiety comprising a 4 to 7 membered ring comprising a bridge connecting two atoms of the 4 to 7 membered ring to form a second ring, resulting in a bicyclic structure. In some embodiments, the bridge connects the C2' and C4' of the ribose sugar ring of a nucleoside (*i.e.*, 2'-4' bridge), as observed in LNA nucleosides.

[0066] As used herein, a "coding region" or "coding sequence" is a portion of polynucleotide which consists of codons translatable into amino acids. Although a "stop codon" (TAG, TGA, or TAA) is typically not translated into an amino acid, it can be considered to be part of a coding region, but any flanking sequences, for example promoters, ribosome binding sites, transcriptional terminators, introns, untranslated regions ("UTRs"), and the like, are not part of a coding region. The boundaries of a coding region are typically determined by a start codon at the 5' terminus, encoding the

amino terminus of the resultant polypeptide, and a translation stop codon at the 3' terminus, encoding the carboxyl terminus of the resulting polypeptide.

[0067] The term "non-coding region" as used herein means a nucleotide sequence that is not a coding region. Examples of non-coding regions include, but are not limited to, promoters, ribosome binding sites, transcriptional terminators, introns, untranslated regions ("UTRs"), non-coding exons and the like. Some of the exons can be wholly or part of the 5' untranslated region (5' UTR) or the 3' untranslated region (3' UTR) of each transcript. The untranslated regions are important for efficient translation of the transcript and for controlling the rate of translation and half-life of the transcript.

[0068] The term "region" when used in the context of a nucleotide sequence refers to a section of that sequence. For example, the phrase "region within a nucleotide sequence" or "region within the complement of a nucleotide sequence" refers to a sequence shorter than the nucleotide sequence, but longer than at least 10 nucleotides located within the particular nucleotide sequence or the complement of the nucleotides sequence, respectively. The term "sub-sequence" or "subsequence" can also refer to a region of a nucleotide sequence.

[0069] The term "downstream," when referring to a nucleotide sequence, means that a nucleic acid or a nucleotide sequence is located 3' to a reference nucleotide sequence. In certain embodiments, downstream nucleotide sequences relate to sequences that follow the starting point of transcription. For example, the translation initiation codon of a gene is located downstream of the start site of transcription.

[0070] The term "upstream" refers to a nucleotide sequence that is located 5' to a reference nucleotide sequence.

[0071] As used herein, the term "regulatory region" refers to nucleotide sequences located upstream (5' non-coding sequences), within, or downstream (3' non-coding sequences) of a coding region, and which influence the transcription, RNA processing, stability, or translation of the associated coding region. Regulatory regions can include promoters, translation leader sequences, introns, polyadenylation recognition sequences, RNA processing sites, effector binding sites, UTRs, and stem-loop structures. If a coding region is intended for expression in a eukaryotic cell, a polyadenylation signal and transcription termination sequence will usually be located 3' to the coding sequence.

[0072] The term "transcript" as used herein can refer to a primary transcript that is synthesized by transcription of DNA and becomes a messenger RNA (mRNA) after processing, *i.e.,* a precursor messenger RNA (pre-mRNA), and the processed mRNA

itself. The term "transcript" can be interchangeably used with "pre-mRNA" and "mRNA." After DNA strands are transcribed to primary transcripts, the newly synthesized primary transcripts are modified in several ways to be converted to their mature, functional forms to produce different proteins and RNAs such as mRNA, tRNA, rRNA, lncRNA, miRNA and others. Thus, the term "transcript" can include exons, introns, 5' UTRs, and 3' UTRs.

[0073] The term "expression" as used herein refers to a process by which a polynucleotide produces a gene product, for example, a RNA or a polypeptide. It includes, without limitation, transcription of the polynucleotide into messenger RNA (mRNA) and the translation of an mRNA into a polypeptide. Expression produces a "gene product." As used herein, a gene product can be either a nucleic acid, *e.g.*, a messenger RNA produced by transcription of a gene, or a polypeptide which is translated from a transcript. Gene products described herein further include nucleic acids with post transcriptional modifications, *e.g.*, polyadenylation or splicing, or polypeptides with post translational modifications, *e.g.*, methylation, glycosylation, the addition of lipids, association with other protein subunits, or proteolytic cleavage.

[0074] The terms "identical" or percent "identity" in the context of two or more nucleic acids refer to two or more sequences that are the same or have a specified percentage of nucleotides or amino acid residues that are the same, when compared and aligned (introducing gaps, if necessary) for maximum correspondence, not considering any conservative amino acid substitutions as part of the sequence identity. The percent identity can be measured using sequence comparison software or algorithms or by visual inspection. Various algorithms and software are known in the art that can be used to obtain alignments of amino acid or nucleotide sequences.

[0075] One such non-limiting example of a sequence alignment algorithm is the algorithm described in Karlin *et al.*, 1990, *Proc. Natl. Acad. Sci.*, 87:2264-2268, as modified in Karlin *et al.*, 1993, *Proc. Natl. Acad. Sci.*, 90:5873-5877, and incorporated into the NBLAST and XBLAST programs (Altschul *et al.*, 1991, *Nucleic Acids Res.*, 25:3389-3402). In certain embodiments, Gapped BLAST can be used as described in Altschul *et al.*, 1997, *Nucleic Acids Res.* 25:3389-3402. BLAST-2, WU-BLAST-2 (Altschul *et al.*, 1996, *Methods in Enzymology*, 266:460-480), ALIGN, ALIGN-2 (Genentech, South San Francisco, California) or Megalign (DNASTAR) are additional publicly available software programs that can be used to align sequences. In certain embodiments, the percent identity between two nucleotide sequences is determined using the GAP program in the GCG software package (*e.g.*, using a NWSgapdna.CMP matrix and a gap weight of

40, 50, 60, 70, or 90 and a length weight of 1, 2, 3, 4, 5, or 6). In certain alternative embodiments, the GAP program in the GCG software package, which incorporates the algorithm of Needleman and Wunsch (*J. Mol. Biol.* (48):444-453 (1970)) can be used to determine the percent identity between two amino acid sequences (*e.g.*, using either a BLOSUM 62 matrix or a PAM250 matrix, and a gap weight of 16, 14, 12, 10, 8, 6, or 4 and a length weight of 1, 2, 3, 4, 5). Alternatively, in certain embodiments, the percent identity between nucleotide or amino acid sequences is determined using the algorithm of Myers and Miller (CABIOS, 4:11-17 (1989)). For example, the percent identity can be determined using the ALIGN program (version 2.0) and using a PAM120 with residue table, a gap length penalty of 12 and a gap penalty of 4. One skilled in the art can determine appropriate parameters for maximal alignment by particular alignment software. In certain embodiments, the default parameters of the alignment software are used.

[0076] In certain embodiments, the percentage identity "X" of a first nucleotide sequence to a second nucleotide sequence is calculated as 100 x (Y/Z), where Y is the number of amino acid residues scored as identical matches in the alignment of the first and second sequences (as aligned by visual inspection or a particular sequence alignment program) and Z is the total number of residues in the second sequence. If the length of a first sequence is longer than the second sequence, the percent identity of the first sequence to the second sequence will be higher than the percent identity of the second sequence to the first sequence.

[0077] Different regions within a single polynucleotide target sequence that align with a polynucleotide reference sequence can each have their own percent sequence identity. It is noted that the percent sequence identity value is rounded to the nearest tenth. For example, 80.11, 80.12, 80.13, and 80.14 are rounded down to 80.1, while 80.15, 80.16, 80.17, 80.18, and 80.19 are rounded up to 80.2. It also is noted that the length value will always be an integer.

[0078] As used herein, the terms "homologous" and "homology" are interchangeable with the terms "identity" and "identical."

[0079] The term "naturally occurring variant thereof" refers to variants of the CAMK2D polypeptide sequence or *CAMK2D* nucleic acid sequence (*e.g.,* transcript) which exist naturally within the defined taxonomic group, such as mammalian, such as mouse, monkey, and human. Typically, when referring to "naturally occurring variants" of a polynucleotide the term also can encompass any allelic variant of the *CAMK2D*-encoding

genomic DNA which is found at Chromosomal position 4q26 (*i.e.*, residues 113,451,032 to 113,761,927 of GenBank Accession No. NC_000004.12) by chromosomal translocation or duplication, and the RNA, such as mRNA derived therefrom. "Naturally occurring variants" can also include variants derived from alternative splicing of the *CAMK2D* mRNA. When referenced to a specific polypeptide sequence, *e.g.*, the term also includes naturally occurring forms of the protein, which can therefore be processed, *e.g.,* by co- or post-translational modifications, such as signal peptide cleavage, proteolytic cleavage, glycosylation, *etc.*

[0080] In determining the degree of "complementarity" between the ASOs of the disclosure (or regions thereof) and the target region of the nucleic acid which encodes mammalian CAMK2D (*e.g.,* the *CAMK2D* gene), such as those disclosed herein, the degree of "complementarity" (also, "homology" or "identity") is expressed as the percentage identity (or percentage homology) between the sequence of the ASO (or region thereof) and the sequence of the target region (or the reverse complement of the target region) that best aligns therewith. The percentage is calculated by counting the number of aligned bases that are identical between the two sequences, dividing by the total number of contiguous monomers in the ASO, and multiplying by 100. In such a comparison, if gaps exist, it is preferable that such gaps are merely mismatches rather than areas where the number of monomers within the gap differs between the ASO of the disclosure and the target region.

[0081] The term "complement" as used herein indicates a sequence that is complementary to a reference sequence. It is well known that complementarity is the base principle of DNA replication and transcription as it is a property shared between two DNA or RNA sequences, such that when they are aligned antiparallel to each other, the nucleotide bases at each position in the sequences will be complementary, much like looking in the mirror and seeing the reverse of things. Therefore, for example, the complement of a sequence of 5'"ATGC"3' can be written as 3'"TACG"5' or 5'"GCAT"3'. The terms "reverse complement", "reverse complementary", and "reverse complementarity" as used herein are interchangeable with the terms "complement", "complementary", and "complementarity." In some embodiments, the term "complementary" refers to 100% match or complementarity (*i.e.*, fully complementary) to a contiguous nucleic acid sequence within a *CAMK2D* transcript. In some embodiments, the term "complementary" refers to at least about 80%, at least about 85%, at least about 90%, at least about 91%, at least about 92%, at least about 93%, at least about 94%, at least about

95%, at least about 96%, at least about 97%, at least about 98%, or at least about 99% match or complementarity to a contiguous nucleic acid sequence within a *CAMK2D* transcript.

[0082] The terms "corresponding to" and "corresponds to," when referencing two separate nucleic acid or nucleotide sequences can be used to clarify regions of the sequences that correspond or are similar to each other based on homology and/or functionality, although the nucleotides of the specific sequences can be numbered differently. For example, different isoforms of a gene transcript can have similar or conserved portions of nucleotide sequences whose numbering can differ in the respective isoforms based on alternative splicing and/or other modifications. In addition, it is recognized that different numbering systems can be employed when characterizing a nucleic acid or nucleotide sequence (*e.g.*, a gene transcript and whether to begin numbering the sequence from the translation start codon or to include the 5'UTR). Further, it is recognized that the nucleic acid or nucleotide sequence of different variants of a gene or gene transcript can vary. As used herein, however, the regions of the variants that share nucleic acid or nucleotide sequence homology and/or functionality are deemed to "correspond" to one another. For example, a nucleotide sequence of a *CAMK2D* transcript corresponding to nucleotides X to Y of SEQ ID NO: 1 ("reference sequence") refers to an *CAMK2d* transcript sequence (*e.g., CAMK2D* pre-mRNA or mRNA) that has an identical sequence or a similar sequence to nucleotides X to Y of SEQ ID NO: 1, wherein X is the start site and Y is the end site (as shown in FIGs. 1A and 1B). A person of ordinary skill in the art can identify the corresponding X and Y residues in the *CAMK2D* transcript sequence by aligning the *CAMK2D* transcript sequence with SEQ ID NO: 1.

[0083] The terms "corresponding nucleotide analog" and "corresponding nucleotide" are intended to indicate that the nucleobase in the nucleotide analog and the naturally occurring nucleotide have the same pairing, or hybridizing, ability. For example, when the 2-deoxyribose unit of the nucleotide is linked to an adenine, the "corresponding nucleotide analog" contains a pentose unit (different from 2-deoxyribose) linked to an adenine.

[0084] The term "DES Number" or "DES No." as used herein refers to a unique number given to a nucleotide sequence having a specific pattern of nucleosides (*e.g.,* DNA) and nucleoside analogs (*e.g.,* LNA). As used herein, the design of an ASO is shown by a combination of upper case letters and lower case letters. For example, DES-0231 refers to an ASO sequence of tacatattatattactcctc (SEQ ID NO: 158) with an ASO design of

LLLDDDDDDDDDDDDDDLLL (*i.e.,* TACatattatattactcCTC), wherein the L (*i.e.,* upper case letter) indicates a nucleoside analog (*e.g.,* LNA) and the D (*i.e.,* lower case letter) indicates a nucleoside (*e.g.,* DNA).

[0085] The annotation of ASO chemistry is as follows Beta-D-oxy LNA nucleotides are designated by OxyB where B designates a nucleotide base such as thymine (T), uridine (U), cytosine (C), 5-methylcytosine (MC), adenine (A) or guanine (G), and thus include OxyA, OxyT, OxyMC, OxyC and OxyG. DNA nucleotides are designated by DNAb, where the lower case b designates a nucleotide base such as thymine (T), uridine (U), cytosine (C), 5-methylcytosine (Mc), adenine (A) or guanine (G), and thus include DNAa, DNAt, DNA and DNAg. The letter M before C or c indicates 5-methylcytosine. The letter "s" indicates a phosphorothioate internucleotide linkage.

[0086] The term "ASO Number" or "ASO No." as used herein refers to a unique number given to a nucleotide sequence having the detailed chemical structure of the components, *e.g.,* nucleosides (*e.g.,* DNA), nucleoside analogs (*e.g.,* beta-D-oxy-LNA), nucleobase (*e.g.,* A, T, G, C, U, or MC), and backbone structure (*e.g.,* phosphorothioate or phosphorodiester). For example, ASO-0231 can refer to OxyTs OxyAs OxyMCs DNAas DNAts DNAas DNAts DNAts DNAas DNAts DNAas DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyTs OxyMC.

[0087] "Potency" is normally expressed as an IC_{50} or EC_{50} value, in μM, nM or pM unless otherwise stated. Potency can also be expressed in terms of percent inhibition. IC_{50} is the median inhibitory concentration of a therapeutic molecule. EC_{50} is the median effective concentration of a therapeutic molecule relative to a vehicle or control (*e.g.*, saline). In functional assays, IC_{50} is the concentration of a therapeutic molecule that reduces a biological response, *e.g.,* transcription of mRNA or protein expression, by 50% of the biological response that is achieved by the therapeutic molecule. In functional assays, EC_{50} is the concentration of a therapeutic molecule that produces 50% of the biological response, *e.g.,* transcription of mRNA or protein expression. IC_{50} or EC_{50} can be calculated by any number of means known in the art.

[0088] As used herein, the term "inhibiting," *e.g.*, the expression of *CAMK2D* gene transcript and/or CAMK2D protein refers to the ASO reducing the expression of the *CAMK2D* gene transcript and/or CAMK2D protein in a cell or a tissue. In some embodiments, the term "inhibiting" refers to complete inhibition (100% inhibition or non-detectable level) of *CAMK2D* gene transcript or CAMK2D protein. In other embodiments, the term "inhibiting" refers to at least 5%, at least 10%, at least 15%, at

least 20%, at least 25%, at least 30%, at least 35%, at least 40%, at least 45%, at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95% or at least 99% inhibition of *CAMK2D* gene transcript and/or CAMK2D protein expression in a cell or a tissue.

[0089] By "subject" or "individual" or "animal" or "patient" or "mammal," is meant any subject, particularly a mammalian subject, for whom diagnosis, prognosis, or therapy is desired. Mammalian subjects include humans, domestic animals, farm animals, sports animals, and zoo animals including, *e.g.*, humans, non-human primates, dogs, cats, guinea pigs, rabbits, rats, mice, horses, cattle, bears, and so on.

[0090] The term "pharmaceutical composition" refers to a preparation which is in such form as to permit the biological activity of the active ingredient to be effective, and which contains no additional components which are unacceptably toxic to a subject to which the composition would be administered. Such composition can be sterile.

[0091] An "effective amount" of an ASO as disclosed herein is an amount sufficient to carry out a specifically stated purpose. An "effective amount" can be determined empirically and in a routine manner, in relation to the stated purpose.

[0092] Terms such as "treating" or "treatment" or "to treat" or "alleviating" or "to alleviate" refer to both (1) therapeutic measures that cure, slow down, lessen symptoms of, and/or halt progression of a diagnosed pathologic condition or disorder and (2) prophylactic or preventative measures that prevent and/or slow the development of a targeted pathologic condition or disorder. Thus, those in need of treatment include those already with the disorder; those prone to have the disorder; and those in whom the disorder is to be prevented. In certain embodiments, a subject is successfully "treated" for a disease or condition disclosed elsewhere herein according to the methods provided herein if the patient shows, *e.g.*, total, partial, or transient alleviation or elimination of symptoms associated with the disease or disorder.

II. Antisense Oligonucleotides

[0093] The present disclosure employs antisense oligonucleotides (ASOs) for use in modulating the function of nucleic acid molecules encoding mammalian CAMK2D, such as the *CAMK2D* nucleic acid, *e.g.*, *CAMK2D* transcript, including *CAMK2D* pre-mRNA, and *CAMK2D* mRNA, or naturally occurring variants of such nucleic acid molecules encoding mammalian CAMK2D. The term "ASO" in the context of the present

disclosure, refers to a molecule formed by covalent linkage of two or more nucleotides (*i.e.,* an oligonucleotide).

[0094] The ASO comprises a contiguous nucleotide sequence of from about 10 to about 30, such as 10–20, 14–20, 16–20, or 15–25, nucleotides in length. The terms "antisense ASO," "antisense oligonucleotide," and "oligomer" as used herein are interchangeable with the term "ASO."

[0095] A reference to a SEQ ID number includes a particular nucleobase sequence, but does not include any design or full chemical structure. Furthermore, the ASOs disclosed in the figures herein show a representative design, but are not limited to the specific design shown in the Figures unless otherwise indicated. Herein, a single nucleotide (unit) can also be referred to as a monomer or unit. When this specification refers to a specific ASO number, the reference includes the sequence, the specific ASO design, and the chemical structure. When this specification refers to a specific DES number, the reference includes the sequence and the specific ASO design. For example, when a claim (or this specification) refers to SEQ ID NO: 158, it includes the nucleotide sequence of tacatattatattactcctc only. When a claim (or the specification) refers to DES-0231, it includes the nucleotide sequence of tacatattatattactcctc with the ASO design of TACatattatattactcCTC. Alternatively, the design of ASO-0231 can also be written as SEQ ID NO: 158, wherein each of the first nucleotide, the second nucleotide, the third nucleotide, the 18^{th} nucleotide, the 19^{th} nucleotide, and the 20^{th} nucleotide from the 5' end is a modified nucleotide, *e.g.,* LNA, and each of the other nucleotides is a non-modified nucleotide (*e.g.,* DNA). The ASO number includes the sequence and the ASO design, as well as the specific details of the ASO. Therefore, for instance, ASO-0231 referred to in this application indicates OxyTs OxyAs OxyMCs DNAas DNAts DNAas DNAts DNAts DNAas DNAts DNAas DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyTs OxyMC, wherein "s" indicates phosphorothioate linkage.

[0096] In various embodiments, the ASO of the disclosure does not comprise RNA (units). In some embodiments, the ASO comprises one or more DNA units. In one embodiment, the ASO according to the disclosure is a linear molecule or is synthesized as a linear molecule. In some embodiments, the ASO is a single stranded molecule, and does not comprise short regions of, for example, at least 3, 4 or 5 contiguous nucleotides, which are complementary to equivalent regions within the same ASO (*i.e.* duplexes) - in this regard, the ASO is not (essentially) double stranded. In some embodiments, the ASO is essentially not double stranded. In some embodiments, the ASO is not a siRNA. In

various embodiments, the ASO of the disclosure can consist entirely of the contiguous nucleotide region. Thus, in some embodiments the ASO is not substantially self-complementary.

[0097] In other embodiments, the present disclosure includes fragments of ASOs. For example, the disclosure includes at least one nucleotide, at least two contiguous nucleotides, at least three contiguous nucleotides, at least four contiguous nucleotides, at least five contiguous nucleotides, at least six contiguous nucleotides, at least seven contiguous nucleotides, at least eight contiguous nucleotides, or at least nine contiguous nucleotides of the ASOs disclosed herein. Fragments of any of the sequences disclosed herein are contemplated as part of the disclosure.

II.A. The Target

[0098] Suitably the ASO of the disclosure is capable of down-regulating (*e.g.,* reducing or removing) expression of the *CAMK2D* mRNA or protein. In this regard, the ASO of the disclosure can affect indirect inhibition of CAMK2D protein through the reduction in *CAMK2D* mRNA levels, typically in a mammalian cell, such as a human cell, such as a cardiocyte. In particular, the present disclosure is directed to ASOs that target one or more regions of the *CAMK2D* pre-mRNA (*e.g.*, intron regions, exon regions, and/or exon-intron junction regions). Unless indicated otherwise, the term "CAMK2D," as used herein, can refer to CAMK2D from one or more species (*e.g.*, humans, non-human primates, dogs, cats, guinea pigs, rabbits, rats, mice, horses, cattle, and bears).

[0099] Calcium/calmodulin-dependent protein kinase type II delta (*CAMK2D*) is also known as CaM kinase II subunit delta and CamK-II subunit delta. Synonyms of *CAMK2D* are known and include CaMKIIδ or CAMKD. The sequence for the human *CAMK2D* gene can be found under publicly available GenBank Accession Number NC_000004.12. The sequence for the human *CAMK2D* pre-mRNA transcript (SEQ ID NO: 1) corresponds to the reverse complement of residues 113,451,032 – 113,761,927 of NC_000004.12. The *CAMK2D* mRNA sequence (GenBank Accession No. NM_001221.3) is provided in SEQ ID NO: 2, except that the nucleotide "t" in SEQ ID NO: 2 is shown as "u" in the mRNA. The sequence for human CAMK2D protein can be found under publicly available Accession Numbers: Q13557 (canonical sequence, SEQ ID NO: 3), A8MVS8, Q52PK4, Q59G21, Q8N553, Q9UGH6, Q9UQE9, each of which is incorporated by reference herein in its entirety.

[0100] Natural variants of the human *CAMK2D* gene product are known. For example, natural variants of human CAMK2D protein can contain one or more amino acid substitutions selected from: D167E, Q463E, and T493I, and any combinations thereof. Additional variants of human CAMK2D protein resulting from alternative splicing are also known in the art. CAMK2D Isoform Delta 3 (identifier: Q13557-3 at UniProt) differs from the canonical sequence (SEQ ID NO: 3) as follows: 328-328: K → KKRKSSSSVQMM. The sequence of CAMK2D Isoform Delta 4 (identifier: Q13557-4) differs from the canonical sequence (SEQ ID NO: 3) as follows: 328-328: K → KINNKANVVTSPKENIPTPAL. The sequence of CAMK2D Isoform Delta 6 (identifier: Q13557-8) differs from the canonical sequence (SEQ ID NO: 3) as follows: 479-499: Missing. The sequence of CAMK2D Isoform Delta 7 (identifier: Q13557-9) differs from the canonical sequence (SEQ ID NO: 3) as follows: 328-328: K → KKRKSSSSVQMM and 479-499: Missing. The sequence of CAMK2D Isoform Delta 8 (identifier: Q13557-5) differs from the canonical sequence (SEQ ID NO: 3) as follows: 328-328: K → KINNKANVVTSPKENIPTPAL and 479-499: Missing. The sequence of CAMK2D Isoform Delta 9 (identifier: Q13557-6) differs from the canonical sequence (SEQ ID NO: 3) as follows: 329-329: E → EPQTTVIHNPDGNKE. The sequence of CAMK2D Isoform Delta 10 (identifier: Q13557-10) differs from the canonical sequence (SEQ ID NO: 3) as follows: 329-329: E → EPQTTVIHNPDGNKE and 479-499: Missing. The sequence of CAMK2D Isoform Delta 11 (identifier: Q13557-11) differs from the canonical sequence (SEQ ID NO: 3) as follows: 328-328: K → KKRKSSSSVQMMEPQTTVIHNPDGNK. The sequence of CAMK2D Isoform Delta 12 (identifier: Q13557-12) differs from the canonical sequence (SEQ ID NO: 3) as follows: 478-478: K → N and 479-499: Missing. Therefore, the ASOs of the present disclosure can be designed to reduce or inhibit expression of the natural variants of the CAMK2D protein.

[0101] An example of a target nucleic acid sequence of the ASOs is *CAMK2D* pre-mRNA. SEQ ID NO: 1 represents a human *CAMK2D* genomic sequence (*i.e.*, reverse complement of nucleotides 113,451,032 to 113,761,927 of GenBank Accession No. NC_000004.12). SEQ ID NO: 1 is identical to a *CAMK2D* pre-mRNA sequence except that nucleotide "t" in SEQ ID NO: 1 is shown as "u" in pre-mRNA. In certain embodiments, the "target nucleic acid" comprises an intron of a CAMK2D protein-encoding nucleic acids or naturally occurring variants thereof, and RNA nucleic acids derived therefrom, *e.g.*, pre-mRNA. In other embodiments, the target nucleic acid

comprises an exon region of a CAMK2D protein-encoding nucleic acids or naturally occurring variants thereof, and RNA nucleic acids derived therefrom, *e.g.*, pre-mRNA. In yet other embodiments, the target nucleic acid comprises an exon-intron junction of a CAMK2D protein-encoding nucleic acids or naturally occurring variants thereof, and RNA nucleic acids derived therefrom, *e.g.*, pre-mRNA. In some embodiments, for example when used in research or diagnostics the "target nucleic acid" can be a cDNA or a synthetic oligonucleotide derived from the above DNA or RNA nucleic acid targets. The human CAMK2D protein sequence encoded by the *CAMK2D* pre-mRNA is shown as SEQ ID NO: 3. In other embodiments, the target nucleic acid comprises an untranslated region of a CAMK2D protein-encoding nucleic acids or naturally occurring variants thereof, *e.g.*, 5' UTR, 3' UTR, or both.

[0102] In some embodiments, an ASO of the disclosure hybridizes to a region within the introns of a *CAMK2D* transcript, *e.g.*, SEQ ID NO: 1. In certain embodiments, an ASO of the disclosure hybridizes to a region within the exons of a *CAMK2D* transcript, *e.g.*, SEQ ID NO: 1. In other embodiments, an ASO of the disclosure hybridizes to a region within the exon-intron junction of a *CAMK2D* transcript, *e.g.*, SEQ ID NO: 1. In some embodiments, an ASO of the disclosure hybridizes to a region within a *CAMK2D* transcript (*e.g.,* an intron, exon, or exon-intron junction), *e.g.*, SEQ ID NO: 1, wherein the ASO has a design according to formula: 5' A-B-C 3' as described elsewhere herein (*e.g.,* Section II.G).

[0103] In some embodiments, the ASO targets a mRNA encoding a particular isoform of CAMK2D protein (*e.g.*, Isoform Delta 3-12). In some embodiments, the ASO targets all isoforms of CAMK2D protein. In other embodiments, the ASO targets two isoforms (*e.g.*, Isoform Delta 3 and Isoform Delta 7, Isoform Delta 4 and Isoform Delta 8, and Isoform Delta 9 and Isoform Delta 10) of CAMK2D protein.

[0104] In some embodiments, the ASO comprises a contiguous nucleotide sequence (*e.g.*, 10 to 30 nucleotides in length) that are complementary to a nucleic acid sequence within a *CAMK2D* transcript, *e.g.*, a region corresponding to SEQ ID NO: 1. In some embodiments, the ASO comprises a contiguous nucleotide sequence that hybridizes to a nucleic acid sequence, or a region within the sequence, of a *CAMK2D* transcript ("target region"), wherein the nucleic acid sequence corresponds to nucleotides (i) nucleotides 625 – 842 of SEQ ID NO: 1; (ii) nucleotides 1,398 – 59,755 of SEQ ID NO: 1; (iii) nucleotides 61,817 – 104,725 of SEQ ID NO: 1; (iv) nucleotides 112,162 – 118,021 of SEQ ID NO: 1; (v) nucleotides 119,440 – 135,219 of SEQ ID NO: 1; (vi) nucleotides

137,587 – 157,856 of SEQ ID NO: 1; (vii) nucleotides 159,191 – 266,174 of SEQ ID NO: 1; and (viii) nucleotides 272,788 – 310,949 of SEQ ID NO: 1, and wherein, optionally, the ASO has one of the designs described herein (*e.g.*, Section II.G) or a chemical structure shown elsewhere herein (*e.g.*, FIGs. 1A and 1B).

[0105] In some embodiments, the target region corresponds to nucleotides 725 – 742 of SEQ ID NO: 1. In other embodiments, the target region corresponds to nucleotides 1,498 – 59,655 of SEQ ID NO: 1. In certain embodiments, the target region corresponds to nucleotides 61,917 – 104,625 of SEQ ID NO: 1. In some embodiments, the target region corresponds to nucleotides 112,262 – 117,921 of SEQ ID NO: 1. In some embodiments, the target region corresponds to nucleotides 119,540 – 135,119 of SEQ ID NO: 1. In further embodiments, the target region corresponds to nucleotides 137,687 – 157,756 of SEQ ID NO: 1. In certain embodiments, the target region corresponds to nucleotides 159,291 – 266,074 of SEQ ID NO: 1. In some embodiments, the target region corresponds to nucleotides 272,888 – 310,849 of SEQ ID NO: 1.

[0106] In some embodiments, the target region corresponds to nucleotides 725 – 742 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In other embodiments, the target region corresponds to nucleotides 1,498 – 59,655 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In certain embodiments, the target region corresponds to nucleotides 61,917 – 104,625 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In some embodiments, the target region corresponds to nucleotides 112,262 – 117,921 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In some embodiments, the target region corresponds to nucleotides 119,540 – 135,119 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In further embodiments, the target region corresponds to nucleotides 137,687 – 157,756 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In certain embodiments, the target region corresponds to nucleotides 159,291 – 266,074 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end. In some embodiments, the target region corresponds to nucleotides 272,888 – 310,849 of SEQ ID NO: 1 ± 10, ± 20, ± 30, ± 40, ± 50, ± 60, ± 70, ± 80, or ± 90 nucleotides at the 3' end and/or the 5' end.

[0107] In some embodiments, the ASO of the present disclosure hybridizes to multiple target regions within the *CAMK2D* transcript (*e.g.*, pre-mRNA, SEQ ID NO: 1). In some embodiments, the ASO hybridizes to two different target regions within the *CAMK2D* transcript. In some embodiments, the ASO hybridizes to three different target regions within the *CAMK2D* transcript. The sequences of exemplary ASOs that hybridizes to multiple target regions, and the start/end sites of the different target regions are provided in FIG. 1B. In some embodiments, the ASOs that hybridizes to multiple regions within the *CAMK2D* transcript (*e.g.*, pre-mRNA, SEQ ID NO: 1) are more potent (*e.g.*, having lower EC50) at reducing *CAMK2D* expression compared to ASOs that hybridizes to a single region within the *CAMK2D* transcript (*e.g.*, pre-mRNA, SEQ ID NO: 1).

[0108] In some embodiments, the ASO of the disclosure is capable of hybridizing to the target nucleic acid (*e.g.*, *CAMK2D* transcript) under physiological condition, *i.e., in vivo* condition. In some embodiments, the ASO of the disclosure is capable of hybridizing to the target nucleic acid (*e.g.*, *CAMK2D* transcript) *in vitro*. In some embodiments, the ASO of the disclosure is capable of hybridizing to the target nucleic acid (*e.g.*, *CAMK2D* transcript) *in vitro* under stringent conditions. Stringency conditions for hybridization *in vitro* are dependent on, *inter alia*, productive cell uptake, RNA accessibility, temperature, free energy of association, salt concentration, and time (*see, e.g.,* Stanley T Crooke, Antisense Drug Technology: Principles, Strategies and Applications, 2nd Edition, CRC Press (2007)). Generally, conditions of high to moderate stringency are used for *in vitro* hybridization to enable hybridization between substantially similar nucleic acids, but not between dissimilar nucleic acids. An example of stringent hybridization conditions includes hybridization in 5X saline-sodium citrate (SSC) buffer (0.75 M sodium chloride/0.075 M sodium citrate) for 1 hour at 40°C, followed by washing the sample 10 times in 1X SSC at 40°C and 5 times in 1X SSC buffer at room temperature. *In vivo* hybridization conditions consist of intracellular conditions (*e.g.*, physiological pH and intracellular ionic conditions) that govern the hybridization of antisense oligonucleotides with target sequences. *In vivo* conditions can be mimicked *in vitro* by relatively low stringency conditions. For example, hybridization can be carried out *in vitro* in 2X SSC (0.3 M sodium chloride/0.03 M sodium citrate), 0.1% SDS at 37°C. A wash solution containing 4X SSC, 0.1% SDS can be used at 37°C, with a final wash in 1X SSC at 45°C.

[0109] In some embodiments, the ASO of the present disclosure is capable of targeting a *CAMK2D* transcript from one or more species (*e.g.*, humans, non-human primates, dogs, cats, guinea pigs, rabbits, rats, mice, horses, cattle, and bears). In certain embodiments,

the ASO disclosed herein is capable of targeting both human and rodent (*e.g.*, mice or rats) *CAMK2D* transcript. Accordingly, in some embodiments, the ASO is capable of down-regulating (*e.g.,* reducing or removing) expression of the *CAMK2D* mRNA or protein both in humans and in rodents (*e.g.*, mice or rats).

[0110] Sequences of mouse *CAMK2D* transcript are known in the art. For instance, the sequence for the mouse *CAMK2D* gene can be found under publicly available GenBank Accession Number NC_000069.6. The sequence for the mouse *CAMK2D* pre-mRNA transcript corresponds to residues 126,596,354 – 126,846,326 of NC_000069.6. The sequences for mouse *CAMK2D* mRNA transcript (both canonical and variants) are known and available as Accession Numbers NM_001025438.2 (canonical sequence), NM_001025439.2, NM_001293663.1, NM_001293664.1, NM_023813.4, NM_001346635.1, NM_001346636.1, NM_001293665.1, XM_006500836.3, XM_006500833.3, XM_006500835.3, XM_017319415.1, XM_006500818.3, XM_017319417.1, XM_017319418.1, XM_017319420.1, NM_001293666.1, XM_006500819.3, XM_017319416.1, XM_006500820.3, XM_006500822.3, XM_006500823.3, XM_006500824.3, XM_017319419.1, XM_006500826.3, XM_006500825.3, XM_006500829.3, BC052894.1, XM_006500831.3, XM_006500832.3, XM_017319422.1, XM_006500834.3, XM_006500839.3, and XM_017319421.1. . The sequence of mouse CAMK2D protein can be found under publicly available Accession Numbers: Q6PHZ2 (canonical sequence), Q3UF87, Q3UQH9, Q5DTK4, Q8CAC5, and Q9CZE2, each of which is incorporated by reference herein in its entirety. Three isoforms of the mouse CAMK2D protein are known. The sequence of CAMK2D Isoform Delta 6 differs from the canonical sequence as follows: 478-478: K → N and 479-499: Missing. The sequence of CAMK2D Isoform Delta 10 differs from the canonical as follows: 329-329: E → EPQTTVIHNPDGNKE; 478-478: K → N; and 479-499: Missing. The sequence of CAMK2D Isoform Delta 5 differs from the canonical sequence (as follows: 328-328: K → KINNKANVVTSPKENIPTPALEPQTTVIHNPDGNK; 478-478: K → N; and 479-499: Missing.

[0111] Sequences of rat *CAMK2D* transcript are also known in the art. The rat *CAMK2D* gene can be found under publicly available GenBank Accession Number NC_005101.4. The sequence for the rat *CAMK2D* pre-mRNA transcript corresponds to residues 230,900,907 – 231,132,207 of NC_005101.4. The sequences for rat *CAMK2D* mRNA transcript (both canonical and variants) are known and available as Accession Number

NM_012519.2 (canonical sequence), BC107562.1, XM_017590621.1, XM_017590605.1, XM_008761452.1, XM_017590606.1, XM_017590607.1, XM_017590608.1, XM_017590610.1, XM_017590611.1, XM_017590612.1, XM_006233285.3, XM_017590614.1, XM_017590615.1, XM_017590616.1, XM_017590613.1, XM_017590617.1, XM_017590618.1, XM_017590604.1, XM_017590609.1, XM_017590624.1, XM_017590625.1, XM_017590619.1, XM_017590620.1, XM_017590622.1, and. XM_017590623.1. The sequence of rat CAMK2D protein can be found under publicly available Accession Numbers: P15791 (canonical sequence), P97915, P97916, Q3B7L0, Q63904, Q63905, Q63906, Q63907, and Q63908, each of which is incorporated by reference herein in its entirety. Six isoforms of rat CAMK2D protein are known. The sequence of CAMK2D Isoform Delta 2 differs from the canonical sequence as follows: 329-362: Missing. The sequence of CAMK2D Isoform Delta 3 differs from the canonical sequence as follows: 329-335: INNKANV → KRKSSSV; 337-359: Missing; and 360-362: GNK → QMM. The sequence of CAMK2D Isoform Delta 4 differs from the canonical sequence as follows: 349-362: Missing. The sequence of CAMK2D Isoform Delta 5 differs from the canonical sequence as follows: 329-362: Missing and 512-533: KPPCIPNGKENFSGGTSLWQNI → N. The sequence of CAMK2D Isoform Delta 6 differs from the canonical sequence as follows: 512-533: KPPCIPNGKENFSGGTSLWQNI → N. The sequence of CAMK2D Isoform Delta 7 differs from the canonical sequence as follows: 349-362: Missing and 512-533: KPPCIPNGKENFSGGTSLWQNI → N.

II.B. ASO Sequences

[0112] The ASOs of the disclosure comprise a contiguous nucleotide sequence which corresponds to the complement of a region of *CAMK2D* transcript, *e.g.*, a nucleotide sequence corresponding to SEQ ID NO: 1.

[0113] In certain embodiments, the disclosure provides an ASO from 10 – 30, such as 10 – 15 nucleotides, 10 – 20 nucleotides, or 10 – 25 nucleotides in length, wherein the contiguous nucleotide sequence has at least about 80%, at least about 85%, at least about 90%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or about 100% sequence identity to a region within the complement of a *CAMK2D* transcript, such as SEQ ID NO: 1 or naturally occurring variant thereof. Thus, for example, the ASO hybridizes to a single stranded nucleic acid molecule having the sequence of SEQ ID NO: 1 or a portion thereof.

[0114] The ASO can comprise a contiguous nucleotide sequence which is fully complementary (perfectly complementary) to the equivalent region of a nucleic acid which encodes a mammalian CAMK2D protein (*e.g.*, SEQ ID NO: 1). The ASO can comprise a contiguous nucleotide sequence which is fully complementary (perfectly complementary) to a nucleic acid sequence, or a region within the sequence, corresponding to nucleotides X-Y of SEQ ID NO: 1, wherein X and Y are the start site and the end site, respectively, as shown in FIGs. 1A and 1B.

[0115] In some embodiments, the nucleotide sequence of the ASOs of the disclosure or the contiguous nucleotide sequence has at least about 80% sequence identity to a sequence selected from SEQ ID NOs: 4 to 1713 (*i.e.,* the sequences in FIGs. 1A and 1B), such as at least about 80%, at least about 85%, at least about 90%, at least about 91%, at least about 92%, at least about 93%, at least about 94%, at least about 95%, at least about 96% sequence identity, at least about 97% sequence identity, at least about 98% sequence identity, at least about 99% sequence identity, such as about 100% sequence identity (homologous). In some embodiments, the ASO has a design described elsewhere herein (*e.g.,* Section II.G) or a chemical structure shown elsewhere herein (*e.g.*, FIGs. 1A and 1B).

[0116] In some embodiments the ASO (or contiguous nucleotide portion thereof) is selected from, or comprises, one of the sequences selected from the group consisting of SEQ ID NOs: 4 to 1713 or a region of at least 10 contiguous nucleotides thereof, wherein the ASO (or contiguous nucleotide portion thereof) can optionally comprise one, two, three, or four mismatches when compared to the corresponding *CAMK2D* transcript.

[0117] In some embodiments, the ASO comprises a sequence selected from the group consisting of SEQ ID NO: 254, SEQ ID NO: 27, SEQ ID NO: 114, SEQ ID NO: 158, SEQ ID NO: 190, SEQ ID NO: 327, SEQ ID NO: 463, SEQ ID NO: 513, SEQ ID NO: 516, SEQ ID NO: 519, SEQ ID NO: 657, SEQ ID NO: 659, SEQ ID NO: 827, SEQ ID NO: 1249, SEQ ID NO: 1326, SEQ ID NO: 1409, SEQ ID NO: 1524, SEQ ID NO: 1530, SEQ ID NO: 1662, and SEQ ID NO: 1676.

[0118] In some embodiments, the ASO comprises a sequence selected from the group consisting of SEQ ID NO: 55, SEQ ID NO: 61, SEQ ID NO: 63, SEQ ID NO: 71, SEQ ID NO: 75, SEQ ID NO: 79, SEQ ID NO: 84, SEQ ID NO: 85, SEQ ID NO: 92, SEQ ID NO: 102, SEQ ID NO: 105, SEQ ID NO: 128, SEQ ID NO: 130, SEQ ID NO: 133, SEQ ID NO: 138, SEQ ID NO: 161, SEQ ID NO: 178, SEQ ID NO: 180, SEQ ID NO: 186, SEQ ID NO: 195, SEQ ID NO: 200, SEQ ID NO: 202, SEQ ID NO: 234, SEQ ID NO:

264, SEQ ID NO: 387, SEQ ID NO: 390, SEQ ID NO: 396, SEQ ID NO: 441, SEQ ID NO: 446, SEQ ID NO: 457, SEQ ID NO: 467, SEQ ID NO: 523, SEQ ID NO: 524, SEQ ID NO: 636, SEQ ID NO: 640, SEQ ID NO: 700, SEQ ID NO: 740, SEQ ID NO: 832, SEQ ID NO: 965, SEQ ID NO: 1015, SEQ ID NO: 1065, SEQ ID NO: 1071, SEQ ID NO: 1155, SEQ ID NO: 1475, SEQ ID NO: 1508, SEQ ID NO: 1685, SEQ ID NO: 1686, SEQ ID NO: 1687, SEQ ID NO: 1688, and SEQ ID NO: 1690.

[0119] In some embodiments, the ASOs of the disclosure bind to the target nucleic acid sequence (*e.g.*, *CAMK2D* transcript) and are capable of inhibiting or reducing expression of the *CAMK2D* transcript by at least 10% or 20% compared to the normal (*i.e.,* control) expression level in the cell, *e.g.*, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or about 100% compared to the normal expression level (*e.g.*, expression level in cells that have not been exposed to the ASO).

[0120] In some embodiments, the ASOs of the disclosure are capable of reducing expression of *CAMK2D* mRNA *in vitro* by at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or about 100% in HEK293 cells when the cells are in contact with 25 μM of the ASO compared to HEK293 cells that are not in contact with the ASO (*e.g.*, contact with saline).

[0121] In some embodiments, the ASOs of the disclosure are capable of reducing expression of *CAMK2D* mRNA *in vitro* by at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or about 100% in human inducible pluripotent stem cell-derived cardiomyocytes (hiPSC-CM) cells when the cells are in contact with 500 nM of the ASO compared to hiPSC-CM cells that are not in contact with the ASO (*e.g.*, contact with saline).

[0122] In certain embodiments, the ASO of the disclosure has at least one property selected from the group consisting of: (i) reducing an mRNA level encoding CAMK2D in Inducible Pluripotent Stem Cell-Derived Cardiomyocytes (hiPSC-CM); (ii) reducing a protein level of CAMK2D in hiPSC-CM; (iii) reducing, ameliorating, or treating one or more symptoms of a cardiovascular disease or disorder, and (iv) any combination thereof.

[0123] In some embodiments, the ASO can tolerate 1, 2, 3, or 4 (or more) mismatches, when hybridizing to the target sequence and still sufficiently bind to the target to show the desired effect*, i.e.,* down-regulation of the target mRNA and/or protein. Mismatches can, for example, be compensated by increased length of the ASO nucleotide sequence and/or an increased number of nucleotide analogs, which are disclosed elsewhere herein.

[0124] In some embodiments, the ASO of the disclosure comprises no more than 3 mismatches when hybridizing to the target sequence. In other embodiments, the contiguous nucleotide sequence comprises no more than 2 mismatches when hybridizing to the target sequence. In other embodiments, the contiguous nucleotide sequence comprises no more than 1 mismatch when hybridizing to the target sequence.

II.C. ASO Length

[0125] The ASOs can comprise a contiguous nucleotide sequence of a total of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, or 30 contiguous nucleotides in length. It should be understood that when a range is given for an ASO, or contiguous nucleotide sequence length, the range includes the lower and upper lengths provided in the range, for example from (or between) 10–30, includes both 10 and 30.

[0126] In some embodiments, the ASOs comprise a contiguous nucleotide sequence of a total of about 14-20, 14, 15, 16, 17, 18, 19, or 20 contiguous nucleotides in length.

II.D. Nucleosides and Nucleoside analogs

[0127] In one aspect of the disclosure, the ASOs comprise one or more non-naturally occurring nucleoside analogs. "Nucleoside analogs" as used herein are variants of natural nucleosides, such as DNA or RNA nucleosides, by virtue of modifications in the sugar and/or base moieties. Analogs could in principle be merely "silent" or "equivalent" to the natural nucleosides in the context of the oligonucleotide, *i.e.* have no functional effect on the way the oligonucleotide works to inhibit target gene expression. Such "equivalent" analogs can nevertheless be useful if, for example, they are easier or cheaper to manufacture, or are more stable to storage or manufacturing conditions, or represent a tag or label. In some embodiments, however, the analogs will have a functional effect on the way in which the ASO works to inhibit expression; for example by producing increased binding affinity to the target and/or increased resistance to intracellular nucleases and/or increased ease of transport into the cell. Specific examples of nucleoside analogs are described by *e.g.* Freier & Altmann; *Nucl. Acid Res.*, 1997, 25, 4429-4443 and Uhlmann;

Curr. Opinion in Drug Development, 2000, 3(2), 293-213, and in Scheme 1. The ASOs of the present disclosure can contain more than one, more than two, more than three, more than four, more than five, more than six, more than seven, more than eight, more than nine, more than 10, more than 11, more than 12, more than 13, more than 14, more than 15, more than 16, more than 18, more than 19, or more than 20 nucleoside analogs. In some embodiments, the nucleoside analogs in the ASOs are the same. In other embodiments, the nucleoside analogs in the ASOs are different. The nucleotide analogs in the ASOs can be any one of or combination of the following nucleoside analogs.

II.D.1. Nucleobase

[0128] The term nucleobase includes the purine (*e.g.,* adenine and guanine) and pyrimidine (*e.g.,* uracil, thymine and cytosine) moiety present in nucleosides and nucleotides which form hydrogen bonds in nucleic acid hybridization. In the context of the present disclosure, the term nucleobase also encompasses modified nucleobases which may differ from naturally occurring nucleobases, but are functional during nucleic acid hybridization. In some embodiments, the nucleobase moiety is modified by modifying or replacing the nucleobase. In this context, "nucleobase" refers to both naturally occurring nucleobases such as adenine, guanine, cytosine, thymidine, uracil, xanthine and hypoxanthine, as well as non-naturally occurring variants. Such variants are for example described in Hirao *et al.*, (2012) *Accounts of Chemical Research* vol 45 page 2055 and Bergstrom (2009) Current Protocols in Nucleic Acid Chemistry Suppl. 37 1.4.1.

[0129] In a some embodiments, the nucleobase moiety is modified by changing the purine or pyrimidine into a modified purine or pyrimidine, such as substituted purine or substituted pyrimidine, such as a nucleobase selected from isocytosine, pseudoisocytosine, 5-methyl-cytosine, 5-thiozolo-cytosine, 5-propynyl-cytosine, 5-propynyl-uracil, 5-bromouracil, 5-thiazolo-uracil, 2-thio-uracil, 2'thio-thymine, inosine, diaminopurine, 6-aminopurine, 2-aminopurine, 2,6-diaminopurine, and 2-chloro-6-aminopurine.

[0130] The nucleobase moieties may be indicated by the letter code for each corresponding nucleobase, *e.g.,* A, T, G, C, or U, wherein each letter may optionally include modified nucleobases of equivalent function. For example, in the exemplified oligonucleotides, the nucleobase moieties are selected from A, T, G, C, and 5-methyl-cytosine. Optionally, for LNA gapmers, 5-methyl-cytosine LNA nucleosides may be used.

II.D.2. Sugar Modification

[0131] The ASO of the disclosure can comprise one or more nucleosides which have a modified sugar moiety, *i.e.* a modification of the sugar moiety when compared to the ribose sugar moiety found in DNA and RNA. Numerous nucleosides with modification of the ribose sugar moiety have been made, primarily with the aim of improving certain properties of oligonucleotides, such as affinity and/or nuclease resistance.

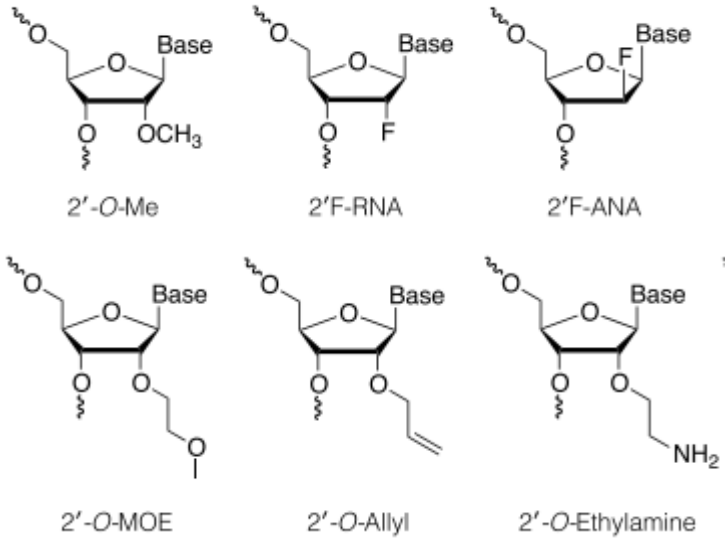
[0132] Such modifications include those where the ribose ring structure is modified, *e.g.* by replacement with a hexose ring (HNA), or a bicyclic ring, which typically have a biradical bridge between the C2' and C4' carbons on the ribose ring (LNA), or an unlinked ribose ring which typically lacks a bond between the C2' and C3' carbons (*e.g.,* UNA). Other sugar modified nucleosides include, for example, bicyclohexose nucleic acids (WO2011/017521) or tricyclic nucleic acids (WO2013/154798). Modified nucleosides also include nucleosides where the sugar moiety is replaced with a non-sugar moiety, for example in the case of peptide nucleic acids (PNA), or morpholino nucleic acids.

[0133] Sugar modifications also include modifications made via altering the substituent groups on the ribose ring to groups other than hydrogen, or the 2'-OH group naturally found in RNA nucleosides. Substituents may, for example be introduced at the 2', 3', 4', or 5' positions. Nucleosides with modified sugar moieties also include 2' modified nucleosides, such as 2' substituted nucleosides. Indeed, much focus has been spent on developing 2' substituted nucleosides, and numerous 2' substituted nucleosides have been found to have beneficial properties when incorporated into oligonucleotides, such as enhanced nucleoside resistance and enhanced affinity.

II.D.2.a 2' modified nucleosides

[0134] A 2' sugar modified nucleoside is a nucleoside which has a substituent other than H or –OH at the 2' position (2' substituted nucleoside) or comprises a 2' linked biradical, and includes 2' substituted nucleosides and LNA (2' – 4' biradical bridged) nucleosides. For example, the 2' modified sugar may provide enhanced binding affinity (*e.g.,* affinity enhancing 2' sugar modified nucleoside) and/or increased nuclease resistance to the oligonucleotide. Examples of 2' substituted modified nucleosides are 2'-O-alkyl-RNA, 2'-O-methyl-RNA, 2'-alkoxy-RNA, 2'-O-methoxyethyl-RNA (MOE), 2'-amino-DNA, 2'-Fluoro-RNA, 2'-Fluro-DNA, arabino nucleic acids (ANA), and 2'-Fluoro-ANA nucleoside. For further examples, please *see, e.g.*, Freier & Altmann; *Nucl. Acid Res.*,

1997, 25, 4429-4443; Uhlmann, *Curr. Opinion in Drug Development*, 2000, 3(2), 293-213; and Deleavey and Damha, Chemistry and Biology 2012, 19, 937. Below are illustrations of some 2' substituted modified nucleosides.



II.D.2.b Locked Nucleic Acid Nucleosides (LNA).

[0135] LNA nucleosides are 2'-sugar modified nucleosides which comprise a linker group (referred to as a biradical or a bridge) between C2' and C4' of the ribose sugar ring of a nucleoside (*i.e.*, 2'-4' bridge), which restricts or locks the conformation of the ribose ring. These nucleosides are also termed bridged nucleic acid or bicyclic nucleic acid (BNA) in the literature. The locking of the conformation of the ribose is associated with an enhanced affinity of hybridization (duplex stabilization) when the LNA is incorporated into an oligonucleotide for a complementary RNA or DNA molecule. This can be routinely determined by measuring the melting temperature of the oligonucleotide/complement duplex.

[0136] Non limiting, exemplary LNA nucleosides are disclosed in WO 99/014226, WO 00/66604, WO 98/039352 , WO 2004/046160, WO 00/047599, WO 2007/134181, WO 2010/077578, WO 2010/036698, WO 2007/090071, WO 2009/006478, WO 2011/156202, WO 2008/154401, WO 2009/067647, WO 2008/150729, Morita *et al.*, *Bioorganic & Med.Chem. Lett*. 12, 73-76, Seth *et al.*, *J. Org. Chem*. 2010, Vol 75(5) pp. 1569-81, and Mitsuoka *et al.*, *Nucleic Acids Research* 2009, 37(4), 1225-1238.

[0137] The 2'-4' bridge comprises 1 to 4 bridging atoms and is in particular of formula -X-Y- wherein

[0138] X is oxygen, sulfur, -CR^aR^b-, -$C(R^a)$=$C(R^b)$, -$C(=CR^aR^b)$-, -$C(R^a)$=N, -$Si(R^a)$2-, -SO2-, -NR^a-; -O-NR^a-, -NR^a-O-, >C=J, Se; –cPr-, -O-NR^a-, NR^a-CR^aR^b-, -$N(R^a)$-O-, or -O-CR^aR^b-;

[0139] Y is oxygen, sulfur, -$(CR^aR^b)_n$ -, -CR^aR^b-O-CR^aR^b-, -$C(R^a)$=$C(R^b)$, -$C(R^a)$=N , -$Si(R^a)$2-, -SO2-, -NR^a-, or >C=J Se; –cPr-, -O-NR^a-,-O-CR^aR^b-, or NR^a-CR^aR^b-; wherein n is 1 or 2;

[0140] with the proviso that -X-Y- is not -O-O-, $Si(R^a)_2$-$Si(R^a)_2$-, -SO_2-SO_2-, -$C(R^a)$=$C(R^b)$-$C(R^a)$=$C(R^b)$, -$C(R^a)$=N-$C(R^a)$=N-, -$C(R^a)$=N-$C(R^a)$=$C(R^b)$, -$C(R^a)$=$C(R^b)$-$C(R^a)$=N-, or -Se-Se-;

[0141] J is oxygen, sulfur, CH_2, or =$N(R^a)$;

[0142] R^a and R^b are independently selected from hydrogen, halogen, hydroxyl, cyano, thiohydroxyl, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl, formyl, aryl, heterocycle, amino, alkylamino, carbamoyl, alkylaminocarbonyl, aminoalkylaminocarbonyl, alkylaminoalkylaminocarbonyl, alkylcarbonylamino, carbamido, alkanoyloxy, sulfone alkylsulfonyloxy, nitro, azido, thiolsulfidealkylsulfanyl, aryloxycarbonyl, aryloxy, arylcarbonyl, heteroaryl, heteroaryloxycarbonyl, heteroaryloxy, heteroarylcarbonyl, -$OC(=X^a)R^c$, -$OC(=X^a)NR^cR^d$ and -$NR^eC(=X^a)NR^cR^d$; or two geminal R^a and R^b together form optionally substituted methylene; wherein substituted alkyl, substituted alkenyl, substituted alkynyl, substituted alkoxy and substituted methylene are alkyl, alkenyl, alkynyl and methylene substituted with 1 to 3 substituents independently selected from halogen, hydroxyl, alkyl, alkenyl, alkynyl, alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl, formyl, heterocycle, aryl, and heteroaryl;

X^a is oxygen, sulfur or -NRc;

R^c, R^d, and R^e are independently hydrogen or alkyl; and

n is 1, 2 or 3.

[0143] In some embodiments, X is oxygen, sulfur, -NR^a-, -CR^aR^b- or -$C(=CR^aR^b)$-, particularly oxygen, sulfur, -NH-, -CH_2- or -$C(=CH_2)$-, more particularly oxygen.

[0144] In some embodiments, Y is -CR^aR^b-, -CR^aR^b-CR^aR^b- or -CR^aR^b-CR^aR^b-CR^aR^b-, particularly -CH_2-$CHCH_3$-, -$CHCH_3$-CH_2-, CH_2-CH_2- or -CH_2-CH_2-CH_2-.

[0145] In some embodiments, -X-Y- is -O-$(CR^aR^b)_n$-, -S-CR^aR^b-, -N(R^a)CR^aR^b-, -CR^aR^b-CR^aR^b-, -O-CR^aR^b-O-CR^aR^b-, -CR^aR^b-O-CR^aR^b-, -$C(=CR^aR^b)$-CR^aR^b-, -N(R^a)CR^aR^b-, -O-N(R^a)CR^aR^b-, or -N(R^a)-O-CR^aR^b-.

[0146] In some embodiments, R^a and R^b are independently selected from the group consisting of hydrogen, halogen, hydroxyl, alkyl and alkoxyalkyl, in particular, hydrogen, alkyl and alkoxyalkyl.

[0147] In some embodiments, R^a and R^b are independently selected from the group consisting of hydrogen, halogen, such as fluoro, hydroxyl, methyl and $-CH_2-O-CH_3$, in particular, hydrogen, methyl and $-CH_2-O-CH_3$.

[0148] In some embodiments, R^a is hydrogen or alkyl, in particular, hydrogen or methyl.

[0149] In some embodiments, R^b is hydrogen or alkyl, in particular hydrogen or methyl. In some embodiments, one or both of R^a and R^b are hydrogen. In certain embodiments, only one of R^a and R^b is hydrogen. In some embodiments, one of R^a and R^b is methyl and the other one is hydrogen. In other embodiments, R^a and R^b are both methyl at the same time.

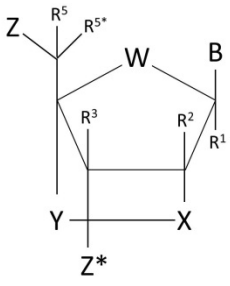
[0150] In a particular embodiment of the invention, -X-Y- is $-O-CH_2-$, $-S-CH_2-$, $-S-CH(CH_3)-$, $-NH-CH_2-$, $-O-CH_2CH_2-$, $-O-CH(CH_2-O-CH_3)-$, $-O-CH(CH_2CH_3)-$, $-O-CH(CH_3)-$, $-O-CH_2-O-CH_2-$, $-O-CH_2-O-CH_2-$, $-CH_2-O-CH_2-$, $-C(=CH_2)CH_2-$, $-C(=CH_2)CH(CH_3)-$, $-N(-O-CH_3)-$ or $-N(CH_3)-$;

[0151] In some embodiments, -X-Y- is $-O-CR^aR^b-$ wherein R^a and R^b are independently selected from the group consisting of hydrogen, alkyl and alkoxyalkyl, in particular, hydrogen, methyl and $-CH_2-O-CH_3$.

[0152] In some embodiments, -X-Y- is $-O-CH_2-$ or $-O-CH(CH_3)-$, particularly $-O-CH_2-$.

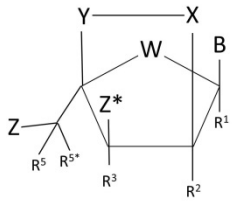
[0153] The 2'- 4' bridge can be positioned either below the plane of the ribose ring (beta-D-configuration), or above the plane of the ring (alpha-L- configuration), as illustrated in formula (A) and formula (B) respectively.

[0154] In some embodiments, the modified nucleoside or the LNA nucleosides of the ASO of the disclosure has a general structure of the formula II or III:



β-D

or



α-L

Formula II Formula III

wherein

W is selected from -O-, -S-, $-N(R^a)-$, $-C(R^aR^b)-$, in particular –O-;

B is a nucleobase or a modified nucleobase moiety;

Z is an internucleoside linkage to an adjacent nucleoside or a 5'-terminal group;

Z* is an internucleoside linkage to an adjacent nucleoside or a 3'-terminal group;

R^1, R^2, R^3, R^5 and R^{5*} are independently selected from hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxy, alkoxy, alkoxyalkyl, alkenyloxy, carboxyl, alkoxycarbonyl, alkylcarbonyl, formyl, azide, heterocycle and aryl; and

X, Y, R^a and R^b are as defined herein.

[0155] In some embodiments, –X-Y-, R^a is hydrogen or alkyl, in particular hydrogen or methyl. In some embodiments of –X-Y-, R^b is hydrogen or alkyl, in particular hydrogen or methyl. In other embodiments of –X-Y-, one or both of R^a and R^b are hydrogen. In further embodiments of –X-Y-, only one of R^a and R^b is hydrogen. In some embodiments of –X-Y-, one of R^a and R^b is methyl and the other one is hydrogen. In certain embodiments of –X-Y-, R^a and R^b are both methyl at the same time.

[0156] In some embodiments, –X-, R^a is hydrogen or alkyl, in particular hydrogen or methyl. In some embodiments of –X-, R^b is hydrogen or alkyl, in particular hydrogen or methyl. In other embodiments of –X-, one or both of R^a and R^b are hydrogen. In certain embodiments of –X-, only one of R^a and R^b is hydrogen. In certain embodiments of –X-, one of R^a and R^b is methyl and the other one is hydrogen. In other embodiments of –X-, R^a and R^b are both methyl at the same time.

[0157] In some embodiments, –Y-, R^a is hydrogen or alkyl, in particular hydrogen or methyl. In certain embodiments of –Y-, R^b is hydrogen or alkyl, in particular hydrogen or methyl. In other embodiments of –Y-, one or both of R^a and R^b are hydrogen. In some embodiments of –Y-, only one of R^a and R^b is hydrogen. In other embodiments of –Y-, one of R^a and R^b is methyl and the other one is hydrogen. In some embodiments of –Y-, R^a and R^b are both methyl at the same time.

[0158] In some embodiments, R^1, R^2, R^3, R^5 and R^{5*} are independently selected from hydrogen and alkyl, in particular hydrogen and methyl.

[0159] In some embodiments, R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time.

[0160] In some embodiments, R^1, R^2, R^3, are all hydrogen at the same time, one of R^5 and R^{5*} is hydrogen and the other one is as defined above, in particular alkyl, more particularly methyl.

[0161] In some embodiments, R^1, R^2, R^3, are all hydrogen at the same time, one of R^5 and R^{5*} is hydrogen and the other one is azide..

[0162] In some embodiments, -X-Y- is -O-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such LNA nucleosides are disclosed in WO 99/014226, WO 00/66604, WO 98/039352 and WO 2004/046160, which are all hereby incorporated by reference, and include what are commonly known in the art as beta-D-oxy LNA and alpha-L-oxy LNA nucleosides.

[0163] In some embodiments, -X-Y- is -S-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such thio LNA nucleosides are disclosed in WO 99/014226 and WO 2004/046160 which are hereby incorporated by reference.

[0164] In some embodiments, -X-Y- is -NH-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such amino LNA nucleosides are disclosed in WO 99/014226 and WO 2004/046160, which are hereby incorporated by reference.

[0165] In some embodiments, -X-Y- is -O-CH_2CH_2- or -O$CH_2CH_2CH_2$-, W is oxygen, and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such LNA nucleosides are disclosed in WO 00/047599 and Morita *et al.*, *Bioorganic & Med.Chem. Lett*. 12, 73-76, which are hereby incorporated by reference, and include what are commonly known in the art as 2'-O-4'C-ethylene bridged nucleic acids (ENA).

[0166] In some embodiments, -X-Y- is -O-CH_2-, W is oxygen, R^1, R^2, R^3 are all hydrogen at the same time, one of R^5 and R^{5*} is hydrogen and the other one is not hydrogen, such as alkyl, for example methyl. Such 5' substituted LNA nucleosides are disclosed in WO 2007/134181, which is hereby incorporated by reference.

[0167] In some embodiments, -X-Y- is -O-CR^aR^b-, wherein one or both of R^a and R^b are not hydrogen, in particular alkyl such as methyl, W is oxygen, R^1, R^2, R^3 are all hydrogen at the same time, one of R^5 and R^{5*} is hydrogen and the other one is not hydrogen, in particular alkyl, for example methyl. Such bis modified LNA nucleosides are disclosed in WO 2010/077578, which is hereby incorporated by reference.

[0168] In some embodiments, -X-Y- is -O-CH(CH_2-O-CH_3)- ("2' O-methoxyethyl bicyclic nucleic acid", Seth *et al., J. Org. Chem*. 2010, Vol 75(5) pp. 1569-81).

[0169] In some embodiments,, -X-Y- is -O-CHR^a-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such 6'-substituted LNA nucleosides are disclosed in WO 2010/036698 and WO 2007/090071, which are both hereby incorporated by reference. In such 6'-substituted LNA nucleosides, R^a is in particular C1-C6 alkyl, such as methyl.

[0170] In some embodiments, -X-Y- is -O-CH(CH_2-O-CH_3)-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such LNA nucleosides are also known in the art as cyclic MOEs (cMOE) and are disclosed in WO 2007/090071.

[0171] In some embodiments, -X-Y- is -O-CH(CH_3)-.

[0172] In some embodiments, -X-Y- is -O-CH_2-O-CH_2- (Seth *et al*., *J. Org. Chem* 2010 op. cit.)

[0173] In some embodiments, -X-Y- is -O-CH(CH_3)-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such 6'-methyl LNA nucleosides are also known in the art as cET nucleosides, and may be either (S)-cET or (R)-cET diastereoisomers, as disclosed in WO 2007/090071 (beta-D) and WO 2010/036698 (alpha-L) which are both hereby incorporated by reference.

[0174] In some embodiments, -X-Y- is -O-CR^aR^b-, wherein neither R^a nor R^b is hydrogen, W is oxygen, and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. In certain embodiments, R^a and R^b are both alkyl at the same time, in particular both methyl at the same time. Such 6'-di-substituted LNA nucleosides are disclosed in WO 2009/006478 which is hereby incorporated by reference.

[0175] In some embodiments, -X-Y- is -S-CHR^a-, W is oxygen, and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such 6'-substituted thio LNA nucleosides are disclosed in WO 2011/156202, which is hereby incorporated by reference. In certain embodiments of such 6'-substituted thio LNA, R^a is alkyl, in particular methyl.

[0176] In some embodiments, -X-Y- is -C(=CH_2)C(R^aR^b)-, such as, W is oxygen, and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. Such vinyl carbo LNA nucleosides are disclosed in WO 2008/154401 and WO 2009/067647, which are both hereby incorporated by reference.

[0177] In some embodiments, -X-Y- is -N(OR^a)-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. In some embodiments, R^a is alkyl such as methyl. Such LNA nucleosides are also known as N substituted LNAs and are disclosed in WO 2008/150729, which is hereby incorporated by reference.

[0178] In some embodiments, -X-Y- is -O-NCH_3- (Seth *et al*., *J. Org. Chem* 2010 op. cit.).

[0179] In some embodiments, -X-Y- is ON(R^a)- –N(R^a)-O-,-NR^a-CR^aR^b-CR^aR^b-, or –NR^a-CR^aR^b-, W is oxygen, and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. In certain embodiments, R^a is alkyl, such as methyl. (Seth *et al*., *J. Org. Chem* 2010 op. cit.).

[0180] In some embodiments, R^5 and R^{5*} are both hydrogen at the same time. In other embodiments, one of R^5 and R^{5*} is hydrogen and the other one is alkyl, such as methyl. In

such embodiments, R^1, R^2 and R^3 can be in particular hydrogen and -X-Y- can be in particular -O-CH_2- or -O-CHC(R^a)$_3$-, such as -O-CH(CH_3)-.

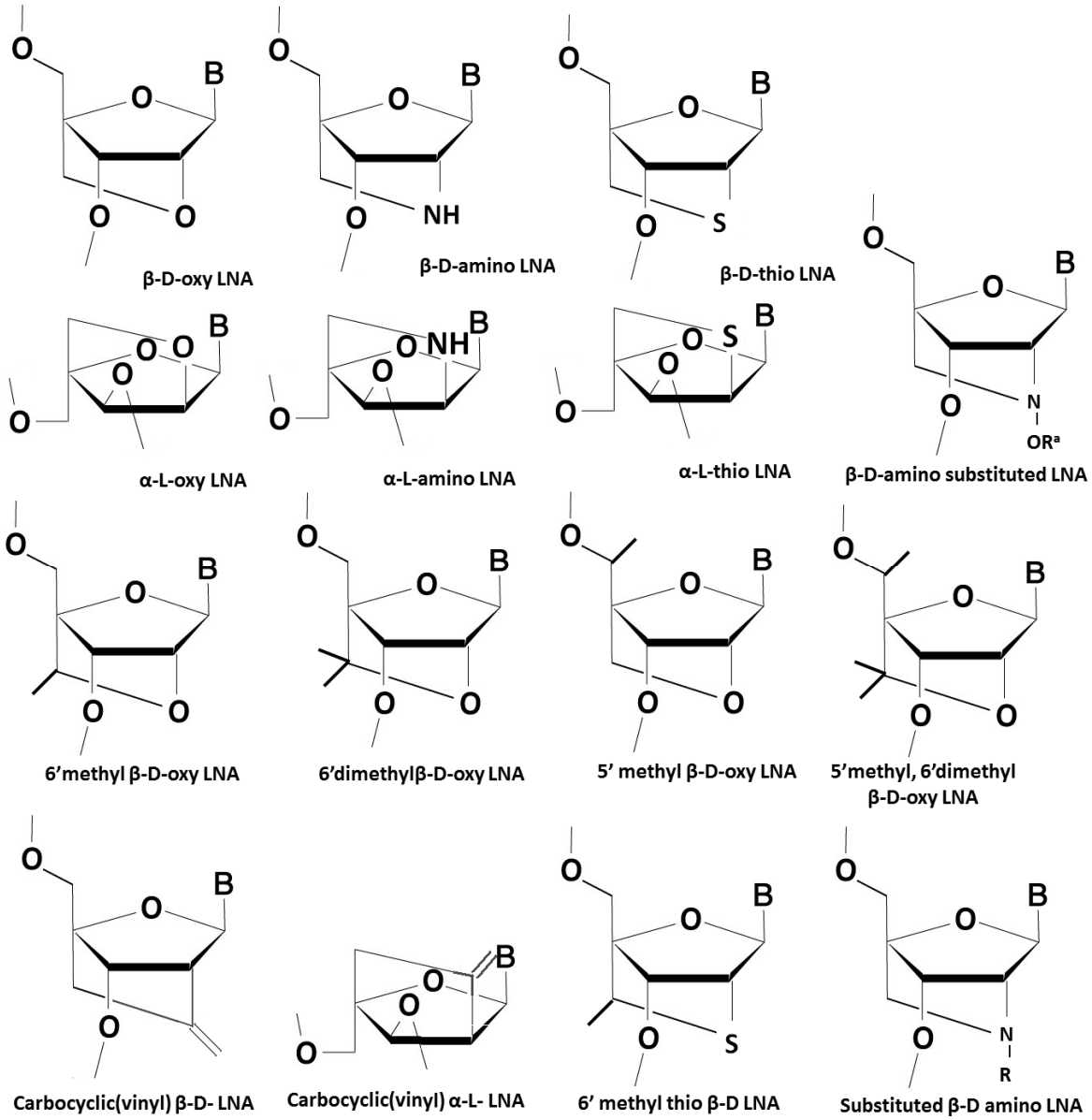
[0181] In some embodiments, -X-Y- is -CR^aR^b-O-CR^aR^b-, such as -CH_2-O-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. In such embodiments, R^a can be in particular alkyl such as methyl. Such LNA nucleosides are also known as conformationally restricted nucleotides (CRNs) and are disclosed in WO 2013/036868, which is hereby incorporated by reference.

[0182] In some embodiments, -X-Y- is -O-CR^aR^b-O-CR^aR^b-, such as -O-CH_2-O-CH_2-, W is oxygen and R^1, R^2, R^3, R^5 and R^{5*} are all hydrogen at the same time. In certain embodiments, R^a can be in particular alkyl such as methyl. Such LNA nucleosides are also known as COC nucleotides and are disclosed in Mitsuoka *et al.*, *Nucleic Acids Research* 2009, 37(4), 1225-1238, which is hereby incorporated by reference.

[0183] It will be recognized than, unless specified, the LNA nucleosides may be in the beta-D or alpha-L stereoisoform.

[0184] Certain examples of LNA nucleosides are presented in Scheme 1.

Scheme 1



[0185] As illustrated elsewhere, in some embodiments of the disclosure the LNA nucleosides in the oligonucleotides are beta-D-oxy-LNA nucleosides.

II.E. Nuclease mediated degradation

[0186] Nuclease mediated degradation refers to an oligonucleotide capable of mediating degradation of a complementary nucleotide sequence when forming a duplex with such a sequence.

[0187] In some embodiments, the oligonucleotide may function via nuclease mediated degradation of the target nucleic acid, where the oligonucleotides of the disclosure are capable of recruiting a nuclease, particularly and endonuclease, preferably endoribonuclease (RNase), such as RNase H. Examples of oligonucleotide designs which

operate via nuclease mediated mechanisms are oligonucleotides which typically comprise a region of at least 5 or 6 DNA nucleosides and are flanked on one side or both sides by affinity enhancing nucleosides, for example gapmers, headmers and tailmers.

II.F. RNase H Activity and Recruitment

[0188] The RNase H activity of an antisense oligonucleotide refers to its ability to recruit RNase H when in a duplex with a complementary RNA molecule and induce degradation of the complementary RNA molecule. WO01/23613 provides *in vitro* methods for determining RNaseH activity, which may be used to determine the ability to recruit RNaseH. Typically, an oligonucleotide is deemed capable of recruiting RNase H if, when provided with a complementary target nucleic acid sequence, it has an initial rate, as measured in pmol/l/min, of at least 5%, such as at least 10% or more than 20% of the of the initial rate determined when using a oligonucleotide having the same base sequence as the modified oligonucleotide being tested, but containing only DNA monomers, with phosphorothioate linkages between all monomers in the oligonucleotide, and using the methodology provided by Example 91 - 95 of WO01/23613.

[0189] In some embodiments, an oligonucleotide is deemed essentially incapable of recruiting RNaseH if, when provided with the complementary target nucleic acid, the RNaseH initial rate, as measured in pmol/l/min, is less than 20%, such as less than 10%,such as less than 5% of the initial rate determined when using a oligonucleotide having the same base sequence as the oligonucleotide being tested, but containing only DNA monomers, with no 2' substitutions, with phosphorothioate linkages between all monomers in the oligonucleotide, and using the methodology provided by Example 91 - 95 of WO01/23613.

II.G. ASO Design

[0190] The ASO of the disclosure can comprise a nucleotide sequence which comprises both nucleosides and nucleoside analogs, and can be in the form of a gapmer, blockmer, mixmer, headmer, tailmer, or totalmer. Examples of configurations of a gapmer, blockmer, mixmer, headmer, tailmer, or totalmer that can be used with the ASO of the disclosure are described in U.S. Patent Appl. Publ. No. 2012/0322851.

[0191] The term "gapmer" as used herein refers to an antisense oligonucleotide which comprises a region of RNase H recruiting oligonucleotides (gap) which is flanked 5' and 3' by one or more affinity enhancing modified nucleosides (flanks). The terms

"headmers" and "tailmers" are oligonucleotides capable of recruiting RNase H where one of the flanks is missing, *i.e.,* only one of the ends of the oligonucleotide comprises affinity enhancing modified nucleosides. For headmers, the 3' flank is missing (*i.e.,* the 5' flank comprise affinity enhancing modified nucleosides) and for tailmers, the 5' flank is missing (*i.e.,* the 3' flank comprises affinity enhancing modified nucleosides). The term "LNA gapmer" is a gapmer oligonucleotide wherein at least one of the affinity enhancing modified nucleosides is an LNA nucleoside. The term "mixed wing gapmer" refers to an LNA gapmer wherein the flank regions comprise at least one LNA nucleoside and at least one DNA nucleoside or non-LNA modified nucleoside, such as at least one 2' substituted modified nucleoside, such as, for example, 2'-O-alkyl-RNA, 2'-O-methyl-RNA, 2'-alkoxy-RNA, 2'-O-methoxyethyl-RNA (MOE), 2'-amino-DNA, 2'-Fluoro-RNA, 2'-Fluro-DNA, arabino nucleic acid (ANA), and 2'-Fluoro-ANA nucleoside(s).

[0192] Other "chimeric" ASOs, called "mixmers", consist of an alternating composition of (i) DNA monomers or nucleoside analog monomers recognizable and cleavable by RNase, and (ii) non-RNase recruiting nucleoside analog monomers.

[0193] A "totalmer" is a single stranded ASO which only comprises non-naturally occurring nucleotides or nucleotide analogs.

[0194] In some embodiments, in addition to enhancing affinity of the ASO for the target region, some nucleoside analogs also mediate RNase (*e.g.,* RNaseH) binding and cleavage. Since α-L-LNA monomers recruit RNaseH activity to a certain extent, in some embodiments, gap regions (*e.g.,* region B as referred to herein) of ASOs containing α-L-LNA monomers consist of fewer monomers recognizable and cleavable by the RNaseH, and more flexibility in the mixmer construction is introduced.

II.G.1. Gapmer Design

[0195] In some embodiments, the ASO of the disclosure is a gapmer and comprises a contiguous stretch of nucleotides (*e.g.*, one or more DNA) which is capable of recruiting an RNase, such as RNaseH, referred to herein in as region B (B), wherein region B is flanked at both 5' and 3' by regions of nucleoside analogs 5' and 3' to the contiguous stretch of nucleotides of region B– these regions are referred to as regions A (A) and C (C), respectively. In some embodiments, the nucleoside analogs are sugar modified nucleosides (*e.g.*, high affinity sugar modified nucleosides). In certain embodiments, the sugar modified nucleosides of regions A and C enhance the affinity of the ASO for the target nucleic acid (*i.e.*, affinity enhancing 2' sugar modified nucleosides). In some

embodiments, the sugar modified nucleosides are 2' sugar modified nucleosides, such as high affinity 2' sugar modifications, such as LNA or 2'-MOE.

[0196] In a gapmer, the 5' and 3' most nucleosides of region B are DNA nucleosides, and are positioned adjacent to nucleoside analogs (*e.g.*, high affinity sugar modified nucleosides) of regions A and C, respectively. In some embodiments, regions A and C can be further defined by having nucleoside analogs at the end most distant from region B (*i.e.*, at the 5' end of region A and at the 3' end of region C).

[0197] In some embodiments, the ASOs of the present disclosure comprise a nucleotide sequence of formula (5' to 3') A-B-C, wherein: (A) (5' region or a first wing sequence) comprises at least one nucleoside analog (*e.g.*, 3-5 LNA units); (B) comprises at least four consecutive nucleosides (*e.g.*, 4-24 DNA units), which are capable of recruiting RNase (when formed in a duplex with a complementary RNA molecule, such as the pre-mRNA or mRNA target); and (C) (3' region or a second wing sequence) comprises at least one nucleoside analog (*e.g.*, 3-5 LNA units).

[0198] In some embodiments, region A comprises 3-5 nucleotide analogs, such as LNA, region B consists of 6-24 (*e.g.*, 6, 7, 8, 9, 10, 11, 12, 13, or 14) DNA units, and region C consists of 3 or 4 nucleotide analogs, such as LNA. Such designs include (A-B-C) 3-14-3, 3-11-3, 3-12-3, 3-13-3, 4-9-4, 4-10-4, 4-11-4, 4-12-4, and 5-10-5 . In some embodiments, the ASO has a design of $LLLD_nLLL$, $LLLLD_nLLLL$, or $LLLLLD_nLLLLL$, wherein the L is a nucleoside analog, the D is DNA, and n can be any integer between 4 and 24. In some embodiments, n can be any integer between 6 and 14. In some embodiments, n can be any integer between 8 and 12.

[0199] Further gapmer designs are disclosed in WO2004/046160, WO 2007/146511, and WO2008/113832, each of which is hereby incorporated by reference in its entirety.

II.H. Internucleotide Linkages

[0200] The monomers of the ASOs described herein are coupled together via linkage groups. Suitably, each monomer is linked to the 3' adjacent monomer via a linkage group.

[0201] The person having ordinary skill in the art would understand that, in the context of the present disclosure, the 5' monomer at the end of an ASO does not comprise a 5' linkage group, although it may or may not comprise a 5' terminal group.

[0202] The terms "linkage group" or "internucleoside linkage" are intended to mean a group capable of covalently coupling together two nucleosides. Specific and preferred examples include phosphate groups and phosphorothioate groups.

[0203] The nucleosides of the ASO of the disclosure or contiguous nucleosides sequence thereof are coupled together via linkage groups. Suitably each nucleoside is linked to the 3' adjacent nucleoside via a linkage group.

[0204] In some embodiments, the internucleoside linkage is modified from its normal phosphodiester to one that is more resistant to nuclease attack, such as phosphorothioate, which is cleavable by RNaseH, also allows that route of antisense inhibition in reducing the expression of the target gene. In some embodiments, at least 75%, at least 80%, at least 85%, 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% of internucleoside linkages are modified.

II.I. Conjugates

[0205] The term conjugate as used herein refers to an ASO which is covalently linked to a non-nucleotide moiety (conjugate moiety or region C or third region).

[0206] Conjugation of the ASO of the disclosure to one or more non-nucleotide moieties may improve the pharmacology of the ASO, *e.g.*, by affecting the activity, cellular distribution, cellular uptake, or stability of the ASO. In some embodiments, the non-nucleotide moieties modify or enhance the pharmacokinetic properties of the ASO by improving cellular distribution, bioavailability, metabolism, excretion, permeability, and/or cellular uptake of the ASO. In certain embodiments, the non-nucleotide moieties may target the ASO to a specific organ, tissue, or cell type and thereby enhance the effectiveness of the ASO in that organ, tissue, or cell type. In other embodiments, the non-nucleotide moieties reduce the activity of the ASO in non-target cell types, tissues, or organs, *e.g.,* off target activity or activity in non-target cell types, tissues, or organs. WO 93/07883 and WO2013/033230 provides suitable conjugate moieties. Further suitable conjugate moieties are those capable of binding to the asialoglycoprotein receptor (ASGPr). In particular, tri-valent N-acetylgalactosamine conjugate moieties are suitable for binding to the ASGPr, *see, e.g.*, WO 2014/076196, WO 2014/207232, and WO 2014/179620, each of which are hereby incorporated by reference.

[0207] In some embodiments, the non-nucleotide moiety (conjugate moiety) is selected from the group consisting of carbohydrates, cell surface receptor ligands, drug substances, hormones, lipophilic substances, polymers, proteins, peptides, toxins (*e.g.,* bacterial toxins), vitamins, viral proteins (*e.g.*, capsids), and combinations thereof.

II.J. Activated ASOs

[0208] The term "activated ASO," as used herein, refers to an ASO that is covalently linked (*i.e.,* functionalized) to at least one functional moiety that permits covalent linkage of the ASO to one or more conjugated moieties, *i.e.,* moieties that are not themselves nucleic acids or monomers, to form the conjugates herein described. Typically, a functional moiety will comprise a chemical group that is capable of covalently bonding to the ASO via, *e.g.,* a 3'-hydroxyl group or the exocyclic NH_2 group of the adenine base, a spacer that can be hydrophilic and a terminal group that is capable of binding to a conjugated moiety (*e.g.,* an amino, sulfhydryl or hydroxyl group). In some embodiments, this terminal group is not protected, *e.g.,* is an NH_2 group. In other embodiments, the terminal group is protected, for example, by any suitable protecting group such as those described in "Protective Groups in Organic Synthesis" by Theodora W Greene and Peter G M Wuts, 3rd edition (John Wiley & Sons, 1999), which is hereby incorporated by reference.

[0209] In some embodiments, ASOs of the disclosure are functionalized at the 5' end in order to allow covalent attachment of the conjugated moiety to the 5' end of the ASO. In other embodiments, ASOs of the disclosure can be functionalized at the 3' end. In still other embodiments, ASOs of the disclosure can be functionalized along the backbone or on the heterocyclic base moiety. In yet other embodiments, ASOs of the disclosure can be functionalized at more than one position independently selected from the 5' end, the 3' end, the backbone and the base.

[0210] In some embodiments, activated ASOs of the disclosure are synthesized by incorporating during the synthesis one or more monomers that is covalently attached to a functional moiety. In other embodiments, activated ASOs of the disclosure are synthesized with monomers that have not been functionalized, and the ASO is functionalized upon completion of synthesis.

III. Pharmaceutical Compositions and Administration Routes

[0211] The ASO of the disclosure can be used in pharmaceutical formulations and compositions. In some embodiments, such compositions comprise a pharmaceutically acceptable diluent, carrier, salt, or adjuvant. In certain embodiments, a pharmaceutically acceptable salt comprises a sodium salt, a potassium salt, or an ammonium salt

[0212] The ASO of the disclosure can be included in a unit formulation such as in a pharmaceutically acceptable carrier or diluent in an amount sufficient to deliver to a patient a therapeutically effective amount without causing serious side effects in the treated patient. However, in some forms of therapy, serious side effects may be acceptable in terms of ensuring a positive outcome to the therapeutic treatment.

[0213] The formulated drug may comprise pharmaceutically acceptable binding agents and adjuvants. Capsules, tablets, or pills can contain for example the following compounds: microcrystalline cellulose, gum or gelatin as binders; starch or lactose as excipients; stearates as lubricants; various sweetening or flavoring agents. For capsules, the dosage unit can contain a liquid carrier like fatty oils. Likewise, coatings of sugar or enteric agents can be part of the dosage unit. The ASO formulations can also be emulsions of the active pharmaceutical ingredients and a lipid forming a micellular emulsion.

[0214] The pharmaceutical compositions of the present disclosure can be administered in a number of ways depending upon whether local or systemic treatment is desired and upon the area to be treated. Administration can be (a) oral; (b) pulmonary, *e.g.,* by inhalation or insufflation of powders or aerosols, including by nebulizer; intratracheal, intranasal, (c) topical including epidermal, transdermal, ophthalmic and to mucous membranes including vaginal and rectal delivery; or (d) parenteral including intravenous, intraarterial, subcutaneous, intraperitoneal or intramuscular injection or infusion; or intracranial, *e.g.,* intrathecal, intra-cerebroventricular, or intraventricular, administration. In some embodiments, the ASO is administered intravenously, intraperitoneally, orally, topically, or as a bolus injection or administered directly in to the target organ. In some embodiments, the ASO is administered intracardially or intraventricularly as a bolus injection. In some embodiments, the ASO is administered subcutaneously. In some embodiments, the ASO is administered orally.

[0215] Pharmaceutical compositions and formulations for topical administration can include transdermal patches, ointments, lotions, creams, gels, drops, sprays, suppositories, liquids and powders. Conventional pharmaceutical carriers, aqueous, powder or oily bases, thickeners and the like may be necessary or desirable. Examples of topical formulations include those in which the ASO of the disclosure are in admixture with a topical delivery agent such as lipids, liposomes, fatty acids, fatty acid esters, steroids, chelating agents and surfactants. Compositions and formulations for oral administration include but are not limited to powders or granules, microparticulates, nanoparticulates, suspensions or solutions in water or non-aqueous media, capsules, gel capsules, sachets,

tablets or minitablets. Compositions and formulations for parenteral, intrathecal, intracerebroventricular, or intraventricular administration can include sterile aqueous solutions which can also contain buffers, diluents and other suitable additives such as, but not limited to, penetration enhancers, carrier compounds and other pharmaceutically acceptable carriers or excipients.

[0216] Pharmaceutical compositions of the present disclosure include, but are not limited to, solutions, emulsions, and liposome-containing formulations. These compositions may be generated from a variety of components that include, but are not limited to, preformed liquids, self-emulsifying solids and self-emulsifying semisolids. Delivery of drug to the target tissue can be enhanced by carrier-mediated delivery including, but not limited to, cationic liposomes, cyclodextrins, porphyrin derivatives, branched chain dendrimers, polyethylenimine polymers, nanoparticles and microspheres (Dass CR. *J Pharm Pharmacol* 2002; 54(l):3-27).

[0217] The pharmaceutical formulations of the present disclosure, which can conveniently be presented in unit dosage form, can be prepared according to conventional techniques well known in the pharmaceutical industry. Such techniques include the step of bringing into association the active ingredients with the pharmaceutical carrier(s) or excipient(s). In general the formulations are prepared by uniformly and intimately bringing into association the active ingredients with liquid carriers or finely divided solid carriers or both, and then, if necessary, shaping the product.

[0218] For parenteral, subcutaneous, intradermal, or topical administration the formulation can include a sterile diluent, buffers, regulators of tonicity and antibacterials. The active ASOs can be prepared with carriers that protect against degradation or immediate elimination from the body, including implants or microcapsules with controlled release properties. For intravenous administration the carriers can be physiological saline or phosphate buffered saline. International Publication No. WO2007/031091 (A2), published March 22, 2007, further provides suitable pharmaceutically acceptable diluent, carrier and adjuvants - which are hereby incorporated by reference.

IV. Diagnostics

[0219] This disclosure further provides a diagnostic method useful during diagnosis of cardiovascular diseases, *e.g.,* a heart failure. Non-limiting examples of cardiovascular diseases that can be diagnosed with the present ASOs include, but are not limited to, coronary artery disease, stroke, heart failure, hypertensive heart disease, rheumatic heart

disease, cardiomyopathy, heart arrhythmia, congenital heart disease, valvular heart disease carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis. In some embodiments, heart failure comprises a left-sided heart failure, a right-sided heart failure, a congestive heart failure, a heart failure with reduced ejection fraction (HFrEF), a heart failure with preserved ejection fraction (HFpEF), a heart failure with mid-range ejection fraction (HFmrEF), a hypertrophic cardiomyopathy (HCM), a hypertensive heart disease (HHD), or hypertensive hypertrophic cardiomyopathy.

[0220] The ASOs of the disclosure can be used to measure expression of *CAMK2D* transcript in a tissue or body fluid from an individual and comparing the measured expression level with a standard *CAMK2D* transcript expression level in normal tissue or body fluid, whereby an increase in the expression level compared to the standard is indicative of a disorder treatable by an ASO of the disclosure.

[0221] The ASOs of the disclosure can be used to assay *CAMK2D* transcript levels in a biological sample using any methods known to those of skill in the art. (Touboul *et. al.*, *Anticancer Res.* (2002) 22 (6A): 3349-56; Verjout *et. al.*, *Mutat. Res.* (2000) 640: 127-38); Stowe *et. al.*, *J. Virol. Methods* (1998) 75 (1): 93-91).

[0222] The term "biological sample" refers to any biological sample obtained from an individual, cell line, tissue culture, or other source of cells potentially expressing *CAMK2D* transcript. Methods for obtaining such a biological sample from mammals are well known in the art.

V. Kits comprising ASOs

[0223] This disclosure further provides kits that comprise an ASO of the disclosure described herein and that can be used to perform the methods described herein. In certain embodiments, a kit comprises at least one ASO in one or more containers. In some embodiments, the kits contain all of the components necessary and/or sufficient to perform a detection assay, including all controls, directions for performing assays, and any necessary software for analysis and presentation of results. One skilled in the art will readily recognize that the disclosed ASO can be readily incorporated into one of the established kit formats which are well known in the art.

VI. Methods of Using

[0224] The ASOs of the disclosure can be utilized as research reagents for, for example, diagnostics, therapeutics, and prophylaxis.

[0225] In research, such ASOs can be used to specifically inhibit the synthesis of CAMK2D protein (typically by degrading or inhibiting the mRNA and thereby prevent protein formation) in cells and experimental animals thereby facilitating functional analysis of the target or an appraisal of its usefulness as a target for therapeutic intervention. Further provided are methods of down-regulating the expression of *CAMK2D* mRNA and/or CAMK2D protein in cells or tissues comprising contacting the cells or tissues, *in vitro* or *in vivo*, with an effective amount of one or more of the ASOs, conjugates or compositions of the disclosure.

[0226] In diagnostics, the ASOs can be used to detect and quantitate *CAMK2D* transcript expression in cell and tissues by northern blotting, *in-situ* hybridization, or similar techniques.

[0227] For therapeutics, an animal or a human, suspected of having a disease or disorder, which can be treated by modulating the expression of *CAMK2D* transcript and/or CAMK2D protein is treated by administering ASOs in accordance with this disclosure. Further provided are methods of treating a mammal, such as treating a human, suspected of having or being prone to a disease or condition, associated with increased expression of *CAMK2D* transcript and/or CAMK2D protein by administering a therapeutically or prophylactically effective amount of one or more of the ASOs or compositions of the disclosure. The ASO, a conjugate, or a pharmaceutical composition according to the disclosure is typically administered in an effective amount. In some embodiments, the ASO or conjugate of the disclosure is used in therapy.

[0228] The disclosure further provides for an ASO according to the disclosure, for use for the treatment of one or more of the cardiovascular diseases referred to herein, such as a disease selected from a coronary artery disease, stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, heart arrhythmia, congenital heart disease, valvular heart disease carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis.

[0229] In certain embodiments, the disease, disorder, or condition is associated with overexpression of *CAMK2D* gene transcript and/or CAMK2D protein.

[0230] The disclosure also provides for methods of inhibiting (*e.g.,* by reducing) the expression of *CAMK2D* gene transcript and/or CAMK2D protein in a cell or a tissue, the method comprising contacting the cell or tissue, *in vitro* or *in vivo*, with an effective amount of one or more ASOs, conjugates, or pharmaceutical compositions thereof, of the disclosure to affect degradation of expression of *CAMK2D* gene transcript thereby reducing CAMK2D protein**.**

[0231] The disclosure also provides for the use of the ASO or conjugate of the disclosure as described for the manufacture of a medicament for the treatment of a disorder as referred to herein, or for a method of the treatment of as a disorder as referred to herein.

[0232] The disclosure further provides for a method for inhibiting or reducing CAMK2D protein in a cell which is expressing CAMK2D comprising administering an ASO or a conjugate according to the disclosure to the cell so as to affect the inhibition or reduction of CAMK2D protein in the cell.

[0233] The disclosure includes a method of reducing, ameliorating, preventing, or treating hyperexcitability of motor neurons (*e.g.*, such as those found in cardiomyocytes) in a subject in need thereof comprising administering an ASO or a conjugate according to the disclosure.

[0234] The disclosure also provides for a method for treating a disorder as referred to herein the method comprising administering an ASO or a conjugate according to the disclosure as herein described and/or a pharmaceutical composition according to the disclosure to a patient in need thereof.

[0235] The ASOs and other compositions according to the disclosure can be used for the treatment of conditions associated with over expression of CAMK2D protein.

[0236] Generally stated, one aspect of the disclosure is directed to a method of treating a mammal suffering from or susceptible to conditions associated with abnormal levels of CAMK2D, comprising administering to the mammal and therapeutically effective amount of an ASO targeted to *CAMK2D* transcript that comprises one or more LNA units. The ASO, a conjugate, or a pharmaceutical composition according to the disclosure is typically administered in an effective amount.

[0237] An interesting aspect of the disclosure is directed to the use of an ASO (compound) as defined herein or a conjugate as defined herein for the preparation of a medicament for the treatment of a disease, disorder or condition as referred to herein.

[0238] The methods of the disclosure can be employed for treatment or prophylaxis against diseases caused by abnormal levels of CAMK2D protein. In some embodiments, diseases

caused by abnormal levels of CAMK2D protein are cardiovascular diseases. In certain embodiments, cardiovascular diseases can include a coronary artery disease, stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, heart arrhythmia, congenital heart disease, valvular heart disease carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis.

[0239] In certain embodiments, the cardiovascular disease is a heart failure, which can include a left-sided heart failure, a right-sided heart failure, congestive heart failure, a heart failure with reduced ejection fraction (HFrEF), a heart failure with preserved ejection fraction (HFpEF), a heart failure with mid-range ejection fraction (HFmrEF), a hypertrophic cardiomyopathy (HCM), a hypertensive heart disease (HHD), or hypertensive hypertrophic cardiomyopathy.

[0240] Alternatively stated, in some embodiments, the disclosure is furthermore directed to a method for treating abnormal levels of CAMK2D protein, the method comprising administering a ASO of the disclosure, or a conjugate of the disclosure or a pharmaceutical composition of the disclosure to a patient in need thereof.

[0241] The disclosure also relates to an ASO, a composition or a conjugate as defined herein for use as a medicament.

[0242] The disclosure further relates to use of a compound, composition, or a conjugate as defined herein for the manufacture of a medicament for the treatment of abnormal levels of CAMK2D protein or expression of mutant forms of CAMK2D protein (such as allelic variants, wherein the allelic variants are associated with one of the diseases referred to herein).

[0243] A patient who is in need of treatment is a patient suffering from or likely to suffer from the disease or disorder.

[0244] The practice of the present disclosure will employ, unless otherwise indicated, conventional techniques of cell biology, cell culture, molecular biology, transgenic biology, microbiology, recombinant DNA, and immunology, which are within the skill of the art. Such techniques are explained fully in the literature. *See*, for example, Sambrook *et al.*, ed. (1989) Molecular Cloning A Laboratory Manual (2nd ed.; Cold Spring Harbor Laboratory Press); Sambrook *et al*., ed. (1992) Molecular Cloning: A Laboratory Manual, (Cold Springs Harbor Laboratory, NY); D. N. Glover ed., (1985) DNA Cloning, Volumes I and II; Gait, ed. (1984) Oligonucleotide Synthesis; Mullis *et al*. U.S. Pat. No. 4,683,195; Hames and Higgins, eds. (1984) Nucleic Acid Hybridization; Hames and Higgins, eds. (1984) Transcription And Translation; Freshney (1987) Culture Of Animal Cells (Alan R.

Liss, Inc.); Immobilized Cells And Enzymes (IRL Press) (1986); Perbal (1984) A Practical Guide To Molecular Cloning; the treatise, Methods In Enzymology (Academic Press, Inc., N.Y.); Miller and Calos eds. (1987) Gene Transfer Vectors For Mammalian Cells, (Cold Spring Harbor Laboratory); Wu *et al*., eds., Methods In Enzymology, Vols. 154 and 155; Mayer and Walker, eds. (1987) Immunochemical Methods In Cell And Molecular Biology (Academic Press, London); Weir and Blackwell, eds., (1986) Handbook Of Experimental Immunology, Volumes I-IV; Manipulating the Mouse Embryo, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., (1986);); Crooke, Antisense drug Technology: Principles, Strategies and Applications, 2nd Ed. CRC Press (2007) and in Ausubel *et al*. (1989) Current Protocols in Molecular Biology (John Wiley and Sons, Baltimore, Md.).

[0245] All of the references cited above, as well as all references cited herein, are incorporated herein by reference in their entireties.

[0246] The following examples are offered by way of illustration and not by way of limitation.

EXAMPLES

Example 1: Construction of ASOs

[0247] Antisense oligonucleotides described herein were designed to target various regions in the *CAMK2D* pre-mRNA (SEQ ID NO: 1). SEQ ID NO: 1 shows the genomic *CAMK2D* sequence, which corresponds to the reverse complement of residues 113,451,032 to 113,761,927 of GenBank Accession No. NC_000004.12. For example, the ASOs were constructed to target the regions denoted using the start and end sites of SEQ ID NO: 1, as shown in FIGs. 1A and 1B. The exemplary sequences of the ASOs of the present disclosure are provided in FIGs. 1A and 1B. In some embodiments, the ASOs were designed to be gapmers as shown in FIG. 3. The disclosed gapmers were constructed to contain locked nucleic acids – LNAs (upper case letters). For example, a gapmer can have beta-deoxy LNA at the 5' end and the 3' end and have a phosphorothioate backbone. But the LNA can also be substituted with any other nucleoside analogs and the backbone can be other types of backbones (*e.g.*, phosphodiester linkage, a phosphotriester linkage, a methylphosphonate linkage, a phosphoroamidate linkage, or any combinations thereof).

[0248] The ASOs were synthesized using methods well known in the art. Exemplary methods of preparing such ASOs are described in Barciszewski *et al.*, Chapter 10 – " Locked Nucleic Acid Aptamers" in *Nucleic Acid and Peptide Aptamers: Methods and Protocols*, vol. 535, Gunter Mayer (ed.) (2009), the entire contents of which is hereby expressly incorporated by reference herein.

Example 2: qPCR assay to measure reduction of *CAMK2D* mRNA in HEK293 cells

[0249] The ASOs of the present disclosure were tested for their ability to reduce *CAMK2D* mRNA expression in human embryonic kidney cells (HEK293) (European Collection of Authenticated Cell Cultures (ECACC), catalog no. 85120602). The HEK293 cells were grown in cell culture media (DMEM AQ D0819, 10% FBS, and Pen/Strep). Every 5 days, cells were trypsinized by washing with Phosphate Buffered Saline (PBS), followed by addition of 0.25% Trypsin-EDTA solution, 2-3 minutes incubation at 37°C, and trituration before cell seeding. Cells were maintained in culture for up to 15 passages.

[0250] For experimental use, 3,500 cells per well were seeded in 96 well plates in 100 µL growth media. ASOs were prepared from a 750 µM stock and dissolved in PBS. Approximately 24 hours after seeding the cells, ASOs were added to the cells at a final concentration of 25 µM. Cells were then incubated for 3 days without any media change. After incubation, cells were harvested by removal of media followed by addition of 125 µL PURELINK®Pro 96 Lysis buffer and 125 µL 70% ethanol. Then, RNA was purified according to the manufacture's instruction and eluted in a final volume of 50 µL water, resulting in an RNA concentration of 10-20 ng/µL. Next, RNA was diluted 10 fold in water prior to the one-step qPCR reaction.

[0251] For the one-step qPCR reaction, qPCR-mix (qScriptTMXLE 1-step RT-qPCR TOUGHMIX®Low ROX from QauntaBio) was mixed with two Taqman probes at a ratio 10:1:1 (qPCR mix: probe1:probe2) to generate the mastermix. Taqman probes were acquired from LifeTechnologies: CAMK2D_ Hs009943538_m1; GAPDH 4325792. The mastermix (6 µL) and RNA (4µL, 1-2 ng/µL) were then mixed in a qPCR plate (MICROAMP® optical 384 well, catalog no. 4309849). After sealing the plate, the plate was given a quick spin, 1000g for 1 minute at RT, and transferred to a ViiaTM 7 system (Applied Biosystems, Thermo)., The following PCR conditions were used: 50°C for 15 minutes; 95°C for 3 minutes; 40 cycles of: 95°C for 5 sec, followed by a temperature decrease of 1.6 °C/sec, followed by 60 °C for 45 sec. The data was analyzed using the

QuantStudio™ Real_time PCR Software. The percent inhibition for the ASO treated samples was calculated relative to the control treated samples. Results are shown in FIGs. 2 and 4.

Example 3: QUANTIGENE® Analysis (96-well assay) to Measure *CAMK2D* mRNA Reduction in Human Inducible Pluripotent Stem Cell-Derived Cardiomyocytes (hiPSC-CM)

[0252] The ability of ASOs to reduce human *CAMK2D* mRNA was measured *in vitro* by QUANTIGENE® analysis. Human inducible pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) from Cellular Dynamics International ("iCell^2") cells were thawed, plated, and cultured per the manufacturer's instructions. These cardiomyocytes are derived from human induced pluripotent stem cells, which were first successfully differentiated into functional cardiomyocytes back in 2009. Zhang *et al.*, *Circ Res* 104(4):230-41 (2009). Since then, hiPSC-CMs have been used to study various aspects of the human heart and related diseases. Because these cells bear the genetic traits of the human donors from whom they are obtained, they are often to be better predictors of human physiology or pathophysiology compared to existing animal models. Blazeski *et al.*, *Prog Biophys Mol Biol* 110:166-177 (2012).

[0253] Workflow: Prior to cell seeding, pre-collagen-coated 96-well plates were coated with fibronectin as follows. Fibronectin (1 mg/mL) was diluted 1:100 in PBS (-Ca^{2+}, -Mg^{2+}) and 50 µL of dilute fibronectin solution was added to each well of the 96-well plate. The plate was gently shaken horizontally to ensure an even coating of fibronectin on the bottom of each well. Then the plates were incubated at 37°C for 90 minutes. Cells were added to the plates immediately following aspiration of the fibronectin solution as per the manufacturer's instructions. Cells were seeded at 30,000 cells/well in 100 µL of the manufacturer's Plating Media and then incubated at 37°C and 5% CO_2 for 4 hours. Then the Plating Media was aspirated and replaced with 100 µL of the manufacturer's Maintenance Media. Cells were incubated at 37°C and 5% CO_2 with media exchange every other day. The ASOs were diluted in water and added to cells at DIV08 (*i.e.*, 8 days post plating). The cells were then incubated at 37°C and 5% CO_2 for 3 days following ASO addition to achieve steady state reduction of mRNA.

[0254] After the incubation, the media was removed and cells were lysed as follows. Working cell lysis buffer was made by adding 1 part proteinase K to 99 parts of QUANTIGENE® 3x lysis buffer and then diluting 1:3 in dH2O. The working lysis buffer

was added to the plates at 220 uL/well. After adding lysis buffer, the plate was shaken on a plate shaker for 10 minutes are medium speed (*i.e.*, speed 5-6 out of 10). The plates were then incubated at 55°C for 30 minute. Following this incubation, the lysates were either frozen at -80°C or assayed immediately. Measurement of lysate mRNA was performed using the QUANTIGENE® 2.0 Reagent System (AFFYMETRIX®), which quantifies RNA using a branched DNA signal amplification method reliant on the specifically-designed target RNA capture probe set.

[0255] Assay: Each well of the capture plate (96-well polystyrene plate coated with capture probes) was loaded with 20 uL of working probe set. Working probe set reagents were generated by combining nuclease-free water (12.05 µL), lysis mixture (6.65 µL), blocking reagent (1 µL), and specific 2.0 probe set (0.3 µL) (human CAMK2D catalogue #SA-3000428 or human POLR2A catalogue #SA-10004) per manufacturer's instructions (QUANTIGENE® 2.0 AFFYMETRIX®). The cell lysates (or 1x lysis buffer for use in background control blank wells) were then added to the capture plates at a volume of 80 µL/well, giving 100 uL of total fluid per well. The plates were sealed using the QUANTIGENE® foil seal in combination with a hand crank sealer. Plates were centrifuged at 240g for 60 seconds and then incubated for 16-20 hours at 55ºC to hybridize (target RNA capture).

[0256] Signal amplification and detection of target RNA began by washing plates with wash buffer 3 times (200, 300, and 300 µL/well in series, with buffer removal between each step) to remove any unbound material, followed by an upside-down centrifugation step for 1 min at 240g to dry the wells. Next, the 2.0 Pre-Amplifier hybridization reagent (100 µL/well) was added, incubated at 55ºC for 1 hour, then aspirated, and wash buffer was added and aspirated 3 times (200, 300, and 300 uL/well in series, with buffer removal between each step), followed by an upside-down centrifugation step for 1 min at 240g to dry the wells. The 2.0 Amplifier hybridization reagent was then added (100 µL/well), incubated for 1 hour at 55ºC, and then the wash, aspiration, and drying steps were repeated as described above. The 2.0 Label Probe hybridization reagent was added next (100 µL/well), incubated for 1 hour at 50ºC, and then the wash, aspiration, and drying steps were repeated as described previously. Then the 2.0 Substrate was added (100 µL/well) to the plates. Plates were incubated for 5 minutes at room temperature and then imaged on a PerkinElmer Envision multilabel plate reader in luminometer mode within 15 minutes.

[0257] Data determination: For the gene of interest, the average assay background signal was subtracted from the average signal of each technical replicate. The background-subtracted, average signals for the gene of interest were then normalized to the background-subtracted average signal for the housekeeping POLR2A mRNA. The percent inhibition for the treated sample was calculated relative to the control treated sample lysate. Results of QUANTIGENE® assays for cells treated with the ASOs at a concentration of 500 nM are provided in FIG. 4.

Example 4: Analysis of *CAMK2D* mRNA Redudction *In Vivo*

[0258] To evaluate the potency of the ASOs in reducing *CAMK2D* mRNA level *in vivo*, female C57BL/6JBom mice were subcutaneously administered with one of the ASOs shown in FIG. 5. The ASOs were administered at a dose of 30 mg/kg/day for three consecutive days (day 1, 2, and 3). The mice were observed with regards to behavioral and body weight changes. Mice were sacrificed on day 8 and cardiac tissue was harvested for RNA isolation and analysis as described below.

[0259] MagNA Pure tissue lysis buffer (Roche) was added to the cardaic tissue section and homogenized using stainless steel beads until a uniform lysate was obtained. Incubation for 30 minutes at room temperature completed lysis. RNA was isolated using the MagNA Pure96 (Roche) with the Cellular RNA Large Volume Kit.

[0260] The RNA concentration was normalized to 5 ng/µl and one-step qPCR was performed using 20 ng RNA, qPCR Taqman Mastermix, and the following Taqman probes: CAMK2D (Thermo Mm00499266_m1) and GAPDH (Thermo 4352339E).

[0261] PCR conditions were as follows: 50°C for 15 minutes; 95°C for 3 minutes; 40 cycles of: 95°C for 5 sec. The data was analyzed using the QUANTSTUDIO™ Real-time PCR Software. The percent inhibition for the ASO treated samples was calculated relative to saline treated samples.

[0262] As shown in FIG. 5, all the ASOs tested were able to decrease *CAMK2D* mRNA level when administered to the C57BL/6JBom mice. Collectively, the results provided herein demonstrate the potency of the ASOs both *in vitro* and *in vivo*, and support that CAMK2D-specific ASOs are disease-modifying therapeutics for the treatment of various medical disorders, such as cardiovascular-related diseases or disorders.

[0263] This PCT application claims priority benefit of U.S. Provisional Application Nos. 62/633,502, filed February 21, 2018; 62/635,954, filed February 27, 2018; 62/665,998

filed May 2, 2018; and 62/778,679, filed December 12, 2018, each of which is incorporated herein by reference in its entirety.

The claims defining the invention are as follows:

1. An antisense oligonucleotide (ASO) comprising a contiguous nucleotide sequence of 10 to 30 nucleotides in length, wherein the ASO is capable of reducing a calcium/calmodulin-dependent protein kinase type II delta (*CAMK2D*) protein and/or *CAMK2D* transcript expression in a cell expressing the CAMK2D protein and/or *CAMK2D* transcript, and wherein the contiguous nucleotide sequence comprises the sequence set forth in SEQ ID NO: 1688, SEQ ID NO: 24, SEQ ID NO: 25, SEQ ID NO: 27, SEQ ID NO: 114, SEQ ID NO: 158, SEQ ID NO: 190, SEQ ID NO: 327, SEQ ID NO: 463, SEQ ID NO: 513, SEQ ID NO: 516, SEQ ID NO: 519, SEQ ID NO: 657, SEQ ID NO: 659, SEQ ID NO: 822, SEQ ID NO: 827, SEQ ID NO: 981, SEQ ID NO: 982, SEQ ID NO: 983, SEQ ID NO: 984, SEQ ID NO: 986, SEQ ID NO: 989, SEQ ID NO: 1247, SEQ ID NO: 1249, SEQ ID NO: 1326, SEQ ID NO: 1359, SEQ ID NO: 1363, SEQ ID NO: 1371, SEQ ID NO: 1387, SEQ ID NO: 1389, SEQ ID NO: 1390, SEQ ID NO: 1409, SEQ ID NO: 1415, SEQ ID NO: 1420, SEQ ID NO: 1429, SEQ ID NO: 1524, SEQ ID NO: 1530, SEQ ID NO: 1659, SEQ ID NO: 1662, SEQ ID NO: 1663, SEQ ID NO: 1676, SEQ ID NO: 1685, SEQ ID NO: 1686, SEQ ID NO: 1687, or SEQ ID NO: 1690;
   and wherein the ASO comprises at least one nucleoside analog and is a gapmer.

2. The ASO of claim 1, wherein the cell is a human cell.

3. The ASO of claim 2, wherein (i) the CAMK2D protein expression is reduced by at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100% when the human cell is contacted with the ASO compared to CAMK2D protein expression in a corresponding human cell that is not contacted with the ASO; (ii) the *CAMK2D* transcript expression is reduced by at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 95%, or about 100% when the human cell is contacted with the ASO compared to *CAMK2D* transcript expression in a corresponding human cell that is not contacted with the ASO; or (iii) both (i) and (ii).

4. The ASO of any one of claims 1 to 3, wherein the ASO has a design of $LLLD_nLLL$, $LLLLD_nLLLL$, or $LLLLLD_nLLLLL$, wherein the L is a nucleoside analog, the D is DNA, and n can be any integer between 4 and 24.

5. The ASO of any one of claims 1 to 4, wherein the nucleoside analog comprises a 2'-O-alkyl-RNA; 2'-O-methyl RNA (2'-OMe); 2'-alkoxy-RNA; 2'-O-methoxyethyl-RNA (2'-MOE); 2'-amino-DNA; 2'-fluro-RNA; 2'-fluoro-DNA; arabino nucleic acid (ANA); 2'-fluoro-ANA; or bicyclic nucleoside analog.

6. The ASO of any one of claims 1 to 5, wherein one or more of the nucleoside analog is a sugar modified nucleoside.

7. The ASO of claim 6, wherein the sugar modified nucleoside is an affinity enhancing 2' sugar modified nucleoside.

8. The ASO of claim 7, wherein the affinity enhancing 2' sugar modified nucleoside is a locked nucleic acid (LNA), wherein the LNA is selected from the group consisting of constrained ethyl nucleoside (cEt), 2',4'-constrained 2′-O-methoxyethyl (cMOE), α-L-LNA, β-D-LNA, 2'-O,4'-C-ethylene-bridged nucleic acids (ENA), amino-LNA, oxy-LNA, thio-LNA, or any combination thereof.

9. The ASO of any one of claims 1 to 8, wherein the ASO comprises one or more 5'-methyl-cytosine nucleobases.

10. The ASO of any one of claims 1 to 9, which has a design selected from the group consisting of the designs in Fig. 3, wherein the upper letter is a sugar modified nucleoside and the lower case letter is DNA.

11. The ASO of any one of claims 1 to 10, wherein the cell comprises a hiPSC-CM cell which is expressing the CAMK2D protein and/or *CAMK2D* transcript.

12. The ASO of any one of claims 1 to 11, wherein the nucleotide sequence comprises one or more modified internucleoside linkages.

13. The ASO of any one of claims 1 to 12, wherein the one or more modified internucleoside linkages is a phosphorothioate linkage.

14. The ASO of claim 12 or 13, wherein at least 75%, at least 80%, at least 85%, at least 90%, at least 95%, or 100% of internucleoside linkages are modified.

15. The ASO of claim 14, wherein each of the internucleoside linkages in the ASO is a phosphorothioate linkage.

16. A conjugate comprising the ASO of any one of claims 1 to 15, wherein the ASO is covalently attached to at least one non-nucleotide or non-polynucleotide moiety, wherein the non-nucleotide or non-polynucleotide moiety comprises a protein, a fatty acid chain, a sugar residue, a glycoprotein, a polymer, or any combinations thereof.

17. A pharmaceutical composition comprising the ASO of any one of claims 1 to 15 or the conjugate of claim 16, and a pharmaceutically acceptable diluent, carrier, salt, or adjuvant, wherein the pharmaceutically acceptable salt comprises a sodium salt, a potassium salt, an ammonium salt, or any combination thereof.

18. The pharmaceutical composition of claim 17, which further comprises at least one further therapeutic agent, wherein the further therapeutic agent is a CAMK2D antagonist.

19. A kit comprising the ASO of any one of claims 1 to 15, the conjugate of claim 16, or the pharmaceutical composition of any one of claims 17 or 18, and instructions for use.

20. A method of inhibiting or reducing CAMK2D protein expression in a cell, comprising administering the ASO of any one of claims 1 to 15, the conjugate of claim 16, or the pharmaceutical composition of any one of claims 17 or 18 to the cell expressing CAMK2D protein, wherein the CAMK2D protein expression in the cell is inhibited or reduced after the administration.

21. The method of claim 20, wherein the cell is a cardiac cell.

22. The method of claim 21, wherein the cell is a hiPSC-CM.

23. A method of reducing, ameliorating, or treating one or more symptoms of a cardiovascular disease or disorder in a subject in need thereof, comprising administering an effective amount of the ASO of any one of claims 1 to 15, the conjugate of claim 16, or the pharmaceutical composition of any one of claims 17 or 18 to the subject.

24. Use of the ASO of any one of claims 1 to 15, the conjugate of claim 16, or the pharmaceutical composition of any one of claims 17 or 18 for the manufacture of a medicament for the treatment of a cardiovascular disease or disorder in a subject in need thereof.

25. The ASO of any one of claims 1 to 15, the conjugate of claim 16, or the pharmaceutical composition of any one of claims 17 or 18 when used in therapy of a cardiovascular disease or disorder in a subject in need thereof.

26. The method of claim 23, the use of claim 24, or the ASO when used of claim 27, wherein the cardiovascular disease or disorder comprises a coronary artery disease, stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, heart arrhythmia, congenital heart disease, valvular heart disease carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, venous thrombosis, or any combination thereof.

27. The method, use, or ASO of claim 26, wherein the cardiovascular disease or disorder is heart failure, wherein the heart failure comprises a left-sided heart failure, a right-sided heart failure, a congestive heart failure, a heart failure with reduced ejection fraction (HFrEF), a heart failure with preserved ejection fraction (HFpEF), a heart failure with mid-range ejection fraction (HFmrEF), a hypertrophic cardiomyopathy (HCM), a hypertensive heart disease (HHD), or hypertensive hypertrophic cardiomyopathy.

28. The method of any one of claims 23, 26, and 27, the use of any one of claims 24, 26, and 27, or the ASO when used of any one of claims 25 to 27, wherein the ASO, the conjugate, or the pharmaceutical composition is administered intracardially, orally, parenterally, intrathecally, intra-cerebroventricularly, pulmorarily, topically, or intraventricularly.

FIG. 1A

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
4	725	739	CGAAAGTAGCT CGCC	ASO-0095	OxyMCs OxyGs OxyAs OxyAs DNAas DNAgs DNAts DNAas DNAgs DNAcs DNAts DNAmcs DNAgs OxyMCs OxyMC
5	725	740	CCGAAAGTAGC TCGCC	ASO-0096	OxyMCs DNAmcs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs DNAts DNAmcs DNAgs OxyMCs OxyMC
6	726	739	CGAAAGTAGCT CGC	ASO-0097	OxyMCs OxyGs OxyAs OxyAs DNAas DNAgs DNAts DNAas DNAgs DNAcs OxyTs OxyMCs OxyGs OxyMC
7	726	740	CCGAAAGTAGC TCGC	ASO-0098	OxyMCs OxyMCs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs OxyTs OxyMCs OxyGs OxyMC
8	726	741	TCCGAAAGTAG CTCGC	ASO-0099	OxyTs OxyMCs DNAmcs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs DNAts OxyMCs OxyGs OxyMC
9	726	742	GTCCGAAAGTA GCTCGC	ASO-0100	OxyGs DNAts DNAcs DNAmcs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs DNAts OxyMCs OxyGs OxyMC
10	727	741	TCCGAAAGTAG CTCG	ASO-0101	OxyTs OxyMCs OxyMCs OxyGs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs OxyTs OxyMCs OxyG
11	727	742	GTCCGAAAGTA GCTCG	ASO-0102	OxyGs OxyTs OxyMCs OxyMCs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs OxyTs OxyMCs OxyG
12	728	742	GTCCGAAAGTA GCTC	ASO-0103	OxyGs OxyTs OxyMCs OxyMCs DNAgs DNAas DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs OxyTs OxyMC
13	1498	1514	TGGATATAGGG CAAGGG	ASO-0104	OxyTs DNAgs DNAgs DNAas DNAts DNAas DNAts DNAas DNAgs DNAgs DNAgs DNAcs DNAas DNAas OxyGs OxyGs OxyG
14	1539	1554	AGAATGATGGT GAGCG	ASO-0105	OxyAs OxyGs OxyAs OxyAs DNAts DNAgs DNAas DNAts DNAgs DNAgs DNAts DNAgs DNAas OxyGs OxyMCs OxyG
15	1796	1812	AGGAATTGGGT TTGGGT	ASO-0106	OxyAs DNAgs DNAgs DNAas DNAas DNAts DNAts DNAgs DNAgs DNAgs DNAts DNAts DNAts DNAgs OxyGs OxyGs OxyT
16	1797	1815	AAGAGGAATTG GGTTTGGG	ASO-0001	OxyAs OxyAs DNAgs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAts DNAgs DNAgs DNAgs DNAts DNAts DNAts OxyGs OxyGs OxyG
17	2299	2318	GAGCACACATT ATTAATCAA	ASO-0107	OxyGs OxyAs OxyGs DNAcs DNAas DNAcs DNAas DNAcs DNAas DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyTs OxyMCs OxyAs OxyA
18	2415	2434	ATTGATTTTAGT GGATTGCC	ASO-0108	OxyAs DNAts DNAts DNAgs DNAas DNAts DNAts DNAts DNAts DNAas DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAts OxyGs OxyMCs OxyMC
19	2495	2514	CCTGGAAACCA ATAATTAGC	ASO-0109	OxyMCs DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAts OxyAs OxyGs OxyMC
20	2496	2514	CCTGGAAACCA ATAATTAG	ASO-0110	OxyMCs OxyMCs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAcs DNAas DNAas DNAts DNAas DNAas OxyTs OxyTs OxyAs OxyG
21	2496	2515	CCCTGGAAACC	ASO-	OxyMCs OxyMCs DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATAATTAG	0111	DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAts OxyAs OxyG
22	2497	2514	CCTGGAAACCA ATAATTA	ASO-0112	OxyMCs OxyMCs OxyTs DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAcs DNAas DNAas DNAts DNAas DNAas OxyTs OxyTs OxyA
23	2497	2515	CCCTGGAAACC AATAATTA	ASO-0113	OxyMCs OxyMCs DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAcs DNAas DNAas DNAts DNAas DNAas OxyTs OxyTs OxyA
24	2566	2583	GATAATTTTGG CAGCATA	ASO-0002	OxyGs OxyAs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAgs OxyMCs OxyAs OxyTs OxyA
25	2566	2584	TGATAATTTTG GCAGCATA	ASO-0003	OxyTs OxyGs OxyAs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAgs DNAcs OxyAs OxyTs OxyA
26	2566	2585	TTGATAATTTTG GCAGCATA	ASO-0004	OxyTs DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAgs OxyMCs OxyAs OxyTs OxyA
27	2567	2584	TGATAATTTTG GCAGCAT	ASO-0005	OxyTs OxyGs OxyAs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAgs OxyMCs OxyAs OxyT
28	2568	2585	TTGATAATTTTG GCAGCA	ASO-0006	OxyTs OxyTs OxyGs OxyAs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAgs OxyMCs OxyA
29	2570	2586	GTTGATAATTTT GGCAG	ASO-0007	OxyGs OxyTs DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs OxyGs OxyMCs OxyAs OxyG
30	2571	2588	GTGTTGATAAT TTTGGCA	ASO-0008	OxyGs OxyTs DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs OxyGs OxyMCs OxyA
31	2571	2590	TGGTGTTGATA ATTTTGGCA	ASO-0009	OxyTs OxyGs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs OxyMCs OxyA
32	2572	2590	TGGTGTTGATA ATTTTGGC	ASO-0010	OxyTs OxyGs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs OxyGs OxyMC
33	2572	2591	TTGGTGTTGAT AATTTTGGC	ASO-0011	OxyTs DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts OxyGs OxyGs OxyMC
34	2574	2592	TTTGGTGTTGA TAATTTTG	ASO-0114	OxyTs OxyTs OxyTs OxyGs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas DNAts OxyTs OxyTs OxyTs OxyG
35	2575	2594	TTTTTGGTGTT GATAATTTT	ASO-0115	OxyTs OxyTs OxyTs OxyTs DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas OxyTs OxyTs OxyTs OxyT
36	2576	2594	TTTTTGGTGTT GATAATTT	ASO-0116	OxyTs OxyTs OxyTs OxyTs DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas OxyAs OxyTs OxyTs OxyT
37	2576	2595	CTTTTTGGTGT TGATAATTT	ASO-0117	OxyMCs OxyTs OxyTs OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas OxyAs OxyTs OxyTs OxyT
38	2577	2595	CTTTTTGGTGT TGATAATT	ASO-0118	OxyMCs OxyTs OxyTs OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts OxyAs OxyAs OxyTs OxyT
39	2577	2596	GCTTTTTGGTG TTGATAATT	ASO-0119	OxyGs OxyMCs OxyTs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas DNAas OxyTs OxyT
40	2578	2595	CTTTTTGGTGT	ASO-	OxyMCs OxyTs OxyTs OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TGATAAT	0120	DNAts DNAgs DNAas OxyTs OxyAs OxyAs OxyT
41	2578	2596	GCTTTTTGGTG TTGATAAT	ASO-0121	OxyGs OxyMCs OxyTs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts DNAas OxyAs OxyT
42	2578	2597	AGCTTTTTGGT GTTGATAAT	ASO-0122	OxyAs DNAgs DNAcs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas OxyTs OxyAs OxyAs OxyT
43	2579	2596	GCTTTTTGGTG TTGATAA	ASO-0123	OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyTs OxyAs OxyA
44	2579	2597	AGCTTTTTGGT GTTGATAA	ASO-0124	OxyAs OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts OxyAs OxyA
45	2579	2598	AAGCTTTTTGG TGTTGATAA	ASO-0125	OxyAs OxyAs OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAts OxyAs OxyA
46	2580	2596	GCTTTTTGGTG TTGATA	ASO-0126	OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyTs OxyA
47	2580	2597	AGCTTTTTGGT GTTGATA	ASO-0127	OxyAs OxyGs DNAcs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyTs OxyA
48	2580	2598	AAGCTTTTTGG TGTTGATA	ASO-0128	OxyAs DNAas DNAgs DNAcs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyTs OxyA
49	2581	2597	AGCTTTTTGGT GTTGAT	ASO-0129	OxyAs OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyT
50	2581	2598	AAGCTTTTTGG TGTTGAT	ASO-0130	OxyAs OxyAs OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyT
51	2582	2598	AAGCTTTTTGG TGTTGA	ASO-0131	OxyAs OxyAs OxyGs OxyMCs DNAts DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts OxyGs OxyA
52	2607	2623	GTTGAAAATAC CCACCC	ASO-0132	OxyGs DNAts DNAts DNAgs DNAas DNAas DNAas DNAas DNAts DNAas DNAcs DNAcs DNAcs DNAas OxyMCs OxyMCs OxyMC
53	2851	2870	TTTAAAATATAG TTATTCAT	ASO-0133	OxyTs OxyTs OxyTs OxyAs DNAas DNAas DNAas DNAts DNAas DNAts DNAas DNAgs DNAts DNAts DNAas DNAts OxyTs OxyMCs OxyAs OxyT
54	3239	3256	TTATGTCAACA GCTATTT	ASO-0134	OxyTs OxyTs OxyAs OxyTs DNAgs DNAts DNAcs DNAas DNAas DNAcs DNAas DNAgs DNAcs DNAts DNAas OxyTs OxyTs OxyT
55	3576	3593	ATTTGCAATAA ATATGGA	ASO-0135	OxyAs OxyTs OxyTs OxyTs DNAgs DNAcs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAas OxyTs OxyGs OxyGs OxyA
56	3778	3794	CTGTGGAGTAG AGACTA	ASO-0136	OxyMCs OxyTs DNAgs DNAts DNAgs DNAgs DNAas DNAgs DNAts DNAas DNAgs DNAas DNAgs DNAas OxyMCs OxyTs OxyA
57	4221	4240	TAGGTAGTTCT TTGAAGCAG	ASO-0137	OxyTs DNAas DNAgs DNAgs DNAts DNAas DNAgs DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAas DNAas DNAgs OxyMCs OxyAs OxyG
58	4225	4241	GTAGGTAGTTC TTTGAA	ASO-0138	OxyGs OxyTs OxyAs OxyGs DNAgs DNAts DNAas DNAgs DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs OxyAs OxyA
59	4926	4945	GTAAAATTGAC	ASO-	OxyGs OxyTs OxyAs OxyAs DNAas DNAas DNAts DNAts DNAgs DNAas DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ACAATACTT	0139	DNAas DNAcs DNAas DNAas DNAts OxyAs OxyMCs OxyTs OxyT
60	4982	4998	TGACCATTTTG AAGGAA	ASO-0140	OxyTs OxyGs OxyAs OxyMCs DNAcs DNAas DNAts DNAts DNAts DNAts DNAgs DNAas DNAas DNAgs DNAgs OxyAs OxyA
61	5256	5274	GATTTATTTTCA GTATTTG	ASO-0141	OxyGs OxyAs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAgs DNAts DNAas OxyTs OxyTs OxyTs OxyG
62	5798	5814	TATGGTATGTA TGACTA	ASO-0142	OxyTs OxyAs OxyTs OxyGs DNAgs DNAts DNAas DNAts DNAgs DNAts DNAas DNAts DNAgs DNAas OxyMCs OxyTs OxyA
63	6204	6221	ACTTTATATAAT TTGACA	ASO-0143	OxyAs OxyMCs OxyTs OxyTs DNAts DNAas DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAts OxyGs OxyAs OxyMCs OxyA
64	6209	6228	TTCTTGGACTT TATATAATT	ASO-0012	OxyTs OxyTs OxyMCs OxyTs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAts DNAas DNAts DNAas DNAts OxyAs OxyAs OxyTs OxyT
65	6211	6228	TTCTTGGACTT TATATAA	ASO-0144	OxyTs OxyTs OxyMCs OxyTs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAts DNAas DNAts OxyAs OxyTs OxyAs OxyA
66	6797	6813	GTAGCAAGAAT TAGTTT	ASO-0145	OxyGs OxyTs OxyAs OxyGs DNAcs DNAas DNAas DNAgs DNAas DNAas DNAts DNAts DNAas OxyGs OxyTs OxyTs OxyT
67	7148	7164	TTAATATCAAG ACCTAT	ASO-0146	OxyTs OxyTs OxyAs OxyAs DNAts DNAas DNAts DNAcs DNAas DNAas DNAgs DNAas DNAcs OxyMCs OxyTs OxyAs OxyT
68	7248	7264	CTGGAAGTGTG GATATA	ASO-0147	OxyMCs OxyTs OxyGs OxyGs DNAas DNAas DNAgs DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAas OxyTs OxyA
69	7738	7756	TGTAACTTAAA ATCTTTAA	ASO-0148	OxyTs OxyGs OxyTs OxyAs DNAas DNAcs DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAcs DNAts OxyTs OxyTs OxyAs OxyA
70	7987	8006	TAGTACTTTATT CATGCTTG	ASO-0149	OxyTs DNAas DNAgs DNAts DNAas DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAcs DNAas DNAts DNAgs OxyMCs OxyTs OxyTs OxyG
71	8068	8085	TTTCTTTAAATC AATACT	ASO-0150	OxyTs OxyTs OxyTs OxyMCs DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAcs DNAas DNAas OxyTs OxyAs OxyMCs OxyT
72	8560	8577	AGGAGTTAAAA TGAGACT	ASO-0151	OxyAs OxyGs OxyGs OxyAs DNAgs DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAgs DNAas DNAgs OxyAs OxyMCs OxyT
73	8994	9012	AATGGGAAGAT AAAATGTA	ASO-0152	OxyAs OxyAs OxyTs OxyGs DNAgs DNAgs DNAas DNAas DNAgs DNAas DNAts DNAas DNAas DNAas DNAas OxyTs OxyGs OxyTs OxyA
74	9181	9199	AACCATTTTCC TACCATTT	ASO-0153	OxyAs OxyAs OxyMCs DNAcs DNAas DNAts DNAts DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAcs DNAas DNAts OxyTs OxyT
75	9246	9263	TGTATAGTGAG ATATTTT	ASO-0154	OxyTs OxyGs OxyTs OxyAs DNAts DNAas DNAgs DNAts DNAgs DNAas DNAgs DNAas DNAts DNAas OxyTs OxyTs OxyTs OxyT
76	9752	9768	AAGTAGGGAGA ATGTTC	ASO-0155	OxyAs OxyAs OxyGs OxyTs DNAas DNAgs DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAts OxyGs OxyTs OxyTs OxyMC
77	10016	10033	CTAATATATGA GAAGTAA	ASO-0156	OxyMCs OxyTs OxyAs OxyAs DNAts DNAas DNAts DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas OxyGs OxyTs OxyAs OxyA
78	10465	10484	TTCATGCTTTAT	ASO-	OxyTs OxyTs OxyMCs OxyAs DNAts DNAgs DNAcs DNAts DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTCAATGT	0157	DNAts DNAts DNAts DNAcs DNAas DNAas DNAts OxyGs OxyT
79	10665	10684	GAAATTCAAAT TATCCAGAA	ASO-0158	OxyGs OxyAs OxyAs OxyAs DNAts DNAts DNAcs DNAas DNAas DNAas DNAts DNAts DNAas DNAts DNAcs DNAcs OxyAs OxyGs OxyAs OxyA
80	10856	10874	AGAGTTCAAAT TGGGATGG	ASO-0013	OxyAs DNAgs DNAas DNAgs DNAts DNAts DNAcs DNAas DNAas DNAas DNAts DNAts DNAgs DNAgs DNAgs OxyAs OxyTs OxyGs OxyG
81	10862	10881	AGAAAAGAGAG TTCAAATTG	ASO-0159	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAgs DNAas DNAgs DNAas DNAgs DNAts DNAts DNAcs DNAas DNAas OxyAs OxyTs OxyTs OxyG
82	11520	11539	TTATTCAAAATA CAACCTCA	ASO-0160	OxyTs OxyTs OxyAs DNAts DNAts DNAcs DNAas DNAas DNAas DNAas DNAts DNAas DNAcs DNAas DNAas DNAcs OxyMCs OxyTs OxyMCs OxyA
83	11881	11897	TATTAATTACTG TGCCA	ASO-0161	OxyTs OxyAs OxyTs OxyTs DNAas DNAas DNAts DNAts DNAas DNAcs DNAts DNAgs DNAts DNAgs OxyMCs OxyMCs OxyA
84	12135	12154	AGAAAATACTG AATTATACA	ASO-0162	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAas OxyTs OxyAs OxyMCs OxyA
85	12329	12346	GTAGAATGGAT CAAAATT	ASO-0163	OxyGs OxyTs OxyAs OxyGs DNAas DNAas DNAts DNAgs DNAgs DNAas DNAts DNAcs DNAas DNAas OxyAs OxyAs OxyTs OxyT
86	12722	12741	GAATAGGTATT AGAAATATG	ASO-0164	OxyGs OxyAs OxyAs OxyTs DNAas DNAgs DNAgs DNAts DNAas DNAts DNAts DNAas DNAgs DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyG
87	13070	13089	TATTTTATGATA TGATTATT	ASO-0165	OxyTs OxyAs OxyTs OxyTs DNAts DNAts DNAas DNAts DNAgs DNAas DNAts DNAas DNAts DNAgs DNAas DNAts OxyTs OxyAs OxyTs OxyT
88	13270	13286	TTGCAGTACAT AGGGAA	ASO-0166	OxyTs OxyTs DNAgs DNAcs DNAas DNAgs DNAts DNAas DNAcs DNAas DNAts DNAas DNAgs OxyGs OxyGs OxyAs OxyA
89	13559	13573	CTCGCATACTT TGTC	ASO-0167	OxyMCs DNAts DNAmcs DNAgs DNAcs DNAas DNAts DNAas DNAcs DNAts DNAts OxyTs OxyGs OxyTs OxyMC
90	13722	13740	TAATTTTACTTG ACTTTAC	ASO-0168	OxyTs OxyAs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAcs DNAts OxyTs OxyTs OxyAs OxyMC
91	14250	14266	TACTTAGTCAC TCTTAA	ASO-0169	OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAgs DNAts DNAcs DNAas DNAcs DNAts DNAcs OxyTs OxyTs OxyAs OxyA
92	14390	14407	ATCTTAGTTTTG GATTTG	ASO-0170	OxyAs OxyTs OxyMCs OxyTs DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAas OxyTs OxyTs OxyTs OxyG
93	14747	14766	ATTTAAATCGA AGTTGTCTT	ASO-0171	OxyAs OxyTs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAmcs DNAgs DNAas DNAas DNAgs DNAts DNAts DNAgs OxyTs OxyMCs OxyTs OxyT
94	14764	14780	TAGGGAGGCTA AATATT	ASO-0172	OxyTs OxyAs OxyGs DNAgs DNAgs DNAas DNAgs DNAgs DNAcs DNAts DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyT
95	15458	15475	TGGACATTATG ATTATCA	ASO-0173	OxyTs OxyGs OxyGs DNAas DNAcs DNAas DNAts DNAts DNAas DNAts DNAgs DNAas DNAts DNAts OxyAs OxyTs OxyMCs OxyA
96	15470	15487	ATTGGGAGATT ATGGACA	ASO-0014	OxyAs OxyTs OxyTs OxyGs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAas DNAts DNAgs DNAgs DNAas OxyMCs OxyA
97	15644	15663	TTTGGTTTGGA	ASO-	OxyTs OxyTs OxyTs DNAgs DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTATTTCAA	0174	DNAts DNAts DNAas DNAts DNAts OxyTs OxyMCs OxyAs OxyA
98	15669	15686	TGGTATTTCTA AGTTTAG	ASO-0175	OxyTs OxyGs OxyGs OxyTs DNAas DNAts DNAts DNAts DNAcs DNAts DNAas DNAas DNAgs DNAts DNAts DNAts OxyAs OxyG
99	16298	16315	TTCCTCATTAAT AGTAGA	ASO-0176	OxyTs OxyTs OxyMCs OxyMCs DNAts DNAcs DNAas DNAts DNAts DNAas DNAas DNAts DNAas DNAgs DNAts DNAas OxyGs OxyA
100	16504	16523	ACTTTCTTCTG ATACTGAAG	ASO-0177	OxyAs OxyMCs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAgs DNAas DNAts DNAas DNAcs DNAts OxyGs OxyAs OxyAs OxyG
101	16574	16590	CCTCAATGTTA CCTTTC	ASO-0178	OxyMCs OxyMCs DNAts DNAcs DNAas DNAas DNAts DNAgs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyMC
102	17218	17235	ACAGTTTTATA GATAAGA	ASO-0179	OxyAs OxyMCs OxyAs OxyGs DNAts DNAts DNAts DNAts DNAas DNAts DNAas DNAgs DNAas DNAts OxyAs OxyAs OxyGs OxyA
103	17404	17419	TATCCTAAACT AGCCC	ASO-0180	OxyTs DNAas DNAts DNAcs DNAcs DNAts DNAas DNAas DNAas DNAcs DNAts DNAas DNAgs OxyMCs OxyMCs OxyMC
104	17654	17671	AATGTGCTAGG TTCTGAG	ASO-0181	OxyAs OxyAs DNAts DNAgs DNAts DNAgs DNAcs DNAts DNAas DNAgs DNAgs DNAts DNAts DNAcs OxyTs OxyGs OxyAs OxyG
105	17708	17725	AGTCATTAATT CTTTATC	ASO-0182	OxyAs OxyGs OxyTs OxyMCs DNAas DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAts DNAts OxyTs OxyAs OxyTs OxyMC
106	19162	19179	TGTAAGCAAGG CACAAGA	ASO-0183	OxyTs DNAgs DNAts DNAas DNAas DNAgs DNAcs DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs OxyAs OxyAs OxyGs OxyA
107	19372	19388	ACACCTACCTC AATAAC	ASO-0184	OxyAs OxyMCs OxyAs OxyMCs DNAcs DNAts DNAas DNAcs DNAcs DNAts DNAcs DNAas DNAas DNAts OxyAs OxyAs OxyMC
108	19703	19720	CAATATAAGAC ATGAGAG	ASO-0185	OxyMCs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAas DNAgs DNAas DNAcs DNAas DNAts DNAgs OxyAs OxyGs OxyAs OxyG
109	19868	19884	CTTATCTATCC AAATGC	ASO-0186	OxyMCs OxyTs OxyTs OxyAs DNAts DNAcs DNAts DNAas DNAts DNAcs DNAcs DNAas DNAas DNAas OxyTs OxyGs OxyMC
110	20246	20263	ATCCTATCACA TTACTTC	ASO-0187	OxyAs OxyTs OxyMCs DNAcs DNAts DNAas DNAts DNAcs DNAas DNAcs DNAas DNAts DNAts DNAas DNAcs OxyTs OxyTs OxyMC
111	20497	20515	TGTTCTATTTTA TTAGTAC	ASO-0188	OxyTs OxyGs OxyTs DNAts DNAcs DNAts DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAas OxyGs OxyTs OxyAs OxyMC
112	21423	21441	GAGAGGTAAGA ATGATGAA	ASO-0015	OxyGs OxyAs OxyGs OxyAs DNAgs DNAgs DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAts OxyGs OxyAs OxyA
113	21444	21461	CTGGGTTTGAG GGAGAGG	ASO-0189	OxyMCs DNAts DNAgs DNAgs DNAgs DNAts DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAgs DNAas DNAgs DNAas OxyGs OxyG
114	21808	21826	TCCTTTGTATTT CTTGAAT	ASO-0190	OxyTs OxyMCs OxyMCs DNAts DNAts DNAts DNAgs DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs OxyAs OxyAs OxyT
115	22289	22308	ATAGGTTGATG TTTCTTTGA	ASO-0191	OxyAs OxyTs OxyAs DNAgs DNAgs DNAts DNAts DNAgs DNAas DNAts DNAgs DNAts DNAts DNAts DNAcs DNAts DNAts DNAts OxyGs OxyA
116	22294	22310	TAATAGGTTGA	ASO-	OxyTs OxyAs OxyAs OxyTs DNAas DNAgs DNAgs DNAts DNAts DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TGTTTC	0192	DNAts DNAgs OxyTs OxyTs OxyTs OxyMC
117	22342	22358	GCCAAATTCTT TCTAGT	ASO-0193	OxyGs OxyMCs DNAcs DNAas DNAas DNAas DNAts DNAts DNAcs DNAts DNAts DNAts DNAcs DNAts DNAas OxyGs OxyT
118	22992	23011	AAAATAAATAA CACATCCCA	ASO-0194	OxyAs OxyAs OxyAs OxyAs DNAts DNAas DNAas DNAas DNAts DNAas DNAas DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyMCs OxyMCs OxyA
119	23373	23392	TTTTAATGTGTT ATTATCCT	ASO-0195	OxyTs OxyTs DNAts DNAts DNAas DNAas DNAts DNAgs DNAts DNAgs DNAts DNAts DNAas DNAts DNAts DNAas OxyTs OxyMCs OxyMCs OxyT
120	23595	23614	GACCTAAATAT TATACAAGA	ASO-0196	OxyGs OxyAs OxyMCs OxyMCs DNAts DNAas DNAas DNAas DNAts DNAas DNAts DNAts DNAas DNAts DNAas DNAcs OxyAs OxyAs OxyGs OxyA
121	23727	23744	TGAAGAATCTA AATATGT	ASO-0197	OxyTs OxyGs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAcs DNAts DNAas DNAas DNAas DNAts OxyAs OxyTs OxyGs OxyT
122	24150	24166	ATCATCTGGTT GTGAAT	ASO-0198	OxyAs OxyTs OxyMCs OxyAs DNAts DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAgs DNAts OxyGs OxyAs OxyAs OxyT
123	24404	24423	CTTAATGAATAT AGAGTTCT	ASO-0016	OxyMCs OxyTs OxyTs OxyAs DNAas DNAts DNAgs DNAas DNAas DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs OxyTs OxyTs OxyMCs OxyT
124	24407	24424	ACTTAATGAAT ATAGAGT	ASO-0199	OxyAs OxyMCs OxyTs OxyTs DNAas DNAas DNAts DNAgs DNAas DNAas DNAts DNAas DNAts DNAas OxyGs OxyAs OxyGs OxyT
125	24747	24764	TTAATAATCATA TATACC	ASO-0200	OxyTs OxyTs OxyAs OxyAs DNAts DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAts DNAas OxyTs OxyAs OxyMCs OxyMC
126	24874	24891	CATAATAATAG TATTTGG	ASO-0201	OxyMCs OxyAs OxyTs OxyAs DNAas DNAts DNAas DNAas DNAts DNAas DNAgs DNAts DNAas DNAts OxyTs OxyTs OxyGs OxyG
127	26041	26060	AATAAGAATTT CCATAACTT	ASO-0202	OxyAs OxyAs OxyTs OxyAs DNAas DNAgs DNAas DNAas DNAts DNAts DNAts DNAcs DNAcs DNAas DNAts DNAas OxyAs OxyMCs OxyTs OxyT
128	26381	26397	GAGATCAATAA AGTATA	ASO-0203	OxyGs OxyAs OxyGs OxyAs DNAts DNAcs DNAas DNAas DNAts DNAas DNAas DNAas DNAgs OxyTs OxyAs OxyTs OxyA
129	27197	27215	ATTTGAAAGGC TGATGGGA	ASO-0204	OxyAs DNAts DNAts DNAts DNAgs DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAts DNAgs DNAas DNAts DNAgs OxyGs OxyGs OxyA
130	27363	27380	ATGTAAATCAA ATAGTTC	ASO-0205	OxyAs OxyTs OxyGs OxyTs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAts DNAas OxyGs OxyTs OxyTs OxyMC
131	27712	27731	GAAGAGTAATT TAAAAGCTT	ASO-0206	OxyGs OxyAs OxyAs OxyGs DNAas DNAgs DNAts DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAas DNAas OxyGs OxyMCs OxyTs OxyT
132	28063	28080	TTGACATCTGA CTTTTAA	ASO-0207	OxyTs OxyTs OxyGs DNAas DNAcs DNAas DNAts DNAcs DNAts DNAgs DNAas DNAcs DNAts DNAts OxyTs OxyTs OxyAs OxyA
133	28249	28265	AGATATAGTTA CTTAAC	ASO-0208	OxyAs OxyGs OxyAs OxyTs DNAas DNAts DNAas DNAgs DNAts DNAts DNAas DNAcs DNAts OxyTs OxyAs OxyAs OxyMC
134	28369	28385	GTCAAGTTATC AGGTAT	ASO-0209	OxyGs OxyTs OxyMCs OxyAs DNAas DNAgs DNAts DNAts DNAas DNAts DNAcs DNAas DNAgs DNAgs OxyTs OxyAs OxyT
135	28782	28801	GACAGAGACTG	ASO-	OxyGs OxyAs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAcs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AAATGATAA	0017	DNAgs DNAas DNAas DNAas DNAts DNAgs OxyAs OxyTs OxyAs OxyA
136	28857	28873	CTGGAGAAGTT TTGAAG	ASO-0210	OxyMCs OxyTs OxyGs OxyGs DNAas DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAts DNAgs OxyAs OxyAs OxyG
137	28897	28915	TAAAAGAGTTT GCATAGGA	ASO-0211	OxyTs OxyAs OxyAs OxyAs DNAas DNAgs DNAas DNAgs DNAts DNAts DNAts DNAgs DNAcs DNAas DNAts DNAas OxyGs OxyGs OxyA
138	29430	29446	AATATTATTGGT TGAGC	ASO-0212	OxyAs OxyAs OxyTs OxyAs DNAts DNAts DNAas DNAts DNAts DNAgs DNAgs DNAts DNAts OxyGs OxyAs OxyGs OxyMC
139	30003	30020	TCTCATAAACTT CATTCC	ASO-0213	OxyTs OxyMCs DNAts DNAcs DNAas DNAts DNAas DNAas DNAas DNAcs DNAts DNAts DNAcs DNAas DNAts OxyTs OxyMCs OxyMC
140	30007	30024	CCTCTCTCATA AACTTCA	ASO-0214	OxyMCs DNAcs DNAts DNAcs DNAts DNAcs DNAts DNAcs DNAas DNAts DNAas DNAas DNAas DNAcs OxyTs OxyTs OxyMCs OxyA
141	30420	30439	ACATTATCTTCA TTAAACAA	ASO-0215	OxyAs OxyMCs OxyAs OxyTs DNAts DNAas DNAts DNAcs DNAts DNAts DNAcs DNAas DNAts DNAts DNAas DNAas OxyAs OxyMCs OxyAs OxyA
142	30634	30653	ATAACTCTGTG TATTAGCAT	ASO-0216	OxyAs DNAts DNAas DNAas DNAcs DNAts DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAas DNAts DNAts DNAas OxyGs OxyMCs OxyAs OxyT
143	30870	30888	CAGATTTTATTT GTCATTC	ASO-0217	OxyMCs OxyAs OxyGs DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAcs OxyAs OxyTs OxyTs OxyMC
144	31207	31225	AGAAAAGAATG AAACTGTT	ASO-0218	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAcs OxyTs OxyGs OxyTs OxyT
145	31565	31582	TGAATTAAAAT GAGAGTA	ASO-0219	OxyTs OxyGs OxyAs OxyAs DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAgs DNAas DNAgs OxyAs OxyGs OxyTs OxyA
146	31711	31728	TAACTTTTCAG ATGGCAT	ASO-0220	OxyTs OxyAs OxyAs OxyMCs DNAts DNAts DNAts DNAts DNAcs DNAas DNAgs DNAas DNAts DNAgs DNAgs OxyMCs OxyAs OxyT
147	32776	32793	TAAGTCATCAT CATCGTC	ASO-0221	OxyTs OxyAs OxyAs OxyGs DNAts DNAcs DNAas DNAts DNAcs DNAas DNAts DNAcs DNAas DNAts DNAmcs DNAgs OxyTs OxyMC
148	33003	33022	AAAGAACAGTC CTAATACAA	ASO-0222	OxyAs OxyAs OxyAs OxyGs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAcs DNAcs DNAts DNAas DNAas DNAts OxyAs OxyMCs OxyAs OxyA
149	33008	33024	CCAAAGAACAG TCCTAA	ASO-0223	OxyMCs OxyMCs OxyAs DNAas DNAas DNAgs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAcs DNAcs OxyTs OxyAs OxyA
150	33577	33596	ATAAGTAACAA CACAGATGA	ASO-0224	OxyAs OxyTs OxyAs DNAas DNAgs DNAts DNAas DNAas DNAcs DNAas DNAas DNAcs DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyGs OxyA
151	33580	33598	CAATAAGTAAC AACACAGA	ASO-0018	OxyMCs OxyAs OxyAs OxyTs DNAas DNAas DNAgs DNAts DNAas DNAas DNAcs DNAas DNAas DNAcs DNAas OxyMCs OxyAs OxyGs OxyA
152	34058	34077	GCAAAAGTCTT AAATACTTC	ASO-0225	OxyGs OxyMCs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas OxyMCs OxyTs OxyTs OxyMC
153	34060	34077	GCAAAAGTCTT AAATACT	ASO-0226	OxyGs OxyMCs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas OxyTs OxyAs OxyMCs OxyT
154	34238	34256	ATCAATATTAAA	ASO-	OxyAs OxyTs OxyMCs OxyAs DNAas DNAts DNAas DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TATTTCT	0227	DNAas DNAas DNAts DNAas DNAts OxyTs OxyTs OxyMCs OxyT
155	34716	34732	ATCAGGACAGG TTATTT	ASO-0228	OxyAs OxyTs OxyMCs OxyAs DNAgs DNAgs DNAas DNAcs DNAas DNAgs DNAgs DNAts DNAts DNAas OxyTs OxyTs OxyT
156	35091	35110	TATATTACTAGT CAAAGGGC	ASO-0229	OxyTs OxyAs OxyTs DNAas DNAts DNAts DNAas DNAcs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAas DNAas DNAgs DNAgs OxyGs OxyMC
157	35150	35166	CTTATTAGGTA ATTGAA	ASO-0230	OxyMCs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAgs DNAgs DNAts DNAas DNAas DNAts OxyTs OxyGs OxyAs OxyA
158	35743	35762	TACATATTATAT TACTCCTC	ASO-0231	OxyTs OxyAs OxyMCs DNAas DNAts DNAas DNAts DNAts DNAas DNAts DNAas DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyTs OxyMC
159	35839	35856	ATTTAAGTTTAT TGAGAT	ASO-0232	OxyAs OxyTs OxyTs OxyTs DNAas DNAas DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAgs OxyAs OxyGs OxyAs OxyT
160	36133	36149	AATAGTTTCAA GTCCAG	ASO-0233	OxyAs OxyAs OxyTs DNAas DNAgs DNAts DNAts DNAts DNAcs DNAas DNAas DNAgs DNAts OxyMCs OxyMCs OxyAs OxyG
161	37100	37119	ATTTAGCACAT ACATTTAAC	ASO-0234	OxyAs OxyTs OxyTs OxyTs DNAas DNAgs DNAcs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAts OxyTs OxyAs OxyAs OxyMC
162	37299	37317	CCTTTGGTTAT TTGTTTAT	ASO-0235	OxyMCs OxyMCs DNAts DNAts DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAts OxyTs OxyAs OxyT
163	37666	37683	GTTAATTATTTG TTATTG	ASO-0236	OxyGs OxyTs OxyTs OxyAs DNAas DNAts DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAts OxyAs OxyTs OxyTs OxyG
164	37987	38006	ATAAATTTTATT AATTGCCT	ASO-0237	OxyAs OxyTs OxyAs DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAts DNAts OxyGs OxyMCs OxyMCs OxyT
165	38072	38090	TTTACAGGATT GTTATCAA	ASO-0019	OxyTs OxyTs OxyTs OxyAs DNAcs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAgs DNAts DNAts DNAas OxyTs OxyMCs OxyAs OxyA
166	38079	38095	CTAAATTTACA GGATTG	ASO-0238	OxyMCs OxyTs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAas DNAcs DNAas DNAgs DNAgs OxyAs OxyTs OxyTs OxyG
167	38833	38851	TTTTGAGGATT AAAGAGAA	ASO-0239	OxyTs OxyTs OxyTs OxyTs DNAgs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAas DNAas DNAas DNAgs OxyAs OxyGs OxyAs OxyA
168	38835	38854	TTGTTTTGAGG ATTAAAGAG	ASO-0240	OxyTs OxyTs OxyGs OxyTs DNAts DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAas DNAas DNAas OxyGs OxyAs OxyG
169	39616	39635	ATTGCTTAAATT GACCTCTA	ASO-0241	OxyAs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAgs DNAas DNAcs DNAcs OxyTs OxyMCs OxyTs OxyA
170	39622	39640	ATTAAATTGCTT AAATTGA	ASO-0242	OxyAs OxyTs OxyTs OxyAs DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAas DNAas OxyTs OxyTs OxyGs OxyA
171	40300	40319	TTTATTTTAAGC TGAAGACA	ASO-0243	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAas DNAas DNAgs DNAcs DNAts DNAgs DNAas DNAas OxyGs OxyAs OxyMCs OxyA
172	40317	40333	TGGTTGGTATA AATTTT	ASO-0244	OxyTs OxyGs OxyGs OxyTs DNAts DNAgs DNAgs DNAts DNAas DNAts DNAas DNAas DNAas OxyTs OxyTs OxyTs OxyT
173	40624	40643	GTGATATTCAA	ASO-	OxyGs OxyTs DNAgs DNAas DNAts DNAas DNAts DNAts DNAcs DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GAAATAGCA	0245	DNAgs DNAas DNAas DNAas DNAts OxyAs OxyGs OxyMCs OxyA
174	40947	40963	TGTTAAGATGT AATTGG	ASO-0246	OxyTs OxyGs OxyTs OxyTs DNAas DNAas DNAgs DNAas DNAts DNAgs DNAts DNAas DNAas OxyTs OxyTs OxyGs OxyG
175	40998	41017	AACATATTAAG TACAAGTGA	ASO-0020	OxyAs OxyAs OxyMCs OxyAs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAts DNAas DNAcs DNAas DNAas OxyGs OxyTs OxyGs OxyA
176	40999	41016	ACATATTAAGT ACAAGTG	ASO-0247	OxyAs OxyMCs OxyAs OxyTs DNAas DNAts DNAts DNAas DNAas DNAgs DNAts DNAas DNAcs DNAas OxyAs OxyGs OxyTs OxyG
177	41740	41757	ACAAATCATTA GTCTATT	ASO-0248	OxyAs OxyMCs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAts DNAts DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyTs OxyT
178	41742	41758	CACAAATCATT AGTCTA	ASO-0249	OxyMCs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAcs DNAas DNAts DNAts DNAas DNAgs OxyTs OxyMCs OxyTs OxyA
179	42527	42546	CATATTATGCT GTTTTCCTG	ASO-0250	OxyMCs OxyAs DNAts DNAas DNAts DNAts DNAas DNAts DNAgs DNAcs DNAts DNAgs DNAts DNAts DNAts DNAts DNAcs DNAcs OxyTs OxyG
180	42531	42548	TTCATATTATGC TGTTTT	ASO-0251	OxyTs OxyTs OxyMCs OxyAs DNAts DNAas DNAts DNAts DNAas DNAts DNAgs DNAcs DNAts DNAgs OxyTs OxyTs OxyTs OxyT
181	42952	42969	CAGTGAAAATC TAAATTA	ASO-0252	OxyMCs OxyAs OxyGs OxyTs DNAgs DNAas DNAas DNAas DNAas DNAts DNAcs DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyA
182	43391	43408	AATTTGGGAAG GTTTAGA	ASO-0253	OxyAs OxyAs OxyTs OxyTs DNAts DNAgs DNAgs DNAgs DNAas DNAas DNAgs DNAgs DNAts DNAts OxyTs OxyAs OxyGs OxyA
183	43393	43410	GCAATTTGGGA AGGTTTA	ASO-0254	OxyGs OxyMCs DNAas DNAas DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAas DNAas DNAgs DNAgs OxyTs OxyTs OxyTs OxyA
184	43931	43949	AGGAGAAGACT TAAATTTT	ASO-0255	OxyAs OxyGs OxyGs OxyAs DNAgs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAts DNAas DNAas DNAas OxyTs OxyTs OxyTs OxyT
185	44247	44264	GTGGAGAGAGT TGAATTT	ASO-0256	OxyGs OxyTs OxyGs DNAgs DNAas DNAgs DNAas DNAgs DNAas DNAgs DNAts DNAts DNAgs DNAas OxyAs OxyTs OxyTs OxyT
186	44345	44361	AAAGTGAGTGT TAAGGT	ASO-0257	OxyAs OxyAs OxyAs OxyGs DNAts DNAgs DNAas DNAgs DNAts DNAgs DNAts DNAts DNAas OxyAs OxyGs OxyGs OxyT
187	44714	44731	ATTTTAATTTGT GAGTAG	ASO-0258	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAas DNAts DNAts DNAts DNAgs DNAts DNAgs DNAas OxyGs OxyTs OxyAs OxyG
188	44982	45001	AAATTGAACAA GTGAATAGT	ASO-0259	OxyAs OxyAs OxyAs OxyTs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAas DNAgs DNAts DNAgs DNAas DNAas OxyTs OxyAs OxyGs OxyT
189	45144	45160	AGTGAACTTAG TGATAT	ASO-0260	OxyAs OxyGs OxyTs OxyGs DNAas DNAas DNAcs DNAts DNAts DNAas DNAgs DNAts DNAgs OxyAs OxyTs OxyAs OxyT
190	46568	46586	TGTTTCTAGGT TTCATTTT	ASO-0261	OxyTs OxyGs OxyTs DNAts DNAts DNAcs DNAts DNAas DNAgs DNAgs DNAts DNAts DNAts DNAcs DNAas DNAts OxyTs OxyTs OxyT
191	46816	46835	TACTTTACATTC TTTTATGT	ASO-0262	OxyTs OxyAs OxyMCs OxyTs DNAts DNAts DNAas DNAcs DNAas DNAts DNAts DNAcs DNAts DNAts DNAts DNAts DNAas DNAts OxyGs OxyT
192	46826	46845	TCTTCTCAATTA	ASO-	OxyTs OxyMCs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTTTACAT	0021	DNAas DNAcs DNAts DNAts DNAts OxyAs OxyMCs OxyAs OxyT
193	47165	47183	CTAGTCATTTC TTTGGGTC	ASO-0263	OxyMCs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAgs DNAgs OxyTs OxyMC
194	47167	47183	CTAGTCATTTC TTTGGG	ASO-0264	OxyMCs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAts OxyGs OxyGs OxyG
195	47770	47788	TAATTTATCATG TATTCAG	ASO-0265	OxyTs OxyAs OxyAs OxyTs DNAts DNAts DNAas DNAts DNAcs DNAas DNAts DNAgs DNAts DNAas DNAts OxyTs OxyMCs OxyAs OxyG
196	47915	47931	CATTACCACTA TATCAT	ASO-0266	OxyMCs OxyAs OxyTs OxyTs DNAas DNAcs DNAcs DNAas DNAcs DNAts DNAas DNAts DNAas OxyTs OxyMCs OxyAs OxyT
197	48166	48183	TTTTCTTATCAA TATGCA	ASO-0267	OxyTs OxyTs OxyTs DNAts DNAcs DNAts DNAts DNAas DNAts DNAcs DNAas DNAas DNAts DNAas OxyTs OxyGs OxyMCs OxyA
198	48838	48855	TGAATAATGTTT TACTAA	ASO-0268	OxyTs OxyGs OxyAs OxyAs DNAts DNAas DNAas DNAts DNAgs DNAts DNAts DNAts DNAts DNAas OxyMCs OxyTs OxyAs OxyA
199	49269	49286	ATCTGTGAATA CTTTGAA	ASO-0269	OxyAs OxyTs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAts DNAas DNAcs DNAts DNAts OxyTs OxyGs OxyAs OxyA
200	49272	49289	GAAATCTGTGA ATACTTT	ASO-0270	OxyGs OxyAs OxyAs OxyAs DNAts DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAts DNAas OxyMCs OxyTs OxyTs OxyT
201	50015	50034	TATACTTGTTCT CTCACTTT	ASO-0271	OxyTs OxyAs DNAts DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts DNAcs DNAts DNAcs DNAts DNAcs DNAas DNAcs OxyTs OxyTs OxyT
202	50024	50041	CATTAAATATAC TTGTTC	ASO-0272	OxyMCs OxyAs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAts OxyGs OxyTs OxyTs OxyMC
203	50265	50283	ATGAAAATAAA TGATCTAG	ASO-0273	OxyAs OxyTs OxyGs OxyAs DNAas DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAas DNAts OxyMCs OxyTs OxyAs OxyG
204	50610	50628	TCATTCTTAAAA TACTAAC	ASO-0274	OxyTs OxyMCs OxyAs OxyTs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAas DNAcs OxyTs OxyAs OxyAs OxyMC
205	50889	50907	CTTGTTTTAAAT TCTAATA	ASO-0275	OxyMCs OxyTs OxyTs OxyGs DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAts OxyAs OxyAs OxyTs OxyA
206	51319	51337	TGATATAGCAA AGCAATGT	ASO-0276	OxyTs OxyGs OxyAs DNAts DNAas DNAts DNAas DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAcs DNAas OxyAs OxyTs OxyGs OxyT
207	51570	51588	TTATGACTGGA AGAACAAA	ASO-0277	OxyTs OxyTs OxyAs OxyTs DNAgs DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAgs DNAas DNAas OxyMCs OxyAs OxyAs OxyA
208	51576	51594	TGTTTATTATGA CTGGAAG	ASO-0022	OxyTs OxyGs OxyTs DNAts DNAts DNAas DNAts DNAts DNAas DNAts DNAgs DNAas DNAcs DNAts DNAgs OxyGs OxyAs OxyAs OxyG
209	51789	51807	ATTTTGACAAG ACTTACAT	ASO-0278	OxyAs OxyTs OxyTs OxyTs DNAts DNAgs DNAas DNAcs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyAs OxyT
210	51976	51993	TGCACTTTTAT CTTTAAC	ASO-0279	OxyTs OxyGs OxyMCs OxyAs DNAcs DNAts DNAts DNAts DNAts DNAas DNAts DNAcs DNAts DNAts DNAts OxyAs OxyAs OxyMC
211	52383	52401	ATGATTTAAATA	ASO-	OxyAs OxyTs OxyGs OxyAs DNAts DNAts DNAts DNAas DNAas DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTTTGGG	0280	DNAas DNAts DNAts DNAts OxyTs OxyGs OxyGs OxyG
212	52840	52859	TGAAATTTTAA GGACAGAAA	ASO-0281	OxyTs OxyGs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas DNAcs DNAas OxyGs OxyAs OxyAs OxyA
213	52861	52879	TTTAATGGAAC TAAACTAT	ASO-0282	OxyTs OxyTs OxyTs OxyAs DNAas DNAts DNAgs DNAgs DNAas DNAas DNAcs DNAts DNAas DNAas DNAas OxyMCs OxyTs OxyAs OxyT
214	53490	53507	AAATGAACGAG GAACTGG	ASO-0283	OxyAs OxyAs OxyAs DNAts DNAgs DNAas DNAas DNAmcs DNAgs DNAas DNAgs DNAgs DNAas DNAas OxyMCs OxyTs OxyGs OxyG
215	53682	53698	TGTTACTAGTC ATCATG	ASO-0284	OxyTs OxyGs OxyTs DNAts DNAas DNAcs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAts OxyMCs OxyAs OxyTs OxyG
216	54402	54421	AGGAAAATTGT GGAATCTTT	ASO-0285	OxyAs OxyGs DNAgs DNAas DNAas DNAas DNAas DNAts DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAas DNAts OxyMCs OxyTs OxyTs OxyT
217	54418	54434	ATTTGGGTTAC TAAGGA	ASO-0286	OxyAs OxyTs OxyTs OxyTs DNAgs DNAgs DNAgs DNAts DNAts DNAas DNAcs DNAts DNAas DNAas OxyGs OxyGs OxyA
218	54752	54770	AATAGAAAATT AGTTTAGA	ASO-0287	OxyAs OxyAs OxyTs OxyAs DNAgs DNAas DNAas DNAas DNAas DNAts DNAts DNAas DNAgs DNAts DNAts OxyTs OxyAs OxyGs OxyA
219	54932	54950	TTGCAAAATAA TATGTTCT	ASO-0288	OxyTs OxyTs OxyGs OxyMCs DNAas DNAas DNAas DNAas DNAts DNAas DNAas DNAts DNAas DNAts DNAgs OxyTs OxyTs OxyMCs OxyT
220	55303	55319	TAAAGGATGGT ATGGCT	ASO-0289	OxyTs OxyAs DNAas DNAas DNAgs DNAgs DNAas DNAts DNAgs DNAgs DNAts DNAas DNAts OxyGs OxyGs OxyMCs OxyT
221	55457	55473	TGGAGTAACAA AATGAG	ASO-0290	OxyTs OxyGs OxyGs OxyAs DNAgs DNAts DNAas DNAas DNAcs DNAas DNAas DNAas DNAas DNAts OxyGs OxyAs OxyG
222	55843	55862	GTTAAGAAATT TTGAAGTGC	ASO-0023	OxyGs OxyTs OxyTs OxyAs DNAas DNAgs DNAas DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAas DNAas DNAgs OxyTs OxyGs OxyMC
223	55912	55929	AGATCAAGGCT AAAGAGA	ASO-0291	OxyAs OxyGs OxyAs DNAts DNAcs DNAas DNAas DNAgs DNAgs DNAcs DNAts DNAas DNAas DNAas DNAgs OxyAs OxyGs OxyA
224	56166	56184	TTGATAGTGAA TGAAATTT	ASO-0292	OxyTs OxyTs OxyGs OxyAs DNAts DNAas DNAgs DNAts DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas OxyAs OxyTs OxyTs OxyT
227	56918	56935	TATATTTAATCA GATATC	ASO-0297	OxyTs OxyAs OxyTs OxyAs DNAts DNAts DNAts DNAas DNAas DNAts DNAcs DNAas DNAgs DNAas OxyTs OxyAs OxyTs OxyMC
228	57034	57051	TGCCTGAATAA AGTAAGA	ASO-0298	OxyTs OxyGs OxyMCs OxyMCs DNAts DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAgs DNAts DNAas DNAas OxyGs OxyA
229	57343	57361	TAATTTACTTGA CATTTTC	ASO-0299	OxyTs OxyAs OxyAs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAcs DNAas DNAts OxyTs OxyTs OxyTs OxyMC
230	57600	57617	ATTATTATAAGC TATTTG	ASO-0300	OxyAs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAas OxyTs OxyTs OxyTs OxyG
231	57859	57876	TAATTGATATAA AGTAGC	ASO-0301	OxyTs OxyAs OxyAs OxyTs DNAts DNAgs DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAgs OxyTs OxyAs OxyGs OxyMC
232	58265	58282	AAGAACTTCTT	ASO-	OxyAs OxyAs DNAgs DNAas DNAas DNAcs DNAts DNAts DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CAATGCA	0302	DNAcs DNAas DNAas DNAts OxyGs OxyMCs OxyA
233	58617	58633	AAAATAGGTTA GGTCTG	ASO-0303	OxyAs OxyAs OxyAs OxyAs DNAts DNAas DNAgs DNAgs DNAts DNAts DNAas DNAgs DNAgs OxyTs OxyMCs OxyTs OxyG
234	58780	58796	GTTGAGAATAC AGATTG	ASO-0304	OxyGs OxyTs OxyTs OxyGs DNAas DNAgs DNAas DNAas DNAts DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyTs OxyG
235	58919	58937	AGACACATTTC ATTTTAAG	ASO-0305	OxyAs OxyGs OxyAs OxyMCs DNAas DNAcs DNAas DNAts DNAts DNAts DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyAs OxyG
236	59562	59581	TTTATTTACAAT CCTTTAAA	ASO-0306	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAas DNAcs DNAas DNAas DNAts DNAcs DNAcs DNAts DNAts OxyTs OxyAs OxyAs OxyA
237	59636	59654	TTTATATTAAGG ACCAGAC	ASO-0024	OxyTs OxyTs OxyTs OxyAs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas DNAcs DNAcs OxyAs OxyGs OxyAs OxyMC
238	59638	59655	TTTTATATTAAG GACCAG	ASO-0307	OxyTs OxyTs OxyTs OxyTs DNAas DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas OxyMCs OxyMCs OxyAs OxyG
239	61917	61935	TGTCTATAATAT CTCCATC	ASO-0308	OxyTs DNAgs DNAts DNAcs DNAts DNAas DNAts DNAas DNAas DNAts DNAas DNAts DNAcs DNAts DNAcs OxyMCs OxyAs OxyTs OxyMC
240	62140	62158	CATTATGATATA AACATGT	ASO-0309	OxyMCs OxyAs OxyTs OxyTs DNAas DNAts DNAgs DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAcs OxyAs OxyTs OxyGs OxyT
241	62487	62506	TAATCTAAGGT TTACTAAGA	ASO-0310	OxyTs OxyAs OxyAs OxyTs DNAcs DNAts DNAas DNAas DNAgs DNAgs DNAts DNAts DNAts DNAas DNAcs DNAts OxyAs OxyAs OxyGs OxyA
242	62667	62683	ATGGCTACTTT GGTTTT	ASO-0311	OxyAs OxyTs OxyGs DNAgs DNAcs DNAts DNAas DNAcs DNAts DNAts DNAts DNAgs DNAgs DNAts DNAts OxyTs OxyT
243	62877	62894	ATTGCCTAGAA GAAATGA	ASO-0312	OxyAs OxyTs OxyTs OxyGs DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas DNAas OxyTs OxyGs OxyA
244	63189	63205	TTTGTGATAGG TATATG	ASO-0313	OxyTs OxyTs OxyTs OxyGs DNAts DNAgs DNAas DNAts DNAas DNAgs DNAgs DNAts DNAas OxyTs OxyAs OxyTs OxyG
245	63479	63496	GTTTCTGTGAT AATTTAA	ASO-0314	OxyGs OxyTs OxyTs OxyTs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAts DNAas DNAas DNAts OxyTs OxyTs OxyAs OxyA
246	63973	63991	TATAAATGGCA GTACAGAT	ASO-0315	OxyTs OxyAs OxyTs DNAas DNAas DNAas DNAts DNAgs DNAgs DNAcs DNAas DNAgs DNAts DNAas DNAcs OxyAs OxyGs OxyAs OxyT
247	63976	63994	ATTTATAAATG GCAGTACA	ASO-0316	OxyAs OxyTs OxyTs OxyTs DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAgs DNAcs DNAas DNAgs OxyTs OxyAs OxyMCs OxyA
248	64358	64377	TATTTTCTTCTT TCTGTACT	ASO-0317	OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAts DNAas OxyMCs OxyT
249	64756	64775	AGGGAAGGCA AAATCTACAT	ASO-0318	OxyAs OxyGs OxyGs DNAgs DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAas DNAas DNAas DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyT
250	64986	65003	ACAGAGAAGGT AATGCAT	ASO-0319	OxyAs OxyMCs OxyAs OxyGs DNAas DNAgs DNAas DNAas DNAgs DNAgs DNAts DNAas DNAas DNAts DNAgs OxyMCs OxyAs OxyT
251	65329	65348	TAAGTGTATTT	ASO-	OxyTs DNAas DNAas DNAgs DNAts DNAgs DNAts DNAas DNAts DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GTAGGGGCC	0320	DNAgs DNAts DNAas DNAgs DNAgs DNAgs DNAgs OxyMCs OxyMC
252	65338	65357	GCTATTAGGTA AGTGTATTT	ASO-0025	OxyGs OxyMCs OxyTs DNAas DNAts DNAts DNAas DNAgs DNAgs DNAts DNAas DNAas DNAgs DNAts DNAgs DNAts DNAas DNAts OxyTs OxyT
253	65831	65849	CCTTTACCTCA TTCAAAAC	ASO-0321	OxyMCs OxyMCs DNAts DNAts DNAts DNAas DNAcs DNAcs DNAts DNAcs DNAas DNAts DNAts DNAcs DNAas OxyAs OxyAs OxyAs OxyMC
254	65833	65849	CCTTTACCTCA TTCAAA	ASO-0322	OxyMCs OxyMCs DNAts DNAts DNAts DNAas DNAcs DNAcs DNAts DNAcs DNAas DNAts DNAts OxyMCs OxyAs OxyAs OxyA
255	66693	66712	AAGAGTAAGTA AAATAAAGA	ASO-0323	OxyAs OxyAs OxyGs OxyAs DNAgs DNAts DNAas DNAas DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAas OxyAs OxyAs OxyGs OxyA
256	66728	66744	CTTGGAATTTG TGGGAT	ASO-0324	OxyMCs OxyTs OxyTs OxyGs DNAgs DNAas DNAas DNAts DNAts DNAts DNAgs DNAts DNAgs DNAgs DNAgs OxyAs OxyT
257	66984	67001	GTTTATAGATT GATTCAT	ASO-0325	OxyGs OxyTs OxyTs OxyTs DNAas DNAts DNAas DNAgs DNAas DNAts DNAts DNAgs DNAas DNAts OxyTs OxyMCs OxyAs OxyT
258	67218	67236	AGTAATTTATAA GAACATT	ASO-0326	OxyAs OxyGs OxyTs OxyAs DNAas DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAgs DNAas DNAas OxyMCs OxyAs OxyTs OxyT
259	67545	67563	CAATGTGTTTA TGTTTTGA	ASO-0327	OxyMCs OxyAs OxyAs OxyTs DNAgs DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAgs DNAts DNAts DNAts OxyTs OxyGs OxyA
260	68059	68078	TTTCTAATTTTC ATGTCTAT	ASO-0328	OxyTs OxyTs OxyTs OxyMCs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAts DNAgs DNAts DNAcs OxyTs OxyAs OxyT
261	68336	68353	ATTGTTTCTCAT ATTCCC	ASO-0329	OxyAs DNAts DNAts DNAgs DNAts DNAts DNAts DNAcs DNAts DNAcs DNAas DNAts DNAas DNAts DNAts OxyMCs OxyMCs OxyMC
262	68408	68425	AAACATCAAGT AAAGGCA	ASO-0330	OxyAs OxyAs OxyAs OxyMCs DNAas DNAts DNAcs DNAas DNAas DNAgs DNAts DNAas DNAas DNAas OxyGs OxyGs OxyMCs OxyA
263	68767	68783	ATTCTGAGTAA GGGGTC	ASO-0331	OxyAs OxyTs OxyTs DNAcs DNAts DNAgs DNAas DNAgs DNAts DNAas DNAas DNAgs DNAgs DNAgs OxyGs OxyTs OxyMC
264	69068	69086	ATACATTTTACA TTATTCT	ASO-0332	OxyAs OxyTs OxyAs OxyMCs DNAas DNAts DNAts DNAts DNAts DNAas DNAcs DNAas DNAts DNAts DNAas OxyTs OxyTs OxyMCs OxyT
266	69608	69625	CTACATTAAAAT ATGGCC	ASO-0335	OxyMCs OxyTs OxyAs OxyMCs DNAas DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAas DNAts DNAgs OxyGs OxyMCs OxyMC
267	69781	69798	TTCATAAATTCC AGGTGC	ASO-0336	OxyTs OxyTs OxyMCs OxyAs DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAcs DNAas DNAgs DNAgs DNAts OxyGs OxyMC
268	69942	69960	TAGCAATACAT GAGAAGAA	ASO-0026	OxyTs OxyAs OxyGs OxyMCs DNAas DNAas DNAts DNAas DNAcs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas OxyGs OxyAs OxyA
269	70003	70020	ATTCTGTGTTG TGCTTTA	ASO-0337	OxyAs OxyTs OxyTs OxyMCs DNAts DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAts DNAgs DNAcs DNAts DNAts OxyTs OxyA
270	70130	70147	GAGTAAATGTT TCTGAAT	ASO-0338	OxyGs OxyAs OxyGs OxyTs DNAas DNAas DNAas DNAts DNAgs DNAts DNAts DNAts DNAcs DNAts OxyGs OxyAs OxyAs OxyT
271	70606	70623	TATATACTTTAG	ASO-	OxyTs OxyAs OxyTs OxyAs DNAts DNAas DNAcs DNAts DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATTACA	0339	DNAgs DNAas DNAts OxyTs OxyAs OxyMCs OxyA
272	71071	71090	CTGTATTTATTA GTTTCCAC	ASO-0340	OxyMCs OxyTs DNAgs DNAts DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs OxyMCs OxyAs OxyMC
273	71222	71239	TTCTTACTAATG TTGAAC	ASO-0341	OxyTs OxyTs OxyMCs OxyTs DNAts DNAas DNAcs DNAts DNAas DNAas DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyAs OxyMC
274	71370	71389	ATTATACATTTT ATTATTAT	ASO-0342	OxyAs OxyTs OxyTs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAas OxyTs OxyTs OxyAs OxyT
275	71872	71889	AGGTGACATAA GAGAACC	ASO-0343	OxyAs OxyGs OxyGs DNAts DNAgs DNAas DNAcs DNAas DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas OxyAs OxyMCs OxyMC
276	71912	71929	ACATTAAGTTT GAATACC	ASO-0344	OxyAs OxyMCs OxyAs OxyTs DNAts DNAas DNAas DNAgs DNAts DNAts DNAts DNAgs DNAas DNAas OxyTs OxyAs OxyMCs OxyMC
277	72300	72318	TTTTCTCTGGC TTAAATAT	ASO-0345	OxyTs OxyTs DNAts DNAts DNAcs DNAts DNAcs DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAas DNAas OxyAs OxyTs OxyAs OxyT
278	73019	73038	ATTAATATACAA AGAAGATG	ASO-0346	OxyAs OxyTs OxyTs OxyAs DNAas DNAts DNAas DNAts DNAas DNAcs DNAas DNAas DNAas DNAgs DNAas DNAas OxyGs OxyAs OxyTs OxyG
279	73024	73041	CAGATTAATAT ACAAAGA	ASO-0347	OxyMCs OxyAs OxyGs OxyAs DNAts DNAts DNAas DNAas DNAts DNAas DNAts DNAas DNAcs DNAas OxyAs OxyAs OxyGs OxyA
280	73605	73621	AAGCTTTAGTG GGAGGG	ASO-0348	OxyAs OxyAs OxyGs DNAcs DNAts DNAts DNAts DNAas DNAgs DNAts DNAgs DNAgs DNAgs DNAas DNAgs OxyGs OxyG
281	74353	74369	ACAAAGGGTAG TAATAT	ASO-0349	OxyAs OxyMCs OxyAs OxyAs DNAas DNAgs DNAgs DNAgs DNAts DNAas DNAgs DNAts DNAas OxyAs OxyTs OxyAs OxyT
282	74557	74574	CTTACATGTCA TTTTCTG	ASO-0350	OxyMCs OxyTs DNAts DNAas DNAcs DNAas DNAts DNAgs DNAts DNAcs DNAas DNAts DNAts DNAts DNAts OxyMCs OxyTs OxyG
283	75074	75093	TCTTATTTACAA TACAGGTA	ASO-0027	OxyTs OxyMCs OxyTs DNAts DNAas DNAts DNAts DNAts DNAas DNAcs DNAas DNAas DNAts DNAas DNAcs DNAas DNAgs OxyGs OxyTs OxyA
284	75414	75431	TCAAACATTTCT TTAGGA	ASO-0351	OxyTs OxyMCs OxyAs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAas OxyGs OxyGs OxyA
285	75419	75438	TAATAATTCAAA CATTTCTT	ASO-0352	OxyTs OxyAs OxyAs OxyTs DNAas DNAas DNAts DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAts DNAts OxyTs OxyMCs OxyTs OxyT
286	75815	75833	GAATAATGAAT AAATGCCA	ASO-0353	OxyGs OxyAs OxyAs OxyTs DNAas DNAas DNAts DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts OxyGs OxyMCs OxyMCs OxyA
304	76173	76189	TATTGTGGAGT ATGGAA	ASO-0388	OxyTs OxyAs OxyTs OxyTs DNAgs DNAts DNAgs DNAgs DNAas DNAgs DNAts DNAas DNAts OxyGs OxyGs OxyAs OxyA
305	76334	76351	GAAAGGTAATA AATTAGG	ASO-0389	OxyGs OxyAs OxyAs OxyAs DNAgs DNAgs DNAts DNAas DNAas DNAts DNAas DNAas DNAas DNAts OxyTs OxyAs OxyGs OxyG
306	77425	77443	TGGAAGGTAAA TGACTGAA	ASO-0390	OxyTs OxyGs OxyGs DNAas DNAas DNAgs DNAgs DNAts DNAas DNAas DNAas DNAts DNAgs DNAas DNAcs OxyTs OxyGs OxyAs OxyA
307	77701	77720	ATGAAAATTGT	ASO-	OxyAs OxyTs OxyGs OxyAs DNAas DNAas DNAas DNAts DNAts DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATCTGTAAA	0391	DNAas DNAts DNAcs DNAts DNAgs OxyTs OxyAs OxyAs OxyA
308	77709	77726	AAGCTAATGAA AATTGTA	ASO-0392	OxyAs OxyAs OxyGs OxyMCs DNAts DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAas DNAts OxyTs OxyGs OxyTs OxyA
309	78259	78278	AAGGAATAGCA TGATTAACA	ASO-0393	OxyAs OxyAs OxyGs OxyGs DNAas DNAas DNAts DNAas DNAgs DNAcs DNAas DNAts DNAgs DNAas DNAts DNAts OxyAs OxyAs OxyMCs OxyA
310	78542	78558	TGGCTGAGAG GTGAATC	ASO-0394	OxyTs OxyGs OxyGs DNAcs DNAts DNAgs DNAas DNAgs DNAas DNAgs DNAgs DNAts DNAgs DNAas DNAas OxyTs OxyMC
311	78838	78855	TCTAAATTAAA GTGAAGA	ASO-0395	OxyTs OxyMCs OxyTs OxyAs DNAas DNAas DNAts DNAts DNAas DNAas DNAas DNAgs DNAts DNAgs OxyAs OxyAs OxyGs OxyA
312	79088	79107	TGAAGTCAAAA TTAGTCATC	ASO-0028	OxyTs OxyGs OxyAs DNAas DNAgs DNAts DNAcs DNAas DNAas DNAas DNAas DNAts DNAts DNAas DNAgs DNAts OxyMCs OxyAs OxyTs OxyMC
313	79090	79107	TGAAGTCAAAA TTAGTCA	ASO-0396	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAcs DNAas DNAas DNAas DNAas DNAts DNAts DNAas OxyGs OxyTs OxyMCs OxyA
314	79400	79417	ATTTACTTCAGT ACCATT	ASO-0397	OxyAs OxyTs OxyTs OxyTs DNAas DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAts DNAas DNAcs OxyMCs OxyAs OxyTs OxyT
315	81257	81273	GCTGCTTTGAT AGATGA	ASO-0398	OxyGs DNAcs DNAts DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAas DNAts DNAas DNAgs OxyAs OxyTs OxyGs OxyA
316	81553	81570	GTGCTGGGGT CTTAACTT	ASO-0399	OxyGs DNAts DNAgs DNAcs DNAts DNAgs DNAgs DNAgs DNAgs DNAts DNAcs DNAts DNAts DNAas DNAas DNAcs OxyTs OxyT
317	81771	81787	TATTTAAGTTCT TGTCA	ASO-0400	OxyTs OxyAs OxyTs OxyTs DNAts DNAas DNAas DNAgs DNAts DNAts DNAcs DNAts DNAts OxyGs OxyTs OxyMCs OxyA
318	82146	82165	ACTTCATAGTA GGTGTCAGA	ASO-0401	OxyAs DNAcs DNAts DNAts DNAcs DNAas DNAts DNAas DNAgs DNAts DNAas DNAgs DNAgs DNAts DNAgs DNAts DNAcs DNAas OxyGs OxyA
319	82479	82498	TTAATTCTTCCC TAGATGTC	ASO-0402	OxyTs DNAts DNAas DNAas DNAts DNAts DNAcs DNAts DNAts DNAcs DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAts DNAgs OxyTs OxyMC
320	82701	82720	AAGGTTGTTAA TGCTAAAGA	ASO-0403	OxyAs OxyAs OxyGs DNAgs DNAts DNAts DNAgs DNAts DNAts DNAas DNAas DNAts DNAgs DNAcs DNAts DNAas OxyAs OxyAs OxyGs OxyA
321	82880	82897	TAATACTTTATG TAATAG	ASO-0404	OxyTs OxyAs OxyAs OxyTs DNAas DNAcs DNAts DNAts DNAts DNAas DNAts DNAgs DNAts DNAas OxyAs OxyTs OxyAs OxyG
322	83174	83190	ATTCTTAAAGG TCTAAG	ASO-0405	OxyAs OxyTs OxyTs OxyMCs DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAts DNAcs OxyTs OxyAs OxyAs OxyG
323	83423	83441	TAGTTGACACA TATTATAA	ASO-0029	OxyTs OxyAs OxyGs OxyTs DNAts DNAgs DNAas DNAcs DNAas DNAcs DNAas DNAts DNAas DNAts DNAts OxyAs OxyTs OxyAs OxyA
324	83475	83491	GTGATTTTATA GTTGGT	ASO-0406	OxyGs OxyTs OxyGs OxyAs DNAts DNAts DNAts DNAts DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs OxyGs OxyT
325	83877	83895	GAATATTTTATA ATTTGAT	ASO-0407	OxyGs OxyAs OxyAs OxyTs DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAts DNAts OxyTs OxyGs OxyAs OxyT
326	84066	84083	TACATATAAATC	ASO-	OxyTs OxyAs OxyMCs OxyAs DNAts DNAas DNAts DNAas DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TAAAGG	0408	DNAts DNAcs DNAts DNAas OxyAs OxyAs OxyGs OxyG
327	84562	84581	TTTGTTTCACC ATTTTATAC	ASO-0409	OxyTs OxyTs OxyTs DNAgs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyTs OxyAs OxyMC
328	84563	84581	TTTGTTTCACC ATTTTATA	ASO-0410	OxyTs OxyTs OxyTs OxyGs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyTs OxyA
329	84941	84960	CTATGTCAATTT AATTCTTA	ASO-0411	OxyMCs OxyTs OxyAs DNAts DNAgs DNAts DNAcs DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAts OxyMCs OxyTs OxyTs OxyA
330	85428	85447	TTATTTACTTTG CTCCACAC	ASO-0412	OxyTs OxyTs DNAas DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAts DNAgs DNAcs DNAts DNAcs DNAcs DNAas DNAcs OxyAs OxyMC
331	85432	85449	CTTTATTTACTT TGCTCC	ASO-0413	OxyMCs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAts DNAgs DNAcs OxyTs OxyMCs OxyMC
332	86205	86223	AGTCAGAGAGG TAAAATTC	ASO-0414	OxyAs OxyGs OxyTs OxyMCs DNAas DNAgs DNAas DNAgs DNAas DNAgs DNAgs DNAts DNAas DNAas DNAas OxyAs OxyTs OxyTs OxyMC
333	86473	86490	GAATGATAAAA GTTTACA	ASO-0415	OxyGs OxyAs OxyAs OxyTs DNAgs DNAas DNAts DNAas DNAas DNAas DNAas DNAgs DNAts DNAts OxyTs OxyAs OxyMCs OxyA
334	86476	86495	ATGGAGAATGA TAAAAGTTT	ASO-0030	OxyAs OxyTs OxyGs OxyGs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAts DNAas DNAas DNAas DNAas OxyGs OxyTs OxyTs OxyT
335	86477	86494	TGGAGAATGAT AAAAGTT	ASO-0416	OxyTs OxyGs OxyGs OxyAs DNAgs DNAas DNAas DNAts DNAgs DNAas DNAts DNAas DNAas DNAas OxyAs OxyGs OxyTs OxyT
336	87943	87959	CTAGATGGTTA GAATTC	ASO-0417	OxyMCs OxyTs OxyAs OxyGs DNAas DNAts DNAgs DNAgs DNAts DNAts DNAas DNAgs DNAas OxyAs OxyTs OxyTs OxyMC
337	89252	89271	ATATATTTTAAT TCTATTAA	ASO-0418	OxyAs OxyTs OxyAs OxyTs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAts DNAas OxyTs OxyTs OxyAs OxyA
338	89426	89442	TAGCTGTTTTG GAAGAT	ASO-0419	OxyTs OxyAs OxyGs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAas DNAas DNAgs OxyAs OxyT
339	89534	89550	AGTTTGAGATA CTATGT	ASO-0420	OxyAs OxyGs OxyTs OxyTs DNAts DNAgs DNAas DNAgs DNAas DNAts DNAas DNAcs DNAts OxyAs OxyTs OxyGs OxyT
340	89977	89994	TTCACTTTTGA GTTTAAT	ASO-0421	OxyTs OxyTs OxyMCs OxyAs DNAcs DNAts DNAts DNAts DNAts DNAgs DNAas DNAgs DNAts DNAts OxyTs OxyAs OxyAs OxyT
341	90288	90305	TAGTTTAGGTT TAATAAA	ASO-0422	OxyTs OxyAs OxyGs OxyTs DNAts DNAts DNAas DNAgs DNAgs DNAts DNAts DNAts DNAas DNAas OxyTs OxyAs OxyAs OxyA
342	90666	90684	ATTTAGAAGAA TAAAGGGA	ASO-0423	OxyAs OxyTs OxyTs OxyTs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas DNAts DNAas DNAas DNAas OxyGs OxyGs OxyGs OxyA
343	90891	90907	CACTTACTTCA GGGATT	ASO-0424	OxyMCs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAgs DNAgs OxyAs OxyTs OxyT
344	91334	91350	CTTAGATGTAA TTTTGC	ASO-0425	OxyMCs OxyTs OxyTs OxyAs DNAgs DNAas DNAts DNAgs DNAts DNAas DNAas DNAts DNAts OxyTs OxyTs OxyGs OxyMC
345	91479	91496	AATTTGTCTATA	ASO-	OxyAs OxyAs OxyTs OxyTs DNAts DNAgs DNAts DNAcs DNAts DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TCTTTA	0426	DNAas DNAts DNAcs OxyTs OxyTs OxyTs OxyA
346	91524	91540	TATAAGGATATTAGTTG	ASO-0427	OxyTs OxyAs OxyTs OxyAs DNAas DNAgs DNAgs DNAas DNAts DNAas DNAts DNAts DNAas OxyGs OxyTs OxyTs OxyG
347	92407	92424	TGGTGGACTGTAGATTTC	ASO-0428	OxyTs OxyGs DNAgs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAgs DNAts DNAas DNAgs DNAas DNAts OxyTs OxyTs OxyMC
348	92646	92663	GTTTATTTAATGTCTGAT	ASO-0429	OxyGs OxyTs OxyTs OxyTs DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAgs DNAts DNAcs OxyTs OxyGs OxyAs OxyT
349	92967	92984	GCTGCTGTATAATATATT	ASO-0430	OxyGs OxyMCs OxyTs OxyGs DNAcs DNAts DNAgs DNAts DNAas DNAts DNAas DNAas DNAts DNAas DNAts DNAas OxyTs OxyT
350	92982	93000	AATTGTTTAAGAGGGAGCT	ASO-0031	OxyAs DNAas DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAgs DNAgs OxyAs OxyGs OxyMCs OxyT
351	93112	93128	TTATTTGTCTGAGTGTA	ASO-0431	OxyTs OxyTs OxyAs OxyTs DNAts DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAas DNAgs DNAts DNAgs OxyTs OxyA
352	93636	93655	ACACACTGTAAGAGACAAGC	ASO-0432	OxyAs DNAcs DNAas DNAcs DNAas DNAcs DNAts DNAgs DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAcs OxyAs OxyAs OxyGs OxyMC
353	93638	93655	ACACACTGTAAGAGACAA	ASO-0433	OxyAs OxyMCs OxyAs OxyMCs DNAas DNAcs DNAts DNAgs DNAts DNAas DNAas DNAgs DNAas DNAgs OxyAs OxyMCs OxyAs OxyA
354	94310	94328	TTAAGTAGGTCACATTTAA	ASO-0434	OxyTs OxyTs OxyAs OxyAs DNAgs DNAts DNAas DNAgs DNAgs DNAts DNAcs DNAas DNAcs DNAas DNAts OxyTs OxyTs OxyAs OxyA
355	94313	94330	ATTTAAGTAGGTCACATT	ASO-0435	OxyAs OxyTs OxyTs OxyTs DNAas DNAas DNAgs DNAts DNAas DNAgs DNAgs DNAts DNAcs DNAas OxyMCs OxyAs OxyTs OxyT
356	95510	95529	ATTAGCATTAATTATTACTC	ASO-0436	OxyAs OxyTs OxyTs OxyAs DNAgs DNAcs DNAas DNAts DNAts DNAas DNAas DNAts DNAts DNAas DNAts DNAts OxyAs OxyMCs OxyTs OxyMC
357	95516	95535	CTCATTATTAGCATTAATTA	ASO-0437	OxyMCs OxyTs OxyMCs OxyAs DNAts DNAts DNAas DNAts DNAts DNAas DNAgs DNAcs DNAas DNAts DNAts DNAas OxyAs OxyTs OxyTs OxyA
358	95891	95908	ATGAGGTGGAAAATGTGA	ASO-0438	OxyAs OxyTs OxyGs DNAas DNAgs DNAgs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAas DNAts OxyGs OxyTs OxyGs OxyA
359	96245	96264	TTATCATTTAATATTTATTA	ASO-0439	OxyTs OxyTs OxyAs OxyTs DNAcs DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAas DNAts DNAts DNAts OxyAs OxyTs OxyTs OxyA
360	96525	96544	GTGAGGAGTGATTAAATACC	ASO-0440	OxyGs OxyTs OxyGs DNAas DNAgs DNAgs DNAas DNAgs DNAts DNAgs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAas OxyMCs OxyMC
361	96798	96817	GACTTTATAACAATAGTACT	ASO-0441	OxyGs OxyAs OxyMCs DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAcs DNAas DNAas DNAts DNAas DNAgs OxyTs OxyAs OxyMCs OxyT
362	97132	97151	GCATCTTAGAATTTGTCTGC	ASO-0442	OxyGs DNAcs DNAas DNAts DNAcs DNAts DNAts DNAas DNAgs DNAas DNAas DNAts DNAts DNAts DNAgs DNAts DNAcs DNAts OxyGs OxyMC
363	97133	97151	GCATCTTAGAATTTGTCTG	ASO-0032	OxyGs OxyMCs OxyAs DNAts DNAcs DNAts DNAts DNAas DNAgs DNAas DNAas DNAts DNAts DNAts DNAgs DNAts DNAcs OxyTs OxyG
364	97147	97163	AGGATTATTAG	ASO-	OxyAs OxyGs DNAgs DNAas DNAts DNAts DNAas DNAts DNAts DNAas DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GGCATC	0443	DNAgs DNAgs OxyMCs OxyAs OxyTs OxyMC
365	97969	97988	ATGTTTAAAGA GGTGACTGA	ASO-0444	OxyAs OxyTs OxyGs DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAas DNAgs DNAgs DNAts DNAgs DNAas DNAcs OxyTs OxyGs OxyA
366	98248	98264	GTTATGGAGAC AGGGAT	ASO-0445	OxyGs DNAts DNAts DNAas DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAcs DNAas DNAgs OxyGs OxyGs OxyAs OxyT
367	98254	98271	GAATTTTGTTAT GGAGAC	ASO-0446	OxyGs OxyAs OxyAs OxyTs DNAts DNAts DNAts DNAgs DNAts DNAts DNAas DNAts DNAgs DNAgs OxyAs OxyGs OxyAs OxyMC
368	98912	98931	AGTGTCTTAAT AAATCAGCC	ASO-0447	OxyAs OxyGs DNAts DNAgs DNAts DNAcs DNAts DNAts DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAcs DNAas DNAgs OxyMCs OxyMC
369	99114	99131	TTTGGAAATAG TTTTGAC	ASO-0448	OxyTs OxyTs OxyTs OxyGs DNAgs DNAas DNAas DNAas DNAts DNAas DNAgs DNAts DNAts DNAts OxyTs OxyGs OxyAs OxyMC
370	99504	99522	AATATTCTTCTT TGATTTT	ASO-0449	OxyAs OxyAs OxyTs OxyAs DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAas OxyTs OxyTs OxyTs OxyT
371	99506	99524	TTAATATTCTTC TTTGATT	ASO-0450	OxyTs OxyTs OxyAs OxyAs DNAts DNAas DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAts DNAts OxyGs OxyAs OxyTs OxyT
372	99980	99996	TAGTTCAACAA TCTAAT	ASO-0451	OxyTs OxyAs OxyGs OxyTs DNAts DNAcs DNAas DNAas DNAcs DNAas DNAas DNAts DNAcs OxyTs OxyAs OxyAs OxyT
373	100155	100173	TTTCTAGTTTCT GATGATC	ASO-0452	OxyTs OxyTs OxyTs DNAcs DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAts OxyGs OxyAs OxyTs OxyMC
374	100155	100174	CTTTCTAGTTTC TGATGATC	ASO-0453	OxyMCs DNAts DNAts DNAts DNAcs DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAts DNAgs OxyAs OxyTs OxyMC
375	100156	100173	TTTCTAGTTTCT GATGAT	ASO-0454	OxyTs OxyTs OxyTs DNAcs DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas OxyTs OxyGs OxyAs OxyT
376	100156	100174	CTTTCTAGTTTC TGATGAT	ASO-0455	OxyMCs OxyTs OxyTs OxyTs DNAcs DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAts DNAgs OxyAs OxyT
377	100156	100175	TCTTTCTAGTTT CTGATGAT	ASO-0456	OxyTs OxyMCs DNAts DNAts DNAts DNAcs DNAts DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAts DNAgs OxyAs OxyT
378	100207	100223	GTTCTCACCAA TATTAG	ASO-0457	OxyGs OxyTs OxyTs OxyMCs DNAts DNAcs DNAas DNAcs DNAcs DNAas DNAas DNAts DNAas DNAts OxyTs OxyAs OxyG
379	100299	100317	AAAGTTATAAAT ATTCTAG	ASO-0458	OxyAs OxyAs OxyAs OxyGs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAas DNAts DNAts OxyMCs OxyTs OxyAs OxyG
380	100520	100538	TATTTATTCTTT AAATTAC	ASO-0459	OxyTs OxyAs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAas OxyTs OxyTs OxyAs OxyMC
381	100773	100789	TGAGACCTTAT ATTATT	ASO-0460	OxyTs OxyGs OxyAs OxyGs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAas DNAts OxyTs OxyAs OxyTs OxyT
382	101632	101649	GTTTCTTATATT CATCAC	ASO-0461	OxyGs OxyTs OxyTs DNAts DNAcs DNAts DNAts DNAas DNAts DNAas DNAts DNAts DNAcs DNAas OxyTs OxyMCs OxyAs OxyMC
383	101749	101767	AACAATAAAATT	ASO-	OxyAs OxyAs OxyMCs OxyAs DNAas DNAts DNAas DNAas DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GAGGGAG	0462	DNAts DNAts DNAgs DNAas DNAgs OxyGs OxyGs OxyAs OxyG
384	101988	102007	GAATGATATAG GTGAATTTG	ASO-0033	OxyGs OxyAs OxyAs OxyTs DNAgs DNAas DNAts DNAas DNAts DNAas DNAgs DNAgs DNAts DNAgs DNAas DNAas OxyTs OxyTs OxyTs OxyG
436	102094	102111	CAGAGTTGTTT TGTTCTC	ASO-0565	OxyMCs OxyAs DNAgs DNAas DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAts DNAgs DNAts DNAts OxyMCs OxyTs OxyMC
437	102432	102448	AGGTTATCAGT GTGGGC	ASO-0566	OxyAs DNAgs DNAgs DNAts DNAts DNAas DNAts DNAcs DNAas DNAgs DNAts DNAgs DNAts DNAgs DNAgs OxyGs OxyMC
438	102681	102700	AACAAATAACA ACTTTCTGC	ASO-0567	OxyAs OxyAs OxyMCs DNAas DNAas DNAas DNAts DNAas DNAas DNAcs DNAas DNAas DNAcs DNAts DNAts DNAts OxyMCs OxyTs OxyGs OxyMC
439	102859	102875	TTTATAAGTTTA GTCTG	ASO-0568	OxyTs OxyTs OxyTs OxyAs DNAts DNAas DNAas DNAgs DNAts DNAts DNAts DNAas DNAgs OxyTs OxyMCs OxyTs OxyG
440	103247	103266	ATATTGGTCTG TTTTGTTCC	ASO-0569	OxyAs DNAts DNAas DNAts DNAts DNAgs DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAts DNAts DNAts DNAgs DNAts DNAts OxyMCs OxyMC
441	103690	103708	AAATCGTTCTTT ACATGAA	ASO-0570	OxyAs OxyAs OxyAs OxyTs DNAmcs DNAgs DNAts DNAts DNAcs DNAts DNAts DNAts DNAas DNAcs DNAas OxyTs OxyGs OxyAs OxyA
442	103692	103711	TTAAAATCGTT CTTTACATG	ASO-0034	OxyTs OxyTs OxyAs OxyAs DNAas DNAas DNAts DNAmcs DNAgs DNAts DNAts DNAcs DNAts DNAts DNAts DNAas OxyMCs OxyAs OxyTs OxyG
443	103695	103712	TTTAAAATCGTT CTTTAC	ASO-0571	OxyTs OxyTs OxyTs OxyAs DNAas DNAas DNAas DNAts DNAmcs DNAgs DNAts DNAts DNAcs DNAts OxyTs OxyTs OxyAs OxyMC
444	104211	104228	AGTTGGTTTAA AATGTGT	ASO-0572	OxyAs OxyGs OxyTs OxyTs DNAgs DNAgs DNAts DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAgs OxyTs OxyGs OxyT
445	104304	104321	TTCCAAATTTTC CACTAA	ASO-0573	OxyTs OxyTs OxyMCs DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAts DNAcs DNAcs DNAas OxyMCs OxyTs OxyAs OxyA
446	104608	104625	ATTATTATGGT GTTTTGT	ASO-0574	OxyAs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts OxyTs OxyTs OxyGs OxyT
447	112262	112280	GCATACATAAT TATTTGTC	ASO-0575	OxyGs OxyMCs OxyAs OxyTs DNAas DNAcs DNAas DNAts DNAas DNAas DNAts DNAts DNAas DNAts DNAts DNAts OxyGs OxyTs OxyMC
448	112263	112282	TTGCATACATA ATTATTTGT	ASO-0035	OxyTs OxyTs OxyGs DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAas DNAas DNAts DNAts DNAas DNAts OxyTs OxyTs OxyGs OxyT
449	112345	112361	ATTCTTAGCTT GTATGT	ASO-0576	OxyAs OxyTs OxyTs OxyMCs DNAts DNAts DNAas DNAgs DNAcs DNAts DNAts DNAgs DNAts DNAas DNAts OxyGs OxyT
450	112542	112559	TTATTCTCAATC AACTTT	ASO-0577	OxyTs OxyTs OxyAs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAas DNAts DNAcs DNAas DNAas OxyMCs OxyTs OxyTs OxyT
451	113328	113344	CTTTAGTGGAC AGAATG	ASO-0578	OxyMCs OxyTs OxyTs DNAts DNAas DNAgs DNAts DNAgs DNAgs DNAas DNAcs DNAas DNAgs OxyAs OxyAs OxyTs OxyG
452	113553	113570	TCATCATTCTG TCTATGG	ASO-0579	OxyTs OxyMCs OxyAs DNAts DNAcs DNAas DNAts DNAts DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAas DNAts OxyGs OxyG
453	113769	113786	GTTGGATTATT	ASO-	OxyGs OxyTs OxyTs OxyGs DNAgs DNAas DNAts DNAts DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATTGTAA	0580	DNAas DNAts DNAts OxyGs OxyTs OxyAs OxyA
454	114111	114127	GACCAGAAGAT GTAATT	ASO-0581	OxyGs OxyAs OxyMCs OxyMCs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAts DNAgs DNAts OxyAs OxyAs OxyTs OxyT
455	114576	114594	AAGCAGTTTAT TTTCTTTA	ASO-0582	OxyAs OxyAs OxyGs OxyMCs DNAas DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAts OxyTs OxyTs OxyA
456	114692	114710	TAGATTTATAA GGATTGTA	ASO-0036	OxyTs OxyAs OxyGs OxyAs DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAgs DNAgs DNAas DNAts DNAts OxyGs OxyTs OxyA
457	114694	114710	TAGATTTATAA GGATTG	ASO-0583	OxyTs OxyAs OxyGs OxyAs DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAgs DNAgs OxyAs OxyTs OxyTs OxyG
458	115587	115606	AGGTACAATAA TAAACAAGA	ASO-0584	OxyAs OxyGs OxyGs OxyTs DNAas DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAas DNAas DNAas DNAcs OxyAs OxyAs OxyGs OxyA
459	115589	115606	AGGTACAATAA TAAACAA	ASO-0585	OxyAs OxyGs OxyGs OxyTs DNAas DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAas DNAas OxyAs OxyMCs OxyAs OxyA
460	115944	115960	AGATGTTAAGG AAGGTC	ASO-0586	OxyAs OxyGs OxyAs OxyTs DNAgs DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas DNAas DNAgs OxyGs OxyTs OxyMC
461	116188	116206	AATCCATGACA TTTATTGA	ASO-0587	OxyAs OxyAs OxyTs OxyMCs DNAcs DNAas DNAts DNAgs DNAas DNAcs DNAas DNAts DNAts DNAts DNAas OxyTs OxyTs OxyGs OxyA
462	116499	116516	ATGAAGTTTCT GTGGCTG	ASO-0588	OxyAs OxyTs DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAts DNAgs DNAgs DNAcs OxyTs OxyG
463	116502	116519	TTTATGAAGTTT CTGTGG	ASO-0589	OxyTs OxyTs OxyTs DNAas DNAts DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAgs OxyTs OxyGs OxyG
464	117064	117079	GCATTAGGGAG TTCAG	ASO-0590	OxyGs OxyMCs OxyAs OxyTs DNAts DNAas DNAgs DNAgs DNAgs DNAas DNAgs DNAts DNAts DNAcs OxyAs OxyG
465	117269	117285	CATTAGACCTA GAATTG	ASO-0591	OxyMCs OxyAs OxyTs OxyTs DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas OxyAs OxyTs OxyTs OxyG
466	117601	117618	AAGTTTAAAAG TAAGAGC	ASO-0592	OxyAs OxyAs OxyGs OxyTs DNAts DNAts DNAas DNAas DNAas DNAas DNAgs DNAts DNAas DNAas OxyGs OxyAs OxyGs OxyMC
467	117904	117921	GTCTTATATTAC ATCAAA	ASO-0593	OxyGs OxyTs OxyMCs OxyTs DNAts DNAas DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyAs OxyA
468	119540	119556	AATTGAGGGAC AGGTAG	ASO-0594	OxyAs OxyAs DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAgs DNAas DNAcs DNAas DNAgs OxyGs OxyTs OxyAs OxyG
469	119776	119795	AATCTGCCATT TTATCAAGG	ASO-0595	OxyAs OxyAs DNAts DNAcs DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAcs DNAas OxyAs OxyGs OxyG
470	119780	119799	CAAGAATCTGC CATTTTATC	ASO-0037	OxyMCs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAcs DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyTs OxyMC
471	119782	119799	CAAGAATCTGC CATTTTA	ASO-0596	OxyMCs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAcs DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts OxyTs OxyA
472	120301	120317	TTACTGGGAAT	ASO-	OxyTs OxyTs OxyAs OxyMCs DNAts DNAgs DNAgs DNAgs DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTAGTT	0597	DNAts DNAts DNAts OxyAs OxyGs OxyTs OxyT
473	120625	120644	ACCCTTCATAA ACTAAGCAA	ASO-0598	OxyAs OxyMCs OxyMCs DNAcs DNAts DNAts DNAcs DNAas DNAts DNAas DNAas DNAas DNAcs DNAts DNAas DNAas DNAgs DNAcs OxyAs OxyA
474	121026	121044	TAACTTTCATAA TTTGGAG	ASO-0599	OxyTs OxyAs OxyAs OxyMCs DNAts DNAts DNAts DNAcs DNAas DNAts DNAas DNAas DNAts DNAts DNAts OxyGs OxyGs OxyAs OxyG
475	121116	121133	GAAAATTACTT ACATAGC	ASO-0600	OxyGs OxyAs OxyAs OxyAs DNAas DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas OxyTs OxyAs OxyGs OxyMC
476	121516	121535	AGAAAATACTT ATGTTACAA	ASO-0601	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAts DNAas DNAcs DNAts DNAts DNAas DNAts DNAgs DNAts DNAts OxyAs OxyMCs OxyAs OxyA
477	121875	121892	TAAGTTGGCAA GGGAAGG	ASO-0602	OxyTs DNAas DNAas DNAgs DNAts DNAts DNAgs DNAgs DNAcs DNAas DNAas DNAgs DNAgs DNAgs OxyAs OxyAs OxyGs OxyG
478	122048	122065	GAGGATTTTGA GGAGAGT	ASO-0603	OxyGs OxyAs DNAgs DNAgs DNAas DNAts DNAts DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAgs OxyAs OxyGs OxyT
479	122626	122644	TAGTAAATTGT GAAAGCAG	ASO-0604	OxyTs OxyAs OxyGs OxyTs DNAas DNAas DNAas DNAts DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAgs OxyMCs OxyAs OxyG
480	122628	122644	TAGTAAATTGT GAAAGC	ASO-0605	OxyTs OxyAs OxyGs OxyTs DNAas DNAas DNAas DNAts DNAts DNAgs DNAts DNAgs DNAas OxyAs OxyAs OxyGs OxyMC
481	123356	123373	AGGTAGAATGC AGTTGGA	ASO-0606	OxyAs OxyGs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAts DNAgs DNAcs DNAas DNAgs DNAts DNAts DNAgs OxyGs OxyA
482	123540	123557	GTTTGGAGAAT ATGAGCC	ASO-0038	OxyTs OxyTs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAas DNAts DNAgs OxyAs OxyGs OxyMCs OxyMC
483	123540	123556	TTTGGAGAATA TGAGCC	ASO-0607	OxyGs DNAts DNAts DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAas DNAts DNAgs DNAas OxyGs OxyMCs OxyMC
484	123596	123614	GAGAGAGAAAA TTTGAGAG	ASO-0608	OxyGs OxyAs OxyGs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAgs DNAas OxyGs OxyAs OxyG
485	124333	124351	TTTGTTTTGGTT TGGGCAC	ASO-0609	OxyTs OxyTs DNAts DNAgs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAcs OxyAs OxyMC
486	124393	124411	CCTGTGGTTTC ATTTGTAT	ASO-0610	OxyMCs DNAcs DNAts DNAgs DNAts DNAgs DNAgs DNAts DNAts DNAts DNAcs DNAas DNAts DNAts DNAts DNAgs DNAts OxyAs OxyT
487	124655	124673	AAGATTTGCTA AATGGATG	ASO-0611	OxyAs OxyAs OxyGs OxyAs DNAts DNAts DNAts DNAgs DNAcs DNAts DNAas DNAas DNAas DNAts DNAgs OxyGs OxyAs OxyTs OxyG
488	124782	124800	TTTATTTGTTTA TTCACAG	ASO-0612	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAcs OxyAs OxyMCs OxyAs OxyG
489	125313	125331	TCAAGGTACAG GCAAATTT	ASO-0613	OxyTs OxyMCs OxyAs OxyAs DNAgs DNAgs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAcs DNAas DNAas DNAas OxyTs OxyTs OxyT
490	125420	125438	TCCTATCCTTA ATAATCTA	ASO-0614	OxyTs OxyMCs DNAcs DNAts DNAas DNAts DNAcs DNAcs DNAts DNAts DNAas DNAas DNAts DNAas DNAas DNAts OxyMCs OxyTs OxyA
491	125906	125924	CTGATTTTATAT	ASO-	OxyMCs OxyTs OxyGs OxyAs DNAts DNAts DNAts DNAts DNAas DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TCCCAAC	0615	DNAts DNAts DNAcs DNAcs DNAcs DNAas OxyAs OxyMC
492	126160	126177	TTGGTTTTAAT GGGTAAT	ASO-0616	OxyTs OxyTs OxyGs OxyGs DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAgs DNAgs DNAgs OxyTs OxyAs OxyAs OxyT
493	126189	126205	TGCTTATGCTT TCTAGT	ASO-0617	OxyTs OxyGs DNAcs DNAts DNAts DNAas DNAts DNAgs DNAcs DNAts DNAts DNAts DNAcs DNAts DNAas OxyGs OxyT
494	126773	126792	TACAATCTGAC CTATGAGAA	ASO-0618	OxyTs OxyAs OxyMCs DNAas DNAas DNAts DNAcs DNAts DNAgs DNAas DNAcs DNAcs DNAts DNAas DNAts DNAgs DNAas OxyGs OxyAs OxyA
495	127216	127233	CATCTATTTCTT GGGCAT	ASO-0619	OxyMCs OxyAs DNAts DNAcs DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs DNAgs DNAgs OxyMCs OxyAs OxyT
496	127432	127449	AATTTAATGAG GAGAGGG	ASO-0620	OxyAs OxyAs OxyTs OxyTs DNAts DNAas DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAgs OxyAs OxyGs OxyGs OxyG
497	127633	127651	TAGGTTCTGAC ATATTTAT	ASO-0621	OxyTs OxyAs OxyGs DNAgs DNAts DNAts DNAcs DNAts DNAgs DNAas DNAcs DNAas DNAts DNAas DNAts DNAts OxyTs OxyAs OxyT
498	127916	127933	GAGAATGTCTT TACTTGC	ASO-0622	OxyGs OxyAs OxyGs DNAas DNAas DNAts DNAgs DNAts DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts OxyGs OxyMC
499	128404	128423	AAGCTGCATTC ATAGAGATC	ASO-0623	OxyAs OxyAs DNAgs DNAcs DNAts DNAgs DNAcs DNAas DNAts DNAts DNAcs DNAas DNAts DNAas DNAgs DNAas DNAgs OxyAs OxyTs OxyMC
500	128557	128576	ATTAATATTTTC AAAGGACA	ASO-0624	OxyAs OxyTs OxyTs OxyAs DNAas DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAas DNAas DNAgs OxyGs OxyAs OxyMCs OxyA
501	128559	128578	GTATTAATATTT TCAAAGGA	ASO-0039	OxyGs OxyTs OxyAs DNAts DNAts DNAas DNAas DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAas OxyAs OxyGs OxyGs OxyA
502	128829	128847	TATATTAGAAAA TTTGCAA	ASO-0625	OxyTs OxyAs OxyTs OxyAs DNAts DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAts DNAts DNAts OxyGs OxyMCs OxyAs OxyA
503	129156	129173	TGGTTTCAAAG TCTATAG	ASO-0626	OxyTs OxyGs OxyGs OxyTs DNAts DNAts DNAcs DNAas DNAas DNAas DNAgs DNAts DNAcs DNAts DNAas DNAts OxyAs OxyG
504	129384	129402	GTGTGTGTATT ATTTGATT	ASO-0627	OxyGs OxyTs OxyGs OxyTs DNAgs DNAts DNAgs DNAts DNAas DNAts DNAts DNAas DNAts DNAts DNAts DNAgs DNAas OxyTs OxyT
505	129928	129944	GAAACAGTATT ATGTAG	ASO-0628	OxyGs OxyAs OxyAs OxyAs DNAcs DNAas DNAgs DNAts DNAas DNAts DNAts DNAas DNAts OxyGs OxyTs OxyAs OxyG
506	129929	129946	TTGAAACAGTA TTATGTA	ASO-0629	OxyTs OxyTs OxyGs OxyAs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAas DNAts DNAts DNAas OxyTs OxyGs OxyTs OxyA
507	130403	130419	TAGTGATTTTG TGAGTT	ASO-0630	OxyTs OxyAs OxyGs DNAts DNAgs DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs OxyAs OxyGs OxyTs OxyT
508	130404	130420	CTAGTGATTTT GTGAGT	ASO-0631	OxyMCs OxyTs OxyAs DNAgs DNAts DNAgs DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs OxyAs OxyGs OxyT
509	130875	130892	AGAAAACAATT ACAATCC	ASO-0632	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAcs DNAas DNAas DNAts DNAts DNAas DNAcs DNAas OxyAs OxyTs OxyMCs OxyMC
510	131610	131629	TTTCTACTTTGT	ASO-	OxyTs OxyTs OxyTs OxyMCs DNAts DNAas DNAcs DNAts DNAts DNAts DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TCATTCAT	0633	DNAts DNAts DNAcs DNAas DNAts DNAts DNAcs OxyAs OxyT
511	131832	131851	CTAATTCAAAT CACTATACT	ASO-0634	OxyMCs OxyTs OxyAs OxyAs DNAts DNAts DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAts DNAas OxyTs OxyAs OxyMCs OxyT
528	132531	132549	ATTAACTGACA AAAGGTAA	ASO-0667	OxyAs OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAgs DNAas DNAcs DNAas DNAas DNAas DNAas DNAgs OxyGs OxyTs OxyAs OxyA
529	132640	132657	AGAAGCTAAGG TAATAAC	ASO-0668	OxyAs OxyGs OxyAs OxyAs DNAgs DNAcs DNAts DNAas DNAas DNAgs DNAgs DNAts DNAas DNAas OxyTs OxyAs OxyAs OxyMC
530	132771	132790	AATAATGAGGA AGAAACTGT	ASO-0669	OxyAs OxyAs OxyTs OxyAs DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAas DNAgs DNAas DNAas DNAas OxyMCs OxyTs OxyGs OxyT
531	133229	133245	GTCTTGTATTAT GTAAT	ASO-0670	OxyGs OxyTs OxyMCs OxyTs DNAts DNAgs DNAts DNAas DNAts DNAts DNAas DNAts DNAgs OxyTs OxyAs OxyAs OxyT
532	133232	133250	AGAAAGTCTTG TATTATGT	ASO-1807	OxyAs OxyGs OxyAs DNAas DNAas DNAgs DNAts DNAcs DNAts DNAts DNAgs DNAts DNAas DNAts DNAts OxyAs OxyTs OxyGs OxyT
533	133234	133251	AAGAAAGTCTT GTATTAT	ASO-0671	OxyAs OxyAs OxyGs OxyAs DNAas DNAas DNAgs DNAts DNAcs DNAts DNAts DNAgs DNAts DNAas OxyTs OxyTs OxyAs OxyT
534	133897	133914	TAATTATATTTA TCTGCT	ASO-0672	OxyTs OxyAs OxyAs OxyTs DNAts DNAas DNAts DNAas DNAts DNAts DNAts DNAas DNAts DNAcs OxyTs OxyGs OxyMCs OxyT
535	134184	134201	GATGGTGAAAA GGGCATT	ASO-0673	OxyGs OxyAs DNAts DNAgs DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAgs DNAgs DNAgs OxyMCs OxyAs OxyTs OxyT
536	134612	134629	ATTTTGGACTT CTTAATA	ASO-0674	OxyAs OxyTs OxyTs OxyTs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAcs DNAts DNAts OxyAs OxyAs OxyTs OxyA
537	135040	135057	AGAAGGGCAAT TTAATTT	ASO-0675	OxyAs OxyGs OxyAs OxyAs DNAgs DNAgs DNAgs DNAcs DNAas DNAas DNAts DNAts DNAts DNAas OxyAs OxyTs OxyTs OxyT
538	137687	137704	TATGTAACAGG TAAAGAA	ASO-0676	OxyTs OxyAs OxyTs OxyGs DNAts DNAas DNAas DNAcs DNAas DNAgs DNAgs DNAts DNAas DNAas OxyAs OxyGs OxyAs OxyA
539	137765	137784	GTAAATTTAAG GAAAATAGG	ASO-0040	OxyGs OxyTs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas DNAas DNAas DNAas OxyTs OxyAs OxyGs OxyG
540	137766	137785	AGTAAATTTAA GGAAAATAG	ASO-0677	OxyAs OxyGs OxyTs OxyAs DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAgs DNAgs DNAas DNAas DNAas OxyAs OxyTs OxyAs OxyG
541	138145	138164	TATGTTTTAATT AGTAAATA	ASO-0678	OxyTs OxyAs OxyTs OxyGs DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAas DNAgs DNAts DNAas OxyAs OxyAs OxyTs OxyA
542	138583	138602	AATAAGTAATA ATGACTACA	ASO-0679	OxyAs OxyAs OxyTs OxyAs DNAas DNAgs DNAts DNAas DNAas DNAts DNAas DNAas DNAts DNAgs DNAas DNAcs OxyTs OxyAs OxyMCs OxyA
543	138827	138845	TGGATTAAGAA AACTGATG	ASO-0680	OxyTs OxyGs OxyGs OxyAs DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAas DNAas DNAcs DNAts OxyGs OxyAs OxyTs OxyG
544	139004	139021	TTATTTGCTATT GATTAG	ASO-0681	OxyTs OxyTs OxyAs OxyTs DNAts DNAts DNAgs DNAcs DNAts DNAas DNAts DNAts DNAgs DNAas OxyTs OxyTs OxyAs OxyG
545	139581	139600	TTTTATACCAGT	ASO-	OxyTs DNAts DNAts DNAts DNAas DNAts DNAas DNAcs DNAcs DNAas DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AAACCAGG	0682	DNAts DNAas DNAas DNAas DNAcs DNAcs OxyAs OxyGs OxyG
546	139584	139600	TTTTATACCAGT AAACC	ASO-0683	OxyTs OxyTs OxyTs OxyTs DNAas DNAts DNAas DNAcs DNAcs DNAas DNAgs DNAts DNAas OxyAs OxyAs OxyMCs OxyMC
547	139987	140005	GTTTTAACTAAA TGAACTA	ASO-0684	OxyGs OxyTs OxyTs OxyTs DNAts DNAas DNAas DNAcs DNAts DNAas DNAas DNAas DNAts DNAgs DNAas OxyAs OxyMCs OxyTs OxyA
548	140122	140139	TCTGGATTATT GGCTTTG	ASO-0685	OxyTs OxyMCs DNAts DNAgs DNAgs DNAas DNAts DNAts DNAas DNAts DNAts DNAgs DNAgs DNAcs DNAts OxyTs OxyTs OxyG
549	140637	140654	TAATTAAGTTTT CTTCCT	ASO-0686	OxyTs OxyAs OxyAs OxyTs DNAts DNAas DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyMCs OxyT
550	140777	140794	CTTGTGATTTTA AGTGTT	ASO-0687	OxyMCs OxyTs OxyTs DNAgs DNAts DNAgs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAgs OxyTs OxyGs OxyTs OxyT
551	141074	141093	TTTAAGAACCA AATTTAAGA	ASO-0688	OxyTs OxyTs OxyTs OxyAs DNAas DNAgs DNAas DNAas DNAcs DNAcs DNAas DNAas DNAas DNAts DNAts DNAts OxyAs OxyAs OxyGs OxyA
552	141457	141474	AGTTATTCAAAT TGCTTA	ASO-0689	OxyAs OxyGs OxyTs DNAts DNAas DNAts DNAts DNAcs DNAas DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyTs OxyA
553	141767	141783	AGGAGGTGTTA ACTATG	ASO-0690	OxyAs OxyGs DNAgs DNAas DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAas DNAas DNAcs OxyTs OxyAs OxyTs OxyG
554	142032	142050	TAAGATTGCTG AAAGAGAG	ASO-0041	OxyTs OxyAs OxyAs DNAgs DNAas DNAts DNAts DNAgs DNAcs DNAts DNAgs DNAas DNAas DNAas DNAgs OxyAs OxyGs OxyAs OxyG
555	142043	142059	AGTAGAGGGTA AGATTG	ASO-0691	OxyAs OxyGs OxyTs DNAas DNAgs DNAas DNAgs DNAgs DNAgs DNAts DNAas DNAas DNAgs OxyAs OxyTs OxyTs OxyG
556	142601	142618	ATTTCTGTGTTT CTACCC	ASO-0692	OxyAs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAts DNAts DNAcs DNAts DNAas DNAcs OxyMCs OxyMC
557	142938	142955	AGGAAGTTATA ATGAATG	ASO-0693	OxyAs OxyGs OxyGs OxyAs DNAas DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAts DNAgs OxyAs OxyAs OxyTs OxyG
558	143358	143377	TGTGAGTTTAA AATCCTAAT	ASO-0694	OxyTs OxyGs OxyTs OxyGs DNAas DNAgs DNAts DNAts DNAts DNAas DNAas DNAas DNAas DNAts DNAcs DNAcs OxyTs OxyAs OxyAs OxyT
559	143511	143527	TTTGTAACTTAC TACCA	ASO-0695	OxyTs OxyTs OxyTs OxyGs DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAts DNAas OxyMCs OxyMCs OxyA
560	143828	143847	TTACATTTCTAC ATTCCTGG	ASO-0696	OxyTs DNAts DNAas DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAas DNAcs DNAas DNAts DNAts DNAcs DNAcs DNAts OxyGs OxyG
561	144042	144059	ATTAAAGGTAA CTATTGC	ASO-0697	OxyAs OxyTs OxyTs OxyAs DNAas DNAas DNAgs DNAgs DNAts DNAas DNAas DNAcs DNAts DNAas OxyTs OxyTs OxyGs OxyMC
562	144407	144422	GTCTATCTTAC TGTAC	ASO-0698	OxyGs OxyTs OxyMCs OxyTs DNAas DNAts DNAcs DNAts DNAts DNAas DNAcs DNAts DNAgs OxyTs OxyAs OxyMC
563	144870	144889	TATCATTTGTTT TATGAATT	ASO-0699	OxyTs OxyAs OxyTs OxyMCs DNAas DNAts DNAts DNAts DNAgs DNAts DNAts DNAts DNAts DNAas DNAts DNAgs OxyAs OxyAs OxyTs OxyT
564	145090	145107	ATAGATTTAGT	ASO-	OxyAs OxyTs OxyAs OxyGs DNAas DNAts DNAts DNAts DNAas DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATATCT	0700	DNAas DNAas DNAts OxyAs OxyTs OxyMCs OxyT
565	145328	145344	AGTGGGAGATA TGATCA	ASO-0701	OxyAs OxyGs OxyTs DNAgs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAts DNAgs DNAas OxyTs OxyMCs OxyA
566	145632	145649	AAAGAAAGTTA CTGGATC	ASO-0702	OxyAs OxyAs OxyAs OxyGs DNAas DNAas DNAas DNAgs DNAts DNAts DNAas DNAcs DNAts DNAgs OxyGs OxyAs OxyTs OxyMC
567	146064	146081	TGGGAGTTTGA TTAGCTG	ASO-0703	OxyTs OxyGs DNAgs DNAgs DNAas DNAgs DNAts DNAts DNAts DNAgs DNAas DNAts DNAts DNAas DNAgs OxyMCs OxyTs OxyG
568	146200	146217	GAATAGAAATA TAGACAG	ASO-0704	OxyGs OxyAs OxyAs OxyTs DNAas DNAgs DNAas DNAas DNAas DNAts DNAas DNAts DNAas DNAgs OxyAs OxyMCs OxyAs OxyG
569	146424	146443	AAAGCACTGAA AACTAAGTT	ASO-0705	OxyAs OxyAs OxyAs OxyGs DNAcs DNAas DNAcs DNAts DNAgs DNAas DNAas DNAas DNAas DNAcs DNAts DNAas OxyAs OxyGs OxyTs OxyT
570	146833	146849	GTAGTTGGATT TGGTTC	ASO-0706	OxyGs DNAts DNAas DNAgs DNAts DNAts DNAgs DNAgs DNAas DNAts DNAts DNAts DNAgs OxyGs OxyTs OxyTs OxyMC
571	146843	146860	CAAAGATTGAG GTAGTTG	ASO-0042	OxyMCs OxyAs OxyAs OxyAs DNAgs DNAas DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAas OxyGs OxyTs OxyTs OxyG
572	146922	146938	AATCATTGTTT GTCAGC	ASO-0707	OxyAs OxyAs OxyTs OxyMCs DNAas DNAts DNAts DNAgs DNAts DNAts DNAts DNAgs DNAts DNAcs OxyAs OxyGs OxyMC
573	147960	147978	GAGTAGGAAAA TTAAACTC	ASO-0708	OxyGs OxyAs OxyGs OxyTs DNAas DNAgs DNAgs DNAas DNAas DNAas DNAas DNAts DNAts DNAas DNAas OxyAs OxyMCs OxyTs OxyMC
574	148347	148364	GCTATAATTTT GAGGGTA	ASO-0709	OxyGs OxyMCs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAas DNAgs DNAgs OxyGs OxyTs OxyA
575	148501	148518	TTTGTCAGGGT AAAATAA	ASO-0710	OxyTs OxyTs OxyTs OxyGs DNAts DNAcs DNAas DNAgs DNAgs DNAgs DNAts DNAas DNAas DNAas OxyAs OxyTs OxyAs OxyA
576	149240	149258	ATAATACATTTT GGCAGTC	ASO-0711	OxyAs OxyTs OxyAs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAgs DNAgs DNAcs DNAas OxyGs OxyTs OxyMC
577	149261	149279	AAACATTTGAG AAAACAGG	ASO-0712	OxyAs OxyAs OxyAs OxyMCs DNAas DNAts DNAts DNAts DNAgs DNAas DNAgs DNAas DNAas DNAas DNAas OxyMCs OxyAs OxyGs OxyG
578	149892	149910	TTCCACTCTCT TATTTTAA	ASO-0713	OxyTs OxyTs OxyMCs DNAcs DNAas DNAcs DNAts DNAcs DNAts DNAcs DNAts DNAts DNAas DNAts DNAts OxyTs OxyTs OxyAs OxyA
579	150255	150272	TCCATTCACTT ATTAATA	ASO-0714	OxyTs OxyMCs OxyMCs OxyAs DNAts DNAts DNAcs DNAas DNAcs DNAts DNAts DNAas DNAts DNAts OxyAs OxyAs OxyTs OxyA
580	150696	150713	AAAGAGTTTGG TTTGATG	ASO-0715	OxyAs OxyAs OxyAs OxyGs DNAas DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAts DNAts DNAts OxyGs OxyAs OxyTs OxyG
581	151007	151026	ATATTTTATAAG TCTTGCAT	ASO-0716	OxyAs OxyTs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAts DNAas DNAas DNAgs DNAts DNAcs DNAts DNAts DNAgs OxyMCs OxyAs OxyT
582	151090	151109	ATATTTTATCTT TATTTACT	ASO-0717	OxyAs OxyTs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAts DNAcs DNAts DNAts DNAts DNAas DNAts DNAts OxyTs OxyAs OxyMCs OxyT
583	151379	151398	CTTTATCATCTA	ASO-	OxyMCs DNAts DNAts DNAts DNAas DNAts DNAcs DNAas DNAts DNAcs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATTCCATC	0043	DNAas DNAas DNAts DNAts DNAcs OxyMCs OxyAs OxyTs OxyMC
584	151387	151404	TCTGTGCTTTA TCATCTA	ASO-0718	OxyTs OxyMCs DNAts DNAgs DNAts DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAcs DNAas DNAts DNAcs OxyTs OxyA
585	151841	151859	TTTTAGCTTCA GGTGTACA	ASO-0719	OxyTs OxyTs DNAts DNAts DNAas DNAgs DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAgs DNAts DNAgs DNAts OxyAs OxyMCs OxyA
586	151842	151860	ATTTTAGCTTCA GGTGTAC	ASO-0720	OxyAs DNAts DNAts DNAts DNAts DNAas DNAgs DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAgs DNAts OxyGs OxyTs OxyAs OxyMC
587	152436	152455	TGGTTGAGATT AAATGAGAT	ASO-0721	OxyTs OxyGs DNAgs DNAts DNAts DNAgs DNAas DNAgs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAgs OxyAs OxyGs OxyAs OxyT
588	152678	152697	ATTGTGTTATA CCTATTCCA	ASO-0722	OxyAs DNAts DNAts DNAgs DNAts DNAgs DNAts DNAts DNAas DNAts DNAas DNAcs DNAcs DNAts DNAas DNAts DNAts DNAcs OxyMCs OxyA
589	152683	152700	AAAATTGTGTT ATACCTA	ASO-0723	OxyAs OxyAs OxyAs OxyAs DNAts DNAts DNAgs DNAts DNAgs DNAts DNAts DNAas DNAts DNAas OxyMCs OxyMCs OxyTs OxyA
590	152708	152726	TCGCACTAGAA AAAAATAA	ASO-0724	OxyTs OxyMCs OxyGs OxyMCs DNAas DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAas DNAas OxyAs OxyTs OxyAs OxyA
591	152709	152726	TCGCACTAGAA AAAAATA	ASO-0725	OxyTs OxyMCs OxyGs OxyMCs DNAas DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAas DNAas OxyAs OxyAs OxyTs OxyA
592	152709	152727	GTCGCACTAGA AAAAAATA	ASO-0726	OxyGs OxyTs OxyMCs OxyGs DNAcs DNAas DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAas DNAas OxyAs OxyAs OxyTs OxyA
593	152709	152728	AGTCGCACTAG AAAAAAATA	ASO-0727	OxyAs OxyGs OxyTs OxyMCs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAas DNAas OxyAs OxyAs OxyTs OxyA
594	152712	152731	TGAAGTCGCAC TAGAAAAAA	ASO-0728	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs DNAas DNAas OxyAs OxyAs OxyAs OxyA
595	152713	152731	TGAAGTCGCAC TAGAAAAA	ASO-0729	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs DNAas OxyAs OxyAs OxyAs OxyA
596	152713	152732	ATGAAGTCGCA CTAGAAAAA	ASO-0730	OxyAs OxyTs OxyGs OxyAs DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs DNAas OxyAs OxyAs OxyAs OxyA
597	152714	152731	TGAAGTCGCAC TAGAAAA	ASO-0731	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyA
598	152714	152732	ATGAAGTCGCA CTAGAAAA	ASO-0732	OxyAs OxyTs OxyGs OxyAs DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyA
599	152714	152733	CATGAAGTCGC ACTAGAAAA	ASO-0733	OxyMCs OxyAs OxyTs OxyGs DNAas DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyA
600	152715	152730	GAAGTCGCACT AGAAA	ASO-0734	OxyGs OxyAs OxyAs OxyGs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyAs OxyA
601	152715	152731	TGAAGTCGCAC TAGAAA	ASO-0735	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyAs OxyA
602	152715	152732	ATGAAGTCGCA	ASO-	OxyAs OxyTs OxyGs OxyAs DNAas DNAgs DNAts DNAmcs DNAgs DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTAGAAA	0736	DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyAs OxyA
603	152715	152733	CATGAAGTCGC ACTAGAAA	ASO-0737	OxyMCs OxyAs OxyTs DNAgs DNAas DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyAs OxyA
604	152716	152731	TGAAGTCGCAC TAGAA	ASO-0738	OxyTs OxyGs OxyAs OxyAs DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyA
605	152716	152732	ATGAAGTCGCA CTAGAA	ASO-0739	OxyAs OxyTs OxyGs OxyAs DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyA
606	152716	152733	CATGAAGTCGC ACTAGAA	ASO-0740	OxyMCs OxyAs OxyTs DNAgs DNAas DNAas DNAgs DNAts DNAmcs DNAgs DNAcs DNAas DNAcs DNAts DNAas OxyGs OxyAs OxyA
607	152760	152777	CAAATCAAACA CCAAGTA	ASO-0741	OxyMCs OxyAs OxyAs OxyAs DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAcs DNAcs DNAas OxyAs OxyGs OxyTs OxyA
608	152760	152778	ACAAATCAAAC ACCAAGTA	ASO-0742	OxyAs OxyMCs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAcs DNAcs DNAas DNAas OxyGs OxyTs OxyA
609	152761	152779	TACAAATCAAA CACCAAGT	ASO-0743	OxyTs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAcs DNAcs OxyAs OxyAs OxyGs OxyT
610	152761	152780	TTACAAATCAA ACACCAAGT	ASO-0744	OxyTs OxyTs OxyAs OxyMCs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAcs DNAcs OxyAs OxyAs OxyGs OxyT
611	152763	152782	ACTTACAAATC AAACACCAA	ASO-0745	OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas OxyMCs OxyMCs OxyAs OxyA
612	152764	152782	ACTTACAAATC AAACACCA	ASO-0746	OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs OxyAs OxyMCs OxyMCs OxyA
613	152764	152783	TACTTACAAAT CAAACACCA	ASO-0747	OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs OxyAs OxyMCs OxyMCs OxyA
614	152765	152782	ACTTACAAATC AAACACC	ASO-0748	OxyAs OxyMCs OxyTs OxyTs DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs OxyAs OxyMCs OxyMC
615	152765	152783	TACTTACAAAT CAAACACC	ASO-0749	OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas OxyMCs OxyAs OxyMCs OxyMC
616	152765	152784	ATACTTACAAAT CAAACACC	ASO-0750	OxyAs OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs OxyAs OxyMCs OxyMC
617	152766	152783	TACTTACAAAT CAAACAC	ASO-0751	OxyTs OxyAs OxyMCs OxyTs DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas OxyAs OxyMCs OxyAs OxyMC
618	152766	152784	ATACTTACAAAT CAAACAC	ASO-0752	OxyAs OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas OxyAs OxyMCs OxyAs OxyMC
619	152766	152785	TATACTTACAAA TCAAACAC	ASO-0753	OxyTs OxyAs OxyTs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas DNAas OxyAs OxyMCs OxyAs OxyMC
620	152767	152785	TATACTTACAAA TCAAACA	ASO-0754	OxyTs OxyAs OxyTs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAts DNAcs DNAas OxyAs OxyAs OxyMCs OxyA
621	152767	152786	ATATACTTACAA	ASO-	OxyAs OxyTs OxyAs OxyTs DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATCAAACA	0755	DNAas DNAas DNAts DNAcs DNAas OxyAs OxyAs OxyMCs OxyA
622	153220	153238	CATTATTTTCCC TTCATTC	ASO-0756	OxyMCs OxyAs DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAcs DNAcs DNAts DNAts DNAcs DNAas OxyTs OxyTs OxyMC
623	153520	153536	TTCTCTATAATT GGATC	ASO-0757	OxyTs OxyTs OxyMCs OxyTs DNAcs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAgs OxyGs OxyAs OxyTs OxyMC
624	153964	153983	AGTTGTAATTT CATTCCCTT	ASO-0758	OxyAs DNAgs DNAts DNAts DNAgs DNAts DNAas DNAas DNAts DNAts DNAts DNAcs DNAas DNAts DNAts DNAcs DNAcs OxyMCs OxyTs OxyT
625	153969	153985	CCAGTTGTAAT TTCATT	ASO-0759	OxyMCs OxyMCs OxyAs OxyGs DNAts DNAts DNAgs DNAts DNAas DNAas DNAts DNAts DNAts DNAcs OxyAs OxyTs OxyT
626	154743	154761	TCAAACATTGG AAAGGAAG	ASO-0760	OxyTs OxyMCs OxyAs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAgs DNAgs DNAas DNAas DNAas DNAgs OxyGs OxyAs OxyAs OxyG
627	154745	154761	TCAAACATTGG AAAGGA	ASO-0761	OxyTs OxyMCs OxyAs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAgs DNAgs DNAas DNAas DNAas OxyGs OxyGs OxyA
628	155365	155384	GACAGAACAAT AATAAATTA	ASO-0762	OxyGs OxyAs OxyMCs OxyAs DNAgs DNAas DNAas DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyA
629	155396	155415	CAGAGGAAAGA ATTAGACAA	ASO-0763	OxyMCs OxyAs OxyGs OxyAs DNAgs DNAgs DNAas DNAas DNAas DNAgs DNAas DNAas DNAts DNAts DNAas DNAgs OxyAs OxyMCs OxyAs OxyA
630	155941	155959	AGATAATCAAC AGGCAGCA	ASO-0764	OxyAs DNAgs DNAas DNAts DNAas DNAas DNAts DNAcs DNAas DNAas DNAcs DNAas DNAgs DNAgs DNAcs DNAas OxyGs OxyMCs OxyA
631	155942	155960	AAGATAATCAA CAGGCAGC	ASO-0044	OxyAs DNAas DNAgs DNAas DNAts DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAcs DNAas DNAgs DNAgs OxyMCs OxyAs OxyGs OxyMC
632	155943	155959	AGATAATCAAC AGGCAG	ASO-0765	OxyAs OxyGs DNAas DNAts DNAas DNAas DNAts DNAcs DNAas DNAas DNAcs DNAas DNAgs OxyGs OxyMCs OxyAs OxyG
633	156515	156532	GTTAATCTCTC TCTTGTT	ASO-0766	OxyGs OxyTs DNAts DNAas DNAas DNAts DNAcs DNAts DNAcs DNAts DNAcs DNAts DNAcs DNAts DNAts OxyGs OxyTs OxyT
634	156666	156682	TTTCCATAAGT CAATTC	ASO-0767	OxyTs OxyTs OxyTs OxyMCs DNAcs DNAas DNAts DNAas DNAas DNAgs DNAts DNAcs DNAas OxyAs OxyTs OxyTs OxyMC
635	157021	157039	ATGACTGTGGA AAACTGGC	ASO-0768	OxyAs DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAas DNAcs DNAts OxyGs OxyGs OxyMC
636	157447	157465	TTTATTAATCTC ATTTACT	ASO-0769	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAas DNAts DNAcs DNAts DNAcs DNAas DNAts DNAts OxyTs OxyAs OxyMCs OxyT
637	157735	157753	CAAGTAGTTAT TTTATCTC	ASO-0770	OxyMCs OxyAs OxyAs OxyGs DNAts DNAas DNAgs DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAas DNAts OxyMCs OxyTs OxyMC
638	157739	157756	ATTCAAGTAGT TATTTTA	ASO-0771	OxyAs OxyTs OxyTs OxyMCs DNAas DNAas DNAgs DNAts DNAas DNAgs DNAts DNAts DNAas DNAts OxyTs OxyTs OxyTs OxyA
639	159291	159308	CAATTTGCTGT TCCTATA	ASO-0772	OxyMCs OxyAs DNAas DNAts DNAts DNAts DNAgs DNAcs DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas OxyTs OxyA
640	159834	159851	ACACTATTTTA	ASO-	OxyAs OxyMCs OxyAs OxyMCs DNAts DNAas DNAts DNAts DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GTTCTTT	0773	DNAas DNAgs DNAts DNAts OxyMCs OxyTs OxyTs OxyT
641	159871	159887	CTCAGCTATGT TCTATA	ASO-0774	OxyMCs OxyTs DNAcs DNAas DNAgs DNAcs DNAts DNAas DNAts DNAgs DNAts DNAts DNAcs OxyTs OxyAs OxyTs OxyA
642	160252	160269	TTTTATGTAGAT TAACTG	ASO-0775	OxyTs OxyTs OxyTs OxyTs DNAas DNAts DNAgs DNAts DNAas DNAgs DNAas DNAts DNAts DNAas OxyAs OxyMCs OxyTs OxyG
643	160665	160684	TAATCGTGTAT TTTGCCTTC	ASO-0776	OxyTs OxyAs OxyAs DNAts DNAmcs DNAgs DNAts DNAgs DNAts DNAas DNAts DNAts DNAts DNAts DNAgs DNAcs DNAcs DNAts OxyTs OxyMC
644	160668	160685	TTAATCGTGTA TTTTGCC	ASO-0045	OxyTs DNAts DNAas DNAas DNAts DNAmcs DNAgs DNAts DNAgs DNAts DNAas DNAts DNAts DNAts OxyTs OxyGs OxyMCs OxyMC
645	160671	160687	AGTTAATCGTG TATTTT	ASO-0777	OxyAs OxyGs OxyTs OxyTs DNAas DNAas DNAts DNAmcs DNAgs DNAts DNAgs DNAts DNAas OxyTs OxyTs OxyTs OxyT
646	161777	161794	TAAGGAGGACA GAACAGG	ASO-0778	OxyTs OxyAs OxyAs DNAgs DNAgs DNAas DNAgs DNAgs DNAas DNAcs DNAas DNAgs DNAas DNAas DNAcs OxyAs OxyGs OxyG
647	161877	161895	ATCTAAAAGGT TATATACT	ASO-0779	OxyAs OxyTs OxyMCs OxyTs DNAas DNAas DNAas DNAas DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas OxyTs OxyAs OxyMCs OxyT
648	162407	162424	AGGAAATAAGC TATAAGG	ASO-0780	OxyAs OxyGs OxyGs OxyAs DNAas DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAas DNAts OxyAs OxyAs OxyGs OxyG
649	162720	162737	GCTATGGAGAC AGTATGG	ASO-0781	OxyGs OxyMCs DNAts DNAas DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAcs DNAas DNAgs DNAts DNAas DNAts OxyGs OxyG
650	162730	162747	CAAAGGTAAAG CTATGGA	ASO-0782	OxyMCs OxyAs OxyAs OxyAs DNAgs DNAgs DNAts DNAas DNAas DNAas DNAgs DNAcs DNAts DNAas OxyTs OxyGs OxyGs OxyA
651	163806	163825	TAGAAGACTGA CACTACTCA	ASO-0783	OxyTs OxyAs DNAgs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAgs DNAas DNAcs DNAas DNAcs DNAts DNAas DNAcs DNAts OxyMCs OxyA
652	163809	163827	GATAGAAGACT GACACTAC	ASO-0046	OxyGs OxyAs DNAts DNAas DNAgs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAgs DNAas DNAcs DNAas OxyMCs OxyTs OxyAs OxyMC
653	163811	163827	GATAGAAGACT GACACT	ASO-0784	OxyGs OxyAs DNAts DNAas DNAgs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAgs DNAas OxyMCs OxyAs OxyMCs OxyT
654	164061	164078	AGTTATTTATTG GTTTAA	ASO-0785	OxyAs OxyGs OxyTs OxyTs DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAgs DNAgs DNAts OxyTs OxyTs OxyAs OxyA
655	164362	164380	CTTAAGGAAAT GTTATAAC	ASO-0786	OxyMCs OxyTs OxyTs OxyAs DNAas DNAgs DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAts DNAas OxyTs OxyAs OxyAs OxyMC
656	165139	165156	ATTGAGTACAG GCAGAGT	ASO-0787	OxyAs DNAts DNAts DNAgs DNAas DNAgs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAcs DNAas DNAgs OxyAs OxyGs OxyT
657	165142	165160	ATTTATTGAGTA CAGGCAG	ASO-0788	OxyAs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAgs DNAas DNAgs DNAts DNAas DNAcs DNAas DNAgs DNAgs OxyMCs OxyAs OxyG
658	165664	165682	GTCTTCATGCT ATTTTCAC	ASO-0789	OxyGs OxyTs OxyMCs DNAts DNAts DNAcs DNAas DNAts DNAgs DNAcs DNAts DNAas DNAts DNAts DNAts DNAts DNAcs OxyAs OxyMC
659	166220	166239	ATGGTCTATTA	ASO-	OxyAs OxyTs OxyGs DNAgs DNAts DNAcs DNAts DNAas DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATGTGCAA	0790	DNAas DNAas DNAts DNAgs DNAts DNAgs OxyMCs OxyAs OxyA
660	166409	166426	AGCAGTGATAC AAGGGAC	ASO-0791	OxyAs OxyGs OxyMCs DNAas DNAgs DNAts DNAgs DNAas DNAts DNAas DNAcs DNAas DNAas DNAgs DNAgs DNAgs OxyAs OxyMC
661	166738	166754	GAGATTATCCT TCAAAT	ASO-0792	OxyGs OxyAs OxyGs OxyAs DNAts DNAts DNAas DNAts DNAcs DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyAs OxyT
662	167073	167090	TGGGAATAGTG GAAGGAG	ASO-0793	OxyTs DNAgs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAgs DNAts DNAgs DNAgs DNAas DNAas OxyGs OxyGs OxyAs OxyG
663	167365	167382	GATGATGTAAA CAGAGAG	ASO-0794	OxyGs OxyAs OxyTs DNAgs DNAas DNAts DNAgs DNAts DNAas DNAas DNAas DNAcs DNAas DNAgs OxyAs OxyGs OxyAs OxyG
664	167371	167388	CAGGTGGATGA TGTAAAC	ASO-0795	OxyMCs OxyAs OxyGs OxyGs DNAts DNAgs DNAgs DNAas DNAts DNAgs DNAas DNAts DNAgs DNAts DNAas OxyAs OxyAs OxyMC
665	168021	168040	TATTGAAGGCT TATTTACCA	ASO-0796	OxyTs DNAas DNAts DNAts DNAgs DNAas DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAas DNAts DNAts DNAts DNAas OxyMCs OxyMCs OxyA
666	168023	168040	TATTGAAGGCT TATTTAC	ASO-0797	OxyTs OxyAs OxyTs OxyTs DNAgs DNAas DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAas DNAts OxyTs OxyTs OxyAs OxyMC
667	168468	168487	TTTAACTGATG AATTGCTGA	ASO-0798	OxyTs DNAts DNAts DNAas DNAas DNAcs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyGs OxyA
668	169122	169141	CCTTGCTTGTA TTTTCAAAT	ASO-0799	OxyMCs OxyMCs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAgs DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAas OxyAs OxyT
669	169402	169420	TTTACATTTAAT TAACTTT	ASO-0800	OxyTs OxyTs OxyTs OxyAs DNAcs DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAas DNAas OxyMCs OxyTs OxyTs OxyT
670	169409	169427	CCATGATTTTA CATTTAAT	ASO-0047	OxyMCs OxyMCs OxyAs OxyTs DNAgs DNAas DNAts DNAts DNAts DNAts DNAas DNAcs DNAas DNAts DNAts OxyTs OxyAs OxyAs OxyT
671	169672	169689	CTGGGAGATGA AATGGAT	ASO-0801	OxyMCs OxyTs DNAgs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAgs DNAas DNAas DNAas DNAts DNAgs OxyGs OxyAs OxyT
672	169826	169843	AGAGAATGTCT AAAGTAC	ASO-0802	OxyAs OxyGs OxyAs DNAgs DNAas DNAas DNAts DNAgs DNAts DNAcs DNAts DNAas DNAas DNAas OxyGs OxyTs OxyAs OxyMC
673	170374	170391	GATTTCTCTAA ATGTGTA	ASO-0803	OxyGs OxyAs DNAts DNAts DNAts DNAcs DNAts DNAcs DNAts DNAas DNAas DNAas DNAts DNAgs OxyTs OxyGs OxyTs OxyA
674	170483	170501	TTAATTACTCTC TAAACTT	ASO-0804	OxyTs OxyTs OxyAs OxyAs DNAts DNAts DNAas DNAcs DNAts DNAcs DNAts DNAcs DNAts DNAas DNAas OxyAs OxyMCs OxyTs OxyT
675	170826	170843	AAATCTGCTTG TTTGTCA	ASO-0805	OxyAs OxyAs OxyAs OxyTs DNAcs DNAts DNAgs DNAcs DNAts DNAts DNAgs DNAts DNAts DNAts DNAgs DNAts OxyMCs OxyA
676	170995	171012	GCTCAATAATT GCTTCTA	ASO-0806	OxyGs OxyMCs DNAts DNAcs DNAas DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAcs OxyTs OxyA
677	171616	171632	TGATAGTATATT GGTTT	ASO-0807	OxyTs OxyGs OxyAs OxyTs DNAas DNAgs DNAts DNAas DNAts DNAas DNAts DNAts DNAgs OxyGs OxyTs OxyTs OxyT
678	171755	171774	TAAATGAATGT	ASO-	OxyTs OxyAs OxyAs OxyAs DNAts DNAgs DNAas DNAas DNAts DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AGAATCTTA	0808	DNAas DNAgs DNAas DNAas DNAts OxyMCs OxyTs OxyTs OxyA
679	172117	172136	AGATGGAATAA TTTAAAGCC	ASO-0809	OxyAs OxyGs DNAas DNAts DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAas DNAas OxyAs OxyGs OxyMCs OxyMC
680	172259	172275	GAACTGTTTTA GATATC	ASO-0810	OxyGs OxyAs OxyAs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAts DNAas DNAgs DNAas OxyTs OxyAs OxyTs OxyMC
681	172675	172691	AGACTATATGA AGGTGA	ASO-0811	OxyAs OxyGs OxyAs DNAcs DNAts DNAas DNAts DNAas DNAts DNAgs DNAas DNAas DNAgs OxyGs OxyTs OxyGs OxyA
682	173063	173080	ATAAATTAATTC ATGGTA	ASO-0812	OxyAs OxyTs OxyAs OxyAs DNAas DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAts OxyGs OxyGs OxyTs OxyA
683	173092	173108	ATAGTTGGTAA TATAGA	ASO-0813	OxyAs OxyTs OxyAs OxyGs DNAts DNAts DNAgs DNAgs DNAts DNAas DNAas DNAts DNAas OxyTs OxyAs OxyGs OxyA
684	173465	173482	TTTCATTTCTTA AAACGT	ASO-0814	OxyTs OxyTs OxyTs OxyMCs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAas DNAas OxyAs OxyMCs OxyGs OxyT
685	173893	173911	AGGGTTGAATA GTTTTCAG	ASO-0815	OxyAs OxyGs OxyGs DNAgs DNAts DNAts DNAgs DNAas DNAas DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs OxyAs OxyG
686	173986	174004	CAGATCAGTAG GTTTCTTT	ASO-0048	OxyMCs OxyAs DNAgs DNAas DNAts DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAgs DNAts DNAts DNAts DNAcs OxyTs OxyTs OxyT
687	173988	174004	CAGATCAGTAG GTTTCT	ASO-0816	OxyMCs OxyAs OxyGs DNAas DNAts DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAgs DNAts DNAts DNAts OxyMCs OxyT
688	174336	174352	CTGAAGGATTG AGGTTG	ASO-0817	OxyMCs OxyTs OxyGs OxyAs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAts OxyTs OxyG
689	174679	174695	TATATGCTTGT CAGTTT	ASO-0818	OxyTs OxyAs OxyTs OxyAs DNAts DNAgs DNAcs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAgs OxyTs OxyTs OxyT
690	174862	174879	TATTTTACAGTT GTTCAT	ASO-0819	OxyTs OxyAs OxyTs OxyTs DNAts DNAts DNAas DNAcs DNAas DNAgs DNAts DNAts DNAgs DNAts OxyTs OxyMCs OxyAs OxyT
691	175112	175128	GCTGGTTATAG TAATAA	ASO-0820	OxyGs OxyMCs OxyTs OxyGs DNAgs DNAts DNAts DNAas DNAts DNAas DNAgs DNAts DNAas OxyAs OxyTs OxyAs OxyA
692	175638	175656	TGATGTAAGCC TGGAACTG	ASO-0821	OxyTs OxyGs OxyAs DNAts DNAgs DNAts DNAas DNAas DNAgs DNAcs DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAcs OxyTs OxyG
693	175647	175663	GTAAGAATGAT GTAAGC	ASO-0822	OxyGs OxyTs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAgs DNAas DNAts DNAgs DNAts OxyAs OxyAs OxyGs OxyMC
703	176315	176332	ATGACTGAATT AAATATG	ASO-0842	OxyAs OxyTs OxyGs OxyAs DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyG
704	176730	176747	GTGCATTAAAT TATCTAT	ASO-0843	OxyGs OxyTs OxyGs OxyMCs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAas DNAts DNAcs OxyTs OxyAs OxyT
705	177165	177183	GCTACATATAA TGAGGAAA	ASO-0844	OxyGs OxyMCs OxyTs OxyAs DNAcs DNAas DNAts DNAas DNAts DNAas DNAas DNAts DNAgs DNAas DNAgs OxyGs OxyAs OxyAs OxyA
706	177458	177477	TGGTTTATGCA	ASO-	OxyTs OxyGs DNAgs DNAts DNAts DNAts DNAas DNAts DNAgs DNAcs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GGAAGAAGA	0845	DNAgs DNAgs DNAas DNAas DNAgs DNAas DNAas OxyGs OxyA
707	177608	177625	AAAGGGATAATTAAGTGA	ASO-0846	OxyAs OxyAs OxyAs OxyGs DNAgs DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAas DNAas OxyGs OxyTs OxyGs OxyA
708	177919	177935	TTAATCATTGGCTGGGG	ASO-0847	OxyTs DNAts DNAas DNAas DNAts DNAcs DNAas DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAgs OxyGs OxyGs OxyG
709	178222	178238	GTTTAACTTATATACAG	ASO-0848	OxyGs OxyTs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAts DNAas DNAts OxyAs OxyMCs OxyAs OxyG
710	178648	178665	GAATTTGAATAAAAGCCT	ASO-0849	OxyGs OxyAs OxyAs OxyTs DNAts DNAts DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAas OxyGs OxyMCs OxyMCs OxyT
711	178649	178667	AAGAATTTGAATAAAAGCC	ASO-0049	OxyAs OxyAs OxyGs OxyAs DNAas DNAts DNAts DNAts DNAgs DNAas DNAas DNAts DNAas DNAas DNAas OxyAs OxyGs OxyMCs OxyMC
712	178802	178820	ATGCTAAATTTTATCTTGA	ASO-0850	OxyAs OxyTs OxyGs OxyMCs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAcs DNAts OxyTs OxyGs OxyA
713	178822	178839	CTAATTTTAAATTGCTGC	ASO-0050	OxyMCs OxyTs OxyAs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyGs OxyMC
714	178822	178840	TCTAATTTTAAATTGCTGC	ASO-0051	OxyTs OxyMCs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyGs OxyMC
715	178822	178841	TTCTAATTTTAAATTGCTGC	ASO-0851	OxyTs OxyTs DNAcs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyGs OxyMC
716	178823	178841	TTCTAATTTTAAATTGCTG	ASO-0052	OxyTs OxyTs OxyMCs OxyTs DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts OxyGs OxyMCs OxyTs OxyG
717	178823	178842	CTTCTAATTTTAAATTGCTG	ASO-0852	OxyMCs OxyTs OxyTs OxyMCs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAgs OxyMCs OxyTs OxyG
718	178824	178842	CTTCTAATTTTAAATTGCT	ASO-0853	OxyMCs OxyTs OxyTs DNAcs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts OxyTs OxyGs OxyMCs OxyT
719	178824	178843	GCTTCTAATTTTAAATTGCT	ASO-0854	OxyGs OxyMCs DNAts DNAts DNAcs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts OxyGs OxyMCs OxyT
720	178825	178843	GCTTCTAATTTTAAATTGC	ASO-0855	OxyGs OxyMCs DNAts DNAts DNAcs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas OxyTs OxyTs OxyGs OxyMC
721	179111	179127	TTATAAGCTTTAGACAG	ASO-0856	OxyTs OxyTs OxyAs OxyTs DNAas DNAas DNAgs DNAcs DNAts DNAts DNAts DNAas DNAgs OxyAs OxyMCs OxyAs OxyG
722	179547	179565	TTAACCTGAATTTATTGAG	ASO-0857	OxyTs OxyTs OxyAs OxyAs DNAcs DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAts DNAas DNAts OxyTs OxyGs OxyAs OxyG
723	179651	179667	ATGAATAGGATAGGGGT	ASO-0858	OxyAs OxyTs DNAgs DNAas DNAas DNAts DNAas DNAgs DNAgs DNAas DNAts DNAas DNAgs OxyGs OxyGs OxyGs OxyT
724	180041	180058	AGTCAGATAATTCAATTA	ASO-0859	OxyAs OxyGs OxyTs OxyMCs DNAas DNAgs DNAas DNAts DNAas DNAas DNAts DNAts DNAcs DNAas OxyAs OxyTs OxyTs OxyA
725	180075	180092	AGCTATATTAA	ASO-	OxyAs OxyGs OxyMCs OxyTs DNAas DNAts DNAas DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GTAAAAG	0860	DNAas DNAgs DNAts DNAas OxyAs OxyAs OxyAs OxyG
726	180769	180785	TTAATATAAGG AGGTAG	ASO-0861	OxyTs OxyTs OxyAs OxyAs DNAts DNAas DNAts DNAas DNAas DNAgs DNAgs DNAas DNAgs OxyGs OxyTs OxyAs OxyG
727	180774	180793	TAATTTTATTAA TATAAGGA	ASO-0862	OxyTs OxyAs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAts DNAas DNAts DNAas OxyAs OxyGs OxyGs OxyA
728	181169	181188	AGATTATCAGG ATTAAATGA	ASO-0863	OxyAs OxyGs OxyAs OxyTs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAas DNAas DNAas OxyTs OxyGs OxyA
729	181170	181188	AGATTATCAGG ATTAAATG	ASO-0864	OxyAs OxyGs OxyAs OxyTs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAas OxyAs OxyAs OxyTs OxyG
730	181774	181791	CCATGACCTTA TTAATGA	ASO-0865	OxyMCs OxyMCs OxyAs DNAts DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyTs OxyGs OxyA
731	181775	181791	CCATGACCTTA TTAATG	ASO-0866	OxyMCs OxyMCs OxyAs OxyTs DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyTs OxyG
732	182679	182696	AAATTGTTGCT TCTCATC	ASO-0867	OxyAs OxyAs OxyAs DNAts DNAts DNAgs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAcs DNAts OxyMCs OxyAs OxyTs OxyMC
733	182764	182780	TTTTGGAGACT AAGCTA	ASO-0868	OxyTs OxyTs OxyTs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAcs DNAts DNAas DNAas DNAgs OxyMCs OxyTs OxyA
734	183386	183405	TTCATATCAGTT CAAAATGA	ASO-0053	OxyTs OxyTs OxyMCs OxyAs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAts DNAts DNAcs DNAas DNAas DNAas OxyAs OxyTs OxyGs OxyA
735	183560	183576	ATTGTCAGGAT TGGGTC	ASO-0869	OxyAs OxyTs DNAts DNAgs DNAts DNAcs DNAas DNAgs DNAgs DNAas DNAts DNAts DNAgs DNAgs DNAgs OxyTs OxyMC
736	183578	183595	TATTTGGTTATT TGTGAG	ASO-0870	OxyTs OxyAs OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAts DNAts DNAgs OxyTs OxyGs OxyAs OxyG
737	184119	184136	ATTTGCATAAAT GTTGTG	ASO-0871	OxyAs OxyTs OxyTs OxyTs DNAgs DNAcs DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts OxyTs OxyGs OxyTs OxyG
738	184370	184387	CCTTGTATTTT GTCTGTT	ASO-0872	OxyMCs OxyMCs DNAts DNAts DNAgs DNAts DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAcs DNAts DNAgs OxyTs OxyT
739	184697	184714	TTAAAAGTTTAT CAGCTT	ASO-0873	OxyTs OxyTs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAts DNAts DNAas DNAts DNAcs DNAas OxyGs OxyMCs OxyTs OxyT
740	184958	184975	TTGTTTAGTATT CATTTC	ASO-0874	OxyTs OxyTs OxyGs OxyTs DNAts DNAts DNAas DNAgs DNAts DNAas DNAts DNAts DNAcs DNAas OxyTs OxyTs OxyTs OxyMC
741	185161	185177	GAGGCTAGAAT AATTTG	ASO-0875	OxyGs OxyAs OxyGs OxyGs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAts DNAas DNAas OxyTs OxyTs OxyTs OxyG
742	185516	185533	ACAATGAAGAA TAGTATA	ASO-0876	OxyAs OxyMCs OxyAs OxyAs DNAts DNAgs DNAas DNAas DNAgs DNAas DNAas DNAts DNAas DNAgs OxyTs OxyAs OxyTs OxyA
743	186088	186104	TGTGGAATAAA GTGCAT	ASO-0877	OxyTs OxyGs OxyTs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAgs DNAts OxyGs OxyMCs OxyAs OxyT
744	186089	186105	TTGTGGAATAA	ASO-	OxyTs OxyTs OxyGs OxyTs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AGTGCA	0878	DNAas DNAgs DNAts OxyGs OxyMCs OxyA
745	186480	186499	TACTTTAAATTTCTCTGAAT	ASO-0879	OxyTs OxyAs OxyMCs OxyTs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAcs DNAts OxyGs OxyAs OxyAs OxyT
746	186769	186787	TATTCTACTCATTTGCTGT	ASO-0880	OxyTs OxyAs DNAts DNAts DNAcs DNAts DNAas DNAcs DNAts DNAcs DNAas DNAts DNAts DNAts DNAgs DNAcs DNAts OxyGs OxyT
747	186804	186820	TGTAGGCTGTTAAACTA	ASO-0881	OxyTs OxyGs OxyTs OxyAs DNAgs DNAgs DNAcs DNAts DNAgs DNAts DNAts DNAas DNAas DNAas DNAcs OxyTs OxyA
748	187540	187559	ATTTGATTCCATAAATAGCA	ASO-0882	OxyAs OxyTs DNAts DNAts DNAgs DNAas DNAts DNAts DNAcs DNAcs DNAas DNAts DNAas DNAas DNAas DNAts OxyAs OxyGs OxyMCs OxyA
749	187541	187559	ATTTGATTCCATAAATAGC	ASO-0054	OxyAs OxyTs OxyTs DNAts DNAgs DNAas DNAts DNAts DNAcs DNAcs DNAas DNAts DNAas DNAas DNAas OxyTs OxyAs OxyGs OxyMC
750	187620	187638	TACAAATATATTCTTCACA	ASO-0883	OxyTs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyAs OxyMCs OxyA
751	187629	187647	TCTCCTTTCTACAAATATA	ASO-0884	OxyTs OxyMCs DNAts DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAts DNAas DNAcs DNAas DNAas DNAas DNAts OxyAs OxyTs OxyA
752	188596	188612	GTTGTTTGAGGTAATCT	ASO-0885	OxyGs OxyTs OxyTs DNAgs DNAts DNAts DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAas OxyAs OxyTs OxyMCs OxyT
753	188820	188839	AGGACTGGACTTAATACATT	ASO-0886	OxyAs DNAgs DNAgs DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAas DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyT
754	188823	188839	AGGACTGGACTTAATAC	ASO-0887	OxyAs OxyGs OxyGs OxyAs DNAcs DNAts DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAas DNAas DNAts OxyAs OxyMC
755	189485	189502	ACACTGGAATGAAATTTT	ASO-0888	OxyAs OxyMCs OxyAs OxyMCs DNAts DNAgs DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas OxyTs OxyTs OxyTs OxyT
756	189696	189715	ATAAGAATTGTGTTGATAAA	ASO-0889	OxyAs OxyTs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAts DNAgs DNAts DNAgs DNAts DNAts DNAgs DNAas OxyTs OxyAs OxyAs OxyA
757	189905	189921	CCTAATTCCTGAAAGAT	ASO-0890	OxyMCs OxyMCs DNAts DNAas DNAas DNAts DNAts DNAcs DNAcs DNAts DNAgs DNAas DNAas OxyAs OxyGs OxyAs OxyT
758	190098	190115	CTAGTTATCTATCTGTAT	ASO-0891	OxyMCs OxyTs OxyAs DNAgs DNAts DNAts DNAas DNAts DNAcs DNAts DNAas DNAts DNAcs DNAts DNAgs OxyTs OxyAs OxyT
759	190985	191003	ATAAGAAACAAACAACTCA	ASO-0892	OxyAs OxyTs OxyAs OxyAs DNAgs DNAas DNAas DNAas DNAcs DNAas DNAas DNAas DNAcs DNAas DNAas OxyMCs OxyTs OxyMCs OxyA
760	191733	191752	TGTTGTTTAATTAAGTTCAT	ASO-0893	OxyTs OxyGs OxyTs OxyTs DNAgs DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAas DNAas DNAgs DNAts DNAts OxyMCs OxyAs OxyT
761	191737	191754	AATGTTGTTTAATTAAGT	ASO-0894	OxyAs OxyAs OxyTs OxyGs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAts DNAts OxyAs OxyAs OxyGs OxyT
762	191854	191873	TAAATTTGAGCAAAGAGATG	ASO-0055	OxyTs OxyAs OxyAs OxyAs DNAts DNAts DNAts DNAgs DNAas DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas OxyGs OxyAs OxyTs OxyG
763	191863	191880	AAAGGAATAAA	ASO-	OxyAs OxyAs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTTGAGC	0895	DNAts DNAts DNAts OxyGs OxyAs OxyGs OxyMC
764	192452	192471	GTTTTGTTCTAA TAATTCTG	ASO-0896	OxyGs OxyTs OxyTs DNAts DNAts DNAgs DNAts DNAts DNAcs DNAts DNAas DNAas DNAts DNAas DNAas DNAts OxyTs OxyMCs OxyTs OxyG
765	192638	192656	CTTGTGCTTTT GTGTCATA	ASO-0897	OxyMCs DNAts DNAts DNAgs DNAts DNAgs DNAcs DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs DNAts DNAcs OxyAs OxyTs OxyA
766	192963	192980	GTTGTTAAGTT ACAGAAG	ASO-0898	OxyGs OxyTs OxyTs OxyGs DNAts DNAts DNAas DNAas DNAgs DNAts DNAts DNAas DNAcs DNAas OxyGs OxyAs OxyAs OxyG
767	193072	193091	AATGATGAGTA ATGTTGAGT	ASO-0899	OxyAs OxyAs OxyTs OxyGs DNAas DNAts DNAgs DNAas DNAgs DNAts DNAas DNAas DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyGs OxyT
768	193590	193607	ATTCAATATTTG TGCTTT	ASO-0900	OxyAs OxyTs OxyTs OxyMCs DNAas DNAas DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAgs OxyMCs OxyTs OxyTs OxyT
769	193594	193610	ACCATTCAATA TTTGTG	ASO-0901	OxyAs OxyMCs OxyMCs OxyAs DNAts DNAts DNAcs DNAas DNAas DNAts DNAas DNAts DNAts DNAts OxyGs OxyTs OxyG
770	194118	194136	TGTAAAATTAAA GAGCTAA	ASO-0902	OxyTs OxyGs OxyTs OxyAs DNAas DNAas DNAas DNAts DNAts DNAas DNAas DNAas DNAgs DNAas DNAgs OxyMCs OxyTs OxyAs OxyA
771	194302	194320	GCAAATATGGA TGAAATTT	ASO-0903	OxyGs OxyMCs OxyAs OxyAs DNAas DNAts DNAas DNAts DNAgs DNAgs DNAas DNAts DNAgs DNAas DNAas OxyAs OxyTs OxyTs OxyT
772	195006	195024	CATTTACTCATT ATCCATC	ASO-0904	OxyMCs OxyAs DNAts DNAts DNAts DNAas DNAcs DNAts DNAcs DNAas DNAts DNAts DNAas DNAts DNAcs OxyMCs OxyAs OxyTs OxyMC
773	195355	195373	ATATCTAAATTC CTCTTTC	ASO-0905	OxyAs OxyTs OxyAs DNAts DNAcs DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAcs DNAts DNAcs OxyTs OxyTs OxyTs OxyMC
774	195619	195636	GTAGAGTTCAG TCATTTT	ASO-0906	OxyGs DNAts DNAas DNAgs DNAas DNAgs DNAts DNAts DNAcs DNAas DNAgs DNAts DNAcs DNAas OxyTs OxyTs OxyTs OxyT
775	195865	195883	TTCTTTTCAATA TTATCTT	ASO-0907	OxyTs OxyTs OxyMCs OxyTs DNAts DNAts DNAts DNAcs DNAas DNAas DNAts DNAas DNAts DNAts DNAas OxyTs OxyMCs OxyTs OxyT
776	196021	196037	GTAGAGGCTAT TAATGA	ASO-0908	OxyGs OxyTs OxyAs DNAgs DNAas DNAgs DNAgs DNAcs DNAts DNAas DNAts DNAts DNAas DNAas OxyTs OxyGs OxyA
777	196644	196662	TACAACAAATT AAAGAGGG	ASO-0909	OxyTs OxyAs OxyMCs OxyAs DNAas DNAcs DNAas DNAas DNAas DNAts DNAts DNAas DNAas DNAas DNAgs OxyAs OxyGs OxyGs OxyG
778	196726	196743	TTTGTGAAAGA GAACAGG	ASO-0910	OxyTs OxyTs OxyTs OxyGs DNAts DNAgs DNAas DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas OxyMCs OxyAs OxyGs OxyG
779	197052	197069	AGATGAGGAAT ATGATGG	ASO-0911	OxyAs OxyGs OxyAs OxyTs DNAgs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAas DNAts DNAgs DNAas OxyTs OxyGs OxyG
780	197054	197073	TATTAGATGAG GAATATGAT	ASO-0056	OxyTs OxyAs OxyTs OxyTs DNAas DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAas OxyTs OxyGs OxyAs OxyT
781	197415	197434	TTGTTTGATTTA AATTTCAC	ASO-0912	OxyTs OxyTs OxyGs OxyTs DNAts DNAts DNAgs DNAas DNAts DNAts DNAts DNAas DNAas DNAas DNAts DNAts OxyTs OxyMCs OxyAs OxyMC
782	197528	197546	CAATCTTGATTT	ASO-	OxyMCs OxyAs OxyAs OxyTs DNAcs DNAts DNAts DNAgs DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATTTTC	0913	DNAts DNAas DNAas DNAts OxyTs OxyTs OxyTs OxyMC
783	197899	197915	TGATGGAGATA ACTAGT	ASO-0914	OxyTs OxyGs OxyAs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAas DNAcs OxyTs OxyAs OxyGs OxyT
784	198307	198324	TAGTTTGGTGG ATGGTGC	ASO-0915	OxyTs DNAas DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAgs DNAgs DNAts OxyGs OxyMC
785	198518	198537	AATGTGTGGGT TTTCTTTCA	ASO-0916	OxyAs OxyAs DNAts DNAgs DNAts DNAgs DNAts DNAgs DNAgs DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts OxyTs OxyMCs OxyA
786	199058	199077	TATTTAATTTAA TGAATGCC	ASO-0917	OxyTs OxyAs OxyTs DNAts DNAts DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAgs DNAas DNAas OxyTs OxyGs OxyMCs OxyMC
787	199070	199088	ATATATGGCTT TATTTAAT	ASO-0918	OxyAs OxyTs OxyAs OxyTs DNAas DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts OxyTs OxyAs OxyAs OxyT
788	199524	199540	ATTGAGGTAAG TCTAGA	ASO-0919	OxyAs OxyTs OxyTs DNAgs DNAas DNAgs DNAgs DNAts DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyGs OxyA
789	199581	199599	TTATCTAAAATC TTATTTA	ASO-0920	OxyTs OxyTs OxyAs OxyTs DNAcs DNAts DNAas DNAas DNAas DNAas DNAts DNAcs DNAts DNAts DNAas OxyTs OxyTs OxyTs OxyA
790	199958	199975	AATGGTTTATT GTATGTG	ASO-0921	OxyAs OxyAs OxyTs OxyGs DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAgs DNAts DNAas OxyTs OxyGs OxyTs OxyG
791	200729	200745	CTACAGGGACT TACAAG	ASO-0922	OxyMCs OxyTs OxyAs OxyMCs DNAas DNAgs DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAas DNAcs OxyAs OxyAs OxyG
792	200739	200756	ATATTTTATTAC TACAGG	ASO-0923	OxyAs OxyTs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAts DNAas OxyMCs OxyAs OxyGs OxyG
793	200989	201007	GAGAGGAGAG AATAATGAA	ASO-0924	OxyGs OxyAs OxyGs OxyAs DNAgs DNAgs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAas DNAas OxyTs OxyGs OxyAs OxyA
794	201838	201855	TACTGTTACTG TTGATCC	ASO-0925	OxyTs DNAas DNAcs DNAts DNAgs DNAts DNAts DNAas DNAcs DNAts DNAgs DNAts DNAts DNAgs DNAas OxyTs OxyMCs OxyMC
795	201843	201862	GAGGAGATACT GTTACTGTT	ASO-0057	OxyGs OxyAs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAts DNAts DNAas DNAcs DNAts DNAgs OxyTs OxyT
796	202054	202073	TTCTAACATATT TCTAATCA	ASO-0926	OxyTs OxyTs OxyMCs OxyTs DNAas DNAas DNAcs DNAas DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAas DNAas OxyTs OxyMCs OxyA
797	202186	202204	TAATTCATCTAA AAGTTAG	ASO-0927	OxyTs OxyAs OxyAs OxyTs DNAts DNAcs DNAas DNAts DNAcs DNAts DNAas DNAas DNAas DNAas DNAgs OxyTs OxyTs OxyAs OxyG
798	202670	202687	TATTAACTATTG GAATTC	ASO-0928	OxyTs OxyAs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAas DNAts DNAts DNAgs DNAgs DNAas OxyAs OxyTs OxyTs OxyMC
799	202673	202690	ATGTATTAACTA TTGGAA	ASO-0929	OxyAs OxyTs OxyGs OxyTs DNAas DNAts DNAts DNAas DNAas DNAcs DNAts DNAas DNAts DNAts OxyGs OxyGs OxyAs OxyA
800	203349	203368	ATATCAGGGAC TTCAGTATC	ASO-0930	OxyAs OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAgs DNAgs DNAas DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAts DNAas OxyTs OxyMC
801	203606	203623	TTTTAATTCTTG	ASO-	OxyTs OxyTs OxyTs OxyTs DNAas DNAas DNAts DNAts DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AAGTCA	0931	DNAgs DNAas DNAas OxyGs OxyTs OxyMCs OxyA
802	203712	203728	CAGTTTTCATA ATCACC	ASO-0932	OxyMCs OxyAs OxyGs OxyTs DNAts DNAts DNAts DNAcs DNAas DNAts DNAas DNAas DNAts DNAcs OxyAs OxyMCs OxyMC
803	204117	204133	CGTATATTATG AGCATG	ASO-0933	OxyMCs OxyGs OxyTs OxyAs DNAts DNAas DNAts DNAts DNAas DNAts DNAgs DNAas DNAgs OxyMCs OxyAs OxyTs OxyG
804	204562	204579	ATTTGTATCCC ACCTATC	ASO-0934	OxyAs DNAts DNAts DNAts DNAgs DNAts DNAas DNAts DNAcs DNAcs DNAcs DNAas DNAcs DNAcs DNAts OxyAs OxyTs OxyMC
805	204568	204584	GCTTAATTTGT ATCCCA	ASO-0935	OxyGs OxyMCs DNAts DNAts DNAas DNAas DNAts DNAts DNAts DNAgs DNAts DNAas DNAts DNAcs DNAcs OxyMCs OxyA
806	204987	205005	GTGAATAAGTG ATTAAATA	ASO-0936	OxyGs OxyTs OxyGs OxyAs DNAas DNAts DNAas DNAas DNAgs DNAts DNAgs DNAas DNAts DNAts DNAas OxyAs OxyAs OxyTs OxyA
807	205172	205188	TATGGGGATAC AATGAA	ASO-0937	OxyTs OxyAs OxyTs OxyGs DNAgs DNAgs DNAgs DNAas DNAts DNAas DNAcs DNAas DNAas OxyTs OxyGs OxyAs OxyA
808	205690	205706	AGTAATGGAGA TTAAGG	ASO-0938	OxyAs OxyGs OxyTs OxyAs DNAas DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts OxyAs OxyAs OxyGs OxyG
809	205860	205879	GAGAAATGTCT GTTGTTCAA	ASO-0939	OxyGs OxyAs DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts OxyMCs OxyAs OxyA
810	206273	206291	AGGCAGAAGTT GTAATGGT	ASO-0940	OxyAs OxyGs DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAgs DNAts DNAts DNAgs DNAts DNAas DNAas DNAts DNAgs OxyGs OxyT
811	206274	206292	AAGGCAGAAGT TGTAATGG	ASO-0058	OxyAs OxyAs OxyGs OxyGs DNAcs DNAas DNAgs DNAas DNAas DNAgs DNAts DNAts DNAgs DNAts DNAas DNAas DNAts OxyGs OxyG
812	206749	206766	ATTTCATCAGT AATAGAT	ASO-0941	OxyAs OxyTs OxyTs OxyTs DNAcs DNAas DNAts DNAcs DNAas DNAgs DNAts DNAas DNAas DNAts OxyAs OxyGs OxyAs OxyT
813	207074	207091	TTAGAGATTTT GTGAATA	ASO-0942	OxyTs OxyTs OxyAs OxyGs DNAas DNAgs DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs OxyAs OxyAs OxyTs OxyA
814	207236	207254	ATTTTCTAACTT TAACATA	ASO-0943	OxyAs OxyTs OxyTs OxyTs DNAts DNAcs DNAts DNAas DNAas DNAcs DNAts DNAts DNAts DNAas DNAas OxyMCs OxyAs OxyTs OxyA
815	207748	207767	TACTGATCTTT GTTATGTTA	ASO-0944	OxyTs OxyAs DNAcs DNAts DNAgs DNAas DNAts DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAas DNAts OxyGs OxyTs OxyTs OxyA
816	207753	207769	CTTACTGATCT TTGTTA	ASO-0945	OxyMCs OxyTs OxyTs OxyAs DNAcs DNAts DNAgs DNAas DNAts DNAcs DNAts DNAts DNAts DNAgs OxyTs OxyTs OxyA
817	208449	208468	TTTTGCTTTATT AAGTTCTG	ASO-0946	OxyTs OxyTs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAts OxyTs OxyMCs OxyTs OxyG
818	208505	208522	GAGTGAGATAA AAGGATG	ASO-0947	OxyGs OxyAs OxyGs OxyTs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAas DNAas DNAas DNAgs OxyGs OxyAs OxyTs OxyG
819	208949	208966	GAATTTCTTGG TTATTAG	ASO-0948	OxyGs OxyAs OxyAs OxyTs DNAts DNAts DNAcs DNAts DNAts DNAgs DNAgs DNAts DNAts DNAas OxyTs OxyTs OxyAs OxyG
820	209096	209112	AATTTTGTAGA	ASO-	OxyAs OxyAs OxyTs OxyTs DNAts DNAts DNAgs DNAts DNAas DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GCAGAC	0949	DNAgs DNAcs OxyAs OxyGs OxyAs OxyMC
821	209851	209869	TTGCCACTATG TCTTCAAA	ASO-0950	OxyTs DNAts DNAgs DNAcs DNAcs DNAas DNAcs DNAts DNAas DNAts DNAgs DNAts DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyA
822	209852	209868	TGCCACTATGT CTTCAA	ASO-0951	OxyTs OxyGs DNAcs DNAcs DNAas DNAcs DNAts DNAas DNAts DNAgs DNAts DNAcs DNAts DNAts OxyMCs OxyAs OxyA
823	209852	209869	TTGCCACTATG TCTTCAA	ASO-0952	OxyTs DNAts DNAgs DNAcs DNAcs DNAas DNAcs DNAts DNAas DNAts DNAgs DNAts DNAcs DNAts OxyTs OxyMCs OxyAs OxyA
824	209853	209869	TTGCCACTATG TCTTCA	ASO-0953	OxyTs DNAts DNAgs DNAcs DNAcs DNAas DNAcs DNAts DNAas DNAts DNAgs DNAts DNAcs DNAts OxyTs OxyMCs OxyA
825	209888	209904	CACTTACCTGG CATCAG	ASO-0954	OxyMCs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAgs DNAgs DNAcs DNAas DNAts DNAcs OxyAs OxyG
826	210073	210092	TTGATAAAATAT GTAATCTA	ASO-0955	OxyTs OxyTs OxyGs OxyAs DNAts DNAas DNAas DNAas DNAas DNAts DNAas DNAts DNAgs DNAts DNAas DNAas OxyTs OxyMCs OxyTs OxyA
827	210416	210435	TTAGATATTCAT TGTTCAGT	ASO-0956	OxyTs OxyTs OxyAs DNAgs DNAas DNAts DNAas DNAts DNAts DNAcs DNAas DNAts DNAts DNAgs DNAts DNAts DNAcs OxyAs OxyGs OxyT
828	210513	210530	AAGGGTTTTAA TGAAATT	ASO-0957	OxyAs OxyAs OxyGs OxyGs DNAgs DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAgs DNAas OxyAs OxyAs OxyTs OxyT
829	210750	210769	ACAGAATATAT AAAAGTACA	ASO-0059	OxyAs OxyMCs OxyAs OxyGs DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAas DNAgs OxyTs OxyAs OxyMCs OxyA
830	210752	210770	TACAGAATATA TAAAAGTA	ASO-0958	OxyTs OxyAs OxyMCs OxyAs DNAgs DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAas DNAas DNAas OxyAs OxyGs OxyTs OxyA
831	211144	211160	TTTGGGGTAAA CTGAGC	ASO-0959	OxyTs DNAts DNAts DNAgs DNAgs DNAgs DNAgs DNAts DNAas DNAas DNAas DNAcs DNAts OxyGs OxyAs OxyGs OxyMC
832	211327	211344	TTTTAATTTCAA CCAGTA	ASO-0960	OxyTs OxyTs OxyTs OxyTs DNAas DNAas DNAts DNAts DNAts DNAcs DNAas DNAas DNAcs DNAcs OxyAs OxyGs OxyTs OxyA
833	211798	211814	CTAGTGAGAAT GGATTC	ASO-0961	OxyMCs OxyTs OxyAs OxyGs DNAts DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAgs OxyAs OxyTs OxyTs OxyMC
834	211970	211986	TAAACCATAGG AATCTT	ASO-0962	OxyTs OxyAs OxyAs OxyAs DNAcs DNAcs DNAas DNAts DNAas DNAgs DNAgs DNAas DNAas OxyTs OxyMCs OxyTs OxyT
835	212270	212287	TTGTATAAGTT CACTGTG	ASO-0963	OxyTs OxyTs OxyGs OxyTs DNAas DNAts DNAas DNAas DNAgs DNAts DNAts DNAcs DNAas DNAcs DNAts OxyGs OxyTs OxyG
836	212647	212666	AGTATATAACA GGAAAACAA	ASO-0964	OxyAs OxyGs OxyTs OxyAs DNAts DNAas DNAts DNAas DNAas DNAcs DNAas DNAgs DNAgs DNAas DNAas DNAas OxyAs OxyMCs OxyAs OxyA
837	213141	213158	AAAGGCACATA ATCACAT	ASO-0965	OxyAs OxyAs OxyAs OxyGs DNAgs DNAcs DNAas DNAcs DNAas DNAts DNAas DNAas DNAts DNAcs OxyAs OxyMCs OxyAs OxyT
838	213141	213159	TAAAGGCACAT AATCACAT	ASO-0966	OxyTs OxyAs OxyAs OxyAs DNAgs DNAgs DNAcs DNAas DNAcs DNAas DNAts DNAas DNAas DNAts DNAcs OxyAs OxyMCs OxyAs OxyT
839	213143	213159	TAAAGGCACAT	ASO-	OxyTs OxyAs OxyAs OxyAs DNAgs DNAgs DNAcs DNAas DNAcs DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATCAC	0967	DNAas DNAas OxyTs OxyMCs OxyAs OxyMC
840	213144	213163	ATTTTAAAGGC ACATAATCA	ASO-0968	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs DNAas DNAts DNAas OxyAs OxyTs OxyMCs OxyA
841	213145	213164	CATTTTAAAGG CACATAATC	ASO-0969	OxyMCs OxyAs OxyTs OxyTs DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs DNAas DNAts OxyAs OxyAs OxyTs OxyMC
842	213146	213165	ACATTTTAAAG GCACATAAT	ASO-0060	OxyMCs OxyAs OxyTs OxyTs DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs DNAas OxyTs OxyAs OxyAs OxyT
843	213146	213164	CATTTTAAAGG CACATAAT	ASO-0970	OxyAs OxyMCs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs DNAas OxyTs OxyAs OxyAs OxyT
844	213147	213165	ACATTTTAAAG GCACATAA	ASO-0971	OxyAs OxyMCs OxyAs OxyTs DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs OxyAs OxyTs OxyAs OxyA
845	213147	213166	AACATTTTAAA GGCACATAA	ASO-0972	OxyAs OxyAs OxyMCs OxyAs DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas DNAcs OxyAs OxyTs OxyAs OxyA
846	213148	213166	AACATTTTAAA GGCACATA	ASO-0061	OxyAs OxyAs OxyMCs OxyAs DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas OxyMCs OxyAs OxyTs OxyA
847	213148	213167	GAACATTTTAA AGGCACATA	ASO-0062	OxyGs OxyAs OxyAs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas OxyMCs OxyAs OxyTs OxyA
848	213149	213167	GAACATTTTAA AGGCACAT	ASO-0063	OxyGs OxyAs OxyAs OxyMCs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs OxyAs OxyMCs OxyAs OxyT
849	213149	213168	AGAACATTTTA AAGGCACAT	ASO-0064	OxyAs OxyGs OxyAs OxyAs DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs DNAcs DNAas OxyMCs OxyAs OxyT
850	213150	213168	AGAACATTTTA AAGGCACA	ASO-0065	OxyAs OxyGs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs OxyMCs OxyAs OxyMCs OxyA
851	213150	213169	GAGAACATTTT AAAGGCACA	ASO-0066	OxyGs OxyAs DNAgs DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs OxyMCs OxyAs OxyMCs OxyA
852	213151	213169	GAGAACATTTT AAAGGCAC	ASO-0067	OxyGs OxyAs OxyGs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAgs OxyMCs OxyAs OxyMC
853	213153	213172	AGGGAGAACAT TTTAAAGGC	ASO-0068	OxyAs DNAgs DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas DNAas OxyGs OxyGs OxyMC
854	213154	213172	AGGGAGAACAT TTTAAAGG	ASO-0069	OxyAs OxyGs OxyGs DNAgs DNAas DNAgs DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAas OxyAs OxyGs OxyG
855	213155	213172	AGGGAGAACAT TTTAAAG	ASO-0070	OxyAs OxyGs OxyGs OxyGs DNAas DNAgs DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyAs OxyAs OxyG
856	213160	213177	ATGGAAGGGA GAACATTT	ASO-0973	OxyAs OxyTs OxyGs OxyGs DNAas DNAas DNAgs DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAcs OxyAs OxyTs OxyTs OxyT
857	213177	213195	CAAAGATACAA GGGCAGAA	ASO-0974	OxyMCs OxyAs OxyAs OxyAs DNAgs DNAas DNAts DNAas DNAcs DNAas DNAas DNAgs DNAgs DNAgs DNAcs OxyAs OxyGs OxyAs OxyA
858	213178	213195	CAAAGATACAA	ASO-	OxyMCs OxyAs OxyAs DNAas DNAgs DNAas DNAts DNAas DNAcs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GGGCAGA	0975	DNAas DNAgs DNAgs DNAgs OxyMCs OxyAs OxyGs OxyA
859	213182	213199	ACTGCAAAGAT ACAAGGG	ASO-0976	OxyAs OxyMCs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAcs DNAas OxyAs OxyGs OxyGs OxyG
860	213182	213200	GACTGCAAAGA TACAAGGG	ASO-0977	OxyGs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAcs DNAas DNAas OxyGs OxyGs OxyG
861	213183	213200	GACTGCAAAGA TACAAGG	ASO-0978	OxyGs OxyAs OxyMCs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAcs OxyAs OxyAs OxyGs OxyG
862	213183	213201	TGACTGCAAAG ATACAAGG	ASO-0979	OxyTs OxyGs OxyAs DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAcs DNAas DNAas OxyGs OxyG
863	213183	213202	ATGACTGCAAA GATACAAGG	ASO-0980	OxyAs OxyTs DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAcs OxyAs OxyAs OxyGs OxyG
864	213184	213201	TGACTGCAAAG ATACAAG	ASO-0981	OxyTs OxyGs OxyAs OxyMCs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas OxyMCs OxyAs OxyAs OxyG
865	213184	213202	ATGACTGCAAA GATACAAG	ASO-0982	OxyAs OxyTs OxyGs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas OxyMCs OxyAs OxyAs OxyG
866	213184	213203	AATGACTGCAA AGATACAAG	ASO-0983	OxyAs OxyAs OxyTs OxyGs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas OxyMCs OxyAs OxyAs OxyG
867	213185	213204	CAATGACTGCA AAGATACAA	ASO-0984	OxyMCs OxyAs OxyAs OxyTs DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas OxyMCs OxyAs OxyA
868	213186	213204	CAATGACTGCA AAGATACA	ASO-0985	OxyMCs OxyAs OxyAs DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas OxyTs OxyAs OxyMCs OxyA
869	213186	213205	ACAATGACTGC AAAGATACA	ASO-0986	OxyAs OxyMCs OxyAs OxyAs DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts OxyAs OxyMCs OxyA
870	213187	213205	ACAATGACTGC AAAGATAC	ASO-0987	OxyAs OxyMCs OxyAs OxyAs DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs OxyAs OxyTs OxyAs OxyMC
871	213188	213206	TACAATGACTG CAAAGATA	ASO-0988	OxyTs OxyAs OxyMCs OxyAs DNAas DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas DNAas DNAgs OxyAs OxyTs OxyA
872	213189	213208	TATACAATGAC TGCAAAGAT	ASO-0989	OxyTs OxyAs DNAts DNAas DNAcs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAas OxyAs OxyGs OxyAs OxyT
873	213191	213208	TATACAATGAC TGCAAAG	ASO-0990	OxyTs OxyAs OxyTs OxyAs DNAcs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAts DNAgs DNAcs OxyAs OxyAs OxyAs OxyG
874	213240	213256	AACTATGCCAT TTAGGT	ASO-0991	OxyAs OxyAs DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts OxyAs OxyGs OxyGs OxyT
875	213240	213257	GAACTATGCCA TTTAGGT	ASO-0992	OxyGs OxyAs OxyAs DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAgs OxyGs OxyT
876	213240	213259	GTGAACTATGC CATTTAGGT	ASO-0993	OxyGs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAgs OxyGs OxyT
877	213241	213257	GAACTATGCCA	ASO-	OxyGs OxyAs OxyAs OxyMCs DNAts DNAas DNAts DNAgs DNAcs DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTTAGG	0994	DNAas DNAts DNAts DNAts DNAas OxyGs OxyG
878	213241	213258	TGAACTATGCC ATTTAGG	ASO-0995	OxyTs DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts OxyAs OxyGs OxyG
879	213241	213259	GTGAACTATGC CATTTAGG	ASO-0996	OxyGs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts OxyAs OxyGs OxyG
880	213242	213259	GTGAACTATGC CATTTAG	ASO-0997	OxyGs OxyTs DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts OxyTs OxyAs OxyG
881	213242	213260	TGTGAACTATG CCATTTAG	ASO-0998	OxyTs DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts OxyTs OxyTs OxyAs OxyG
882	213242	213261	CTGTGAACTAT GCCATTTAG	ASO-0999	OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts DNAts OxyAs OxyG
883	213243	213259	GTGAACTATGC CATTTA	ASO-1000	OxyGs OxyTs DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas OxyTs OxyTs OxyTs OxyA
884	213243	213260	TGTGAACTATG CCATTTA	ASO-1001	OxyTs OxyGs OxyTs DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas DNAts DNAts OxyTs OxyA
885	213243	213261	CTGTGAACTAT GCCATTTA	ASO-1002	OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs DNAas OxyTs OxyTs OxyTs OxyA
886	213246	213262	CCTGTGAACTA TGCCAT	ASO-1003	OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs DNAcs DNAcs OxyAs OxyT
887	213248	213263	CCCTGTGAACT ATGCC	ASO-1004	OxyMCs DNAcs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAas DNAts DNAgs OxyMCs OxyMC
888	213267	213283	CCATATACTGA CCTTCA	ASO-1005	OxyMCs OxyMCs OxyAs DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAcs DNAcs DNAts DNAts OxyMCs OxyA
889	213267	213284	TCCATATACTG ACCTTCA	ASO-1006	OxyTs OxyMCs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAcs DNAcs DNAts OxyTs OxyMCs OxyA
890	213268	213284	TCCATATACTG ACCTTC	ASO-1007	OxyTs OxyMCs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAcs OxyMCs OxyTs OxyTs OxyMC
891	213269	213285	CTCCATATACT GACCTT	ASO-1008	OxyMCs DNAts DNAcs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas OxyMCs OxyMCs OxyTs OxyT
892	213269	213286	ACTCCATATAC TGACCTT	ASO-1009	OxyAs OxyMCs DNAts DNAcs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAcs OxyMCs OxyTs OxyT
893	213270	213286	ACTCCATATAC TGACCT	ASO-1010	OxyAs OxyMCs OxyTs OxyMCs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas DNAcs OxyMCs OxyT
894	213271	213287	GACTCCATATA CTGACC	ASO-1011	OxyGs OxyAs OxyMCs DNAts DNAcs DNAcs DNAas DNAts DNAas DNAts DNAas DNAcs DNAts DNAgs DNAas OxyMCs OxyMC
895	213450	213467	TTTTGCTATGAT GTATAT	ASO-1012	OxyTs OxyTs OxyTs OxyTs DNAgs DNAcs DNAts DNAas DNAts DNAgs DNAas DNAts DNAgs DNAts OxyAs OxyTs OxyAs OxyT
896	213587	213605	AGGCGGACATA	ASO-	OxyAs DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CATCACAG	1013	DNAas DNAcs DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyG
897	213587	213606	CAGGCGGACAT ACATCACAG	ASO-1014	OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyG
898	213588	213605	AGGCGGACATA CATCACA	ASO-1015	OxyAs OxyGs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas OxyMCs OxyA
899	213588	213606	CAGGCGGACAT ACATCACA	ASO-1016	OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas OxyMCs OxyA
900	213589	213605	AGGCGGACATA CATCAC	ASO-1017	OxyAs OxyGs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyMC
901	213589	213606	CAGGCGGACAT ACATCAC	ASO-1018	OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas OxyTs OxyMCs OxyAs OxyMC
902	213589	213607	ACAGGCGGAC ATACATCAC	ASO-1019	OxyAs DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyMC
903	213589	213608	TACAGGCGGAC ATACATCAC	ASO-1020	OxyTs OxyAs DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs OxyAs OxyMC
904	213590	213605	AGGCGGACATA CATCA	ASO-1021	OxyAs OxyGs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs OxyAs OxyTs OxyMCs OxyA
905	213590	213606	CAGGCGGACAT ACATCA	ASO-1022	OxyMCs OxyAs DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas OxyTs OxyMCs OxyA
906	213590	213607	ACAGGCGGAC ATACATCA	ASO-1023	OxyAs OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas OxyTs OxyMCs OxyA
907	213590	213608	TACAGGCGGAC ATACATCA	ASO-1024	OxyTs DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas OxyTs OxyMCs OxyA
908	213591	213606	CAGGCGGACAT ACATC	ASO-1025	OxyMCs OxyAs DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
909	213591	213607	ACAGGCGGAC ATACATC	ASO-1026	OxyAs OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
910	213591	213608	TACAGGCGGAC ATACATC	ASO-1027	OxyTs DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
911	213591	213609	CTACAGGCGGA CATACATC	ASO-1028	OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas DNAcs OxyAs OxyTs OxyMC
912	213592	213608	TACAGGCGGAC ATACAT	ASO-1029	OxyTs OxyAs OxyMCs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyT
913	213592	213609	CTACAGGCGGA CATACAT	ASO-1030	OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts OxyAs OxyMCs OxyAs OxyT
914	213592	213610	TCTACAGGCGG ACATACAT	ASO-1031	OxyTs DNAcs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyT
915	213593	213608	TACAGGCGGAC	ASO-	OxyTs OxyAs OxyMCs OxyAs DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATACA	1032	DNAcs DNAas DNAts DNAas OxyMCs OxyA
916	213593	213609	CTACAGGCGGA CATACA	ASO-1033	OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas OxyTs OxyAs OxyMCs OxyA
917	213593	213610	TCTACAGGCGG ACATACA	ASO-1034	OxyTs OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyA
918	213594	213610	TCTACAGGCGG ACATAC	ASO-1035	OxyTs OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas DNAcs OxyAs OxyTs OxyAs OxyMC
919	213595	213610	TCTACAGGCGG ACATA	ASO-1036	OxyTs OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs DNAgs DNAas OxyMCs OxyAs OxyTs OxyA
920	213597	213612	AATCTACAGGC GGACA	ASO-1037	OxyAs OxyAs OxyTs DNAcs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs OxyGs OxyAs OxyMCs OxyA
921	213597	213613	AAATCTACAGG CGGACA	ASO-1038	OxyAs OxyAs OxyAs DNAts DNAcs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs OxyGs OxyAs OxyMCs OxyA
922	213598	213612	AATCTACAGGC GGAC	ASO-1039	OxyAs OxyAs OxyTs OxyMCs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAmcs DNAgs OxyGs OxyAs OxyMC
923	213612	213629	ACAGAAGTGGT GTTTAAA	ASO-1040	OxyAs OxyMCs OxyAs OxyGs DNAas DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts OxyTs OxyAs OxyAs OxyA
924	213612	213630	AACAGAAGTGG TGTTTAAA	ASO-1041	OxyAs OxyAs OxyMCs OxyAs DNAgs DNAas DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAgs DNAts DNAts OxyTs OxyAs OxyAs OxyA
925	213613	213630	AACAGAAGTGG TGTTTAA	ASO-1042	OxyAs OxyAs OxyMCs OxyAs DNAgs DNAas DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAgs DNAts OxyTs OxyTs OxyAs OxyA
926	213926	213944	TGGTTATAAATT CTTCCAG	ASO-1043	OxyTs DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyMCs OxyAs OxyG
927	213927	213944	TGGTTATAAATT CTTCCA	ASO-1044	OxyTs OxyGs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyMCs OxyA
928	213927	213945	CTGGTTATAAA TTCTTCCA	ASO-1045	OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAts OxyTs OxyMCs OxyMCs OxyA
929	213927	213946	CCTGGTTATAA ATTCTTCCA	ASO-1046	OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs DNAts DNAts DNAcs OxyMCs OxyA
930	213928	213945	CTGGTTATAAA TTCTTCC	ASO-1047	OxyMCs OxyTs DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyMCs OxyMC
931	213928	213946	CCTGGTTATAA ATTCTTCC	ASO-1048	OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyMCs OxyMC
932	213929	213946	CCTGGTTATAA ATTCTTC	ASO-1049	OxyMCs OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts OxyMCs OxyTs OxyTs OxyMC
933	213929	213947	TCCTGGTTATA AATTCTTC	ASO-1050	OxyTs OxyMCs OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyMC
934	213929	213948	TTCCTGGTTAT	ASO-	OxyTs OxyTs OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AAATTCTTC	1051	DNAas DNAas DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyMC
935	213930	213947	TCCTGGTTATA AATTCTT	ASO-1052	OxyTs OxyMCs OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts OxyMCs OxyTs OxyT
936	213930	213948	TTCCTGGTTAT AAATTCTT	ASO-1053	OxyTs OxyTs OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts OxyTs OxyMCs OxyTs OxyT
937	213930	213949	TTTCCTGGTTA TAAATTCTT	ASO-1054	OxyTs OxyTs OxyTs OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts OxyMCs OxyTs OxyT
938	213931	213948	TTCCTGGTTAT AAATTCT	ASO-1055	OxyTs OxyTs OxyMCs OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAts OxyMCs OxyT
939	213931	213949	TTTCCTGGTTA TAAATTCT	ASO-1056	OxyTs OxyTs OxyTs OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts OxyTs OxyMCs OxyT
940	213931	213950	ATTTCCTGGTT ATAAATTCT	ASO-1057	OxyAs OxyTs OxyTs OxyTs DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAts OxyTs OxyMCs OxyT
941	213932	213948	TTCCTGGTTAT AAATTC	ASO-1058	OxyTs OxyTs OxyMCs OxyMCs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyMC
942	213932	213949	TTTCCTGGTTA TAAATTC	ASO-1059	OxyTs OxyTs OxyTs OxyMCs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyMC
943	213932	213950	ATTTCCTGGTT ATAAATTC	ASO-1060	OxyAs OxyTs OxyTs OxyTs DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyMC
944	213932	213951	CATTTCCTGGT TATAAATTC	ASO-1061	OxyMCs OxyAs OxyTs OxyTs DNAts DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas DNAas DNAas OxyTs OxyTs OxyMC
945	213933	213951	CATTTCCTGGT TATAAATT	ASO-1062	OxyMCs OxyAs OxyTs OxyTs DNAts DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas OxyAs OxyAs OxyTs OxyT
946	213933	213952	TCATTTCCTGG TTATAAATT	ASO-1063	OxyTs OxyMCs OxyAs DNAts DNAts DNAts DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts DNAas OxyAs OxyAs OxyTs OxyT
947	213934	213951	CATTTCCTGGT TATAAAT	ASO-1064	OxyMCs OxyAs OxyTs OxyTs DNAts DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts OxyAs OxyAs OxyAs OxyT
948	213934	213952	TCATTTCCTGG TTATAAAT	ASO-1065	OxyTs OxyMCs OxyAs OxyTs DNAts DNAts DNAcs DNAcs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAts OxyAs OxyAs OxyAs OxyT
949	214149	214165	CACTGTCTGTA TACCCT	ASO-1066	OxyMCs DNAas DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAas DNAts DNAas DNAcs DNAcs OxyMCs OxyT
950	214152	214169	CACTCACTGTC TGTATAC	ASO-1067	OxyMCs OxyAs OxyMCs DNAts DNAcs DNAas DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAas DNAts OxyAs OxyMC
951	214152	214170	ACACTCACTGT CTGTATAC	ASO-1068	OxyAs OxyMCs OxyAs DNAcs DNAts DNAcs DNAas DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAas DNAts OxyAs OxyMC
952	214153	214169	CACTCACTGTC TGTATA	ASO-1069	OxyMCs OxyAs OxyMCs DNAts DNAcs DNAas DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAgs DNAts DNAas OxyTs OxyA
953	214159	214175	AGCTTACACTC	ASO-	OxyAs DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAts DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ACTGTC	1070	DNAas DNAcs DNAts DNAgs OxyTs OxyMC
954	214160	214176	AAGCTTACACT CACTGT	ASO-1071	OxyAs OxyAs OxyGs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAts DNAcs DNAas DNAcs DNAts OxyGs OxyT
955	214163	214178	CCAAGCTTACA CTCAC	ASO-1072	OxyMCs OxyMCs OxyAs OxyAs DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAts DNAcs OxyAs OxyMC
956	214279	214295	GCATTACTCAC CTTCAG	ASO-1073	OxyGs OxyMCs DNAas DNAts DNAts DNAas DNAcs DNAts DNAcs DNAas DNAcs DNAcs DNAts DNAts DNAcs OxyAs OxyG
957	214433	214451	TAGAGATGAAA TAAGAGAG	ASO-1074	OxyTs OxyAs OxyGs OxyAs DNAgs DNAas DNAts DNAgs DNAas DNAas DNAas DNAts DNAas DNAas DNAgs OxyAs OxyGs OxyAs OxyG
958	214766	214784	TAATGTTAAGG GAAAGAGA	ASO-1075	OxyTs OxyAs OxyAs OxyTs DNAgs DNAts DNAts DNAas DNAas DNAgs DNAgs DNAgs DNAas DNAas DNAas OxyGs OxyAs OxyGs OxyA
959	214967	214984	TAAGGGTATCA GTAGGCA	ASO-0071	OxyTs OxyAs OxyAs DNAgs DNAgs DNAgs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAgs OxyMCs OxyA
960	214969	214984	TAAGGGTATCA GTAGG	ASO-1076	OxyTs OxyAs OxyAs OxyGs DNAgs DNAgs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAts DNAas OxyGs OxyG
961	215349	215367	GACTGGAAATA TGGATTTA	ASO-1077	OxyGs OxyAs OxyMCs OxyTs DNAgs DNAgs DNAas DNAas DNAas DNAts DNAas DNAts DNAgs DNAgs DNAas OxyTs OxyTs OxyTs OxyA
962	215705	215724	ATATATGTTCA CTTAAAAGG	ASO-1078	OxyAs OxyTs OxyAs OxyTs DNAas DNAts DNAgs DNAts DNAts DNAcs DNAas DNAcs DNAts DNAts DNAas DNAas OxyAs OxyAs OxyGs OxyG
963	215706	215724	ATATATGTTCA CTTAAAAG	ASO-1079	OxyAs OxyTs OxyAs OxyTs DNAas DNAts DNAgs DNAts DNAts DNAcs DNAas DNAcs DNAts DNAts DNAas OxyAs OxyAs OxyAs OxyG
964	216351	216370	ATCATGGGTAT AAAAGGCAC	ASO-1080	OxyAs DNAts DNAcs DNAas DNAts DNAgs DNAgs DNAgs DNAts DNAas DNAts DNAas DNAas DNAas DNAas DNAgs OxyGs OxyMCs OxyAs OxyMC
965	216411	216429	TTTAACTTTACT ATATTGG	ASO-1081	OxyTs OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts DNAas DNAts DNAas OxyTs OxyTs OxyGs OxyG
966	216786	216802	ATGTACTTTTG GTTGAC	ASO-1082	OxyAs OxyTs OxyGs DNAts DNAas DNAcs DNAts DNAts DNAts DNAts DNAgs DNAgs DNAts OxyTs OxyGs OxyAs OxyMC
967	216889	216906	ATAGTGATCTT TATTCTG	ASO-1083	OxyAs OxyTs OxyAs OxyGs DNAts DNAgs DNAas DNAts DNAcs DNAts DNAts DNAts DNAas DNAts DNAts OxyMCs OxyTs OxyG
968	217509	217528	TTACAGGCTTT TAATTCATC	ASO-1084	OxyTs OxyTs OxyAs OxyMCs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAas OxyTs OxyMC
969	217513	217530	CTTTACAGGCT TTTAATT	ASO-1085	OxyMCs OxyTs OxyTs OxyTs DNAas DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAts DNAas DNAas OxyTs OxyT
970	217809	217828	ATTTTATTCTTC TTTGTCTC	ASO-1086	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAts DNAcs OxyTs OxyMC
971	218208	218225	TTCACAAATAT CCAACAC	ASO-1087	OxyTs OxyTs OxyMCs OxyAs DNAcs DNAas DNAas DNAas DNAts DNAas DNAts DNAcs DNAcs DNAas OxyAs OxyMCs OxyAs OxyMC
972	218211	218228	CAATTCACAAA	ASO-	OxyMCs OxyAs OxyAs OxyTs DNAts DNAcs DNAas DNAcs DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TATCCAA	1088	DNAas DNAts DNAas DNAts OxyMCs OxyMCs OxyAs OxyA
973	218876	218893	CCAGATTGTTG TTCATGA	ASO-1089	OxyMCs DNAcs DNAas DNAgs DNAas DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAcs OxyAs OxyTs OxyGs OxyA
974	218981	218997	TTCTGAATAGG GGCTAA	ASO-1090	OxyTs OxyTs OxyMCs DNAts DNAgs DNAas DNAas DNAts DNAas DNAgs DNAgs DNAgs DNAgs OxyMCs OxyTs OxyAs OxyA
975	219839	219857	TATTCCATTCCT GTTTATT	ASO-1091	OxyTs OxyAs OxyTs DNAts DNAcs DNAcs DNAas DNAts DNAts DNAcs DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas OxyTs OxyT
976	219917	219936	TATGTGCTATA AGTTTGCAA	ASO-0072	OxyTs OxyAs DNAts DNAgs DNAts DNAgs DNAcs DNAts DNAas DNAts DNAas DNAas DNAgs DNAts DNAts DNAts OxyGs OxyMCs OxyAs OxyA
977	219976	219992	TGTGTGGAATT AATGCC	ASO-1092	OxyTs DNAgs DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAas DNAts DNAts DNAas DNAas OxyTs OxyGs OxyMCs OxyMC
978	220130	220147	TCTGTCACTTA TCTTTTG	ASO-1093	OxyTs OxyMCs DNAts DNAgs DNAts DNAcs DNAas DNAcs DNAts DNAts DNAas DNAts DNAcs DNAts DNAts DNAts OxyTs OxyG
979	220732	220751	TTGGGAGATAA AATAACTCA	ASO-1094	OxyTs OxyTs OxyGs OxyGs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAas DNAas DNAas DNAts DNAas DNAas DNAcs OxyTs OxyMCs OxyA
980	220735	220752	CTTGGGAGATA AAATAAC	ASO-1095	OxyMCs OxyTs OxyTs OxyGs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAas DNAas DNAas OxyTs OxyAs OxyAs OxyMC
981	220916	220933	CAACAACCATT TATAGCA	ASO-1096	OxyMCs OxyAs OxyAs DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts OxyAs OxyGs OxyMCs OxyA
982	220916	220934	TCAACAACCAT TTATAGCA	ASO-1097	OxyTs OxyMCs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts DNAas OxyGs OxyMCs OxyA
983	220917	220934	TCAACAACCAT TTATAGC	ASO-1098	OxyTs OxyMCs OxyAs OxyAs DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts OxyAs OxyGs OxyMC
984	220917	220935	GTCAACAACCA TTTATAGC	ASO-1099	OxyGs OxyTs OxyMCs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts DNAas OxyGs OxyMC
985	220917	220936	TGTCAACAACC ATTTATAGC	ASO-1100	OxyTs DNAgs DNAts DNAcs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts DNAas OxyGs OxyMC
986	220918	220935	GTCAACAACCA TTTATAG	ASO-1101	OxyGs OxyTs OxyMCs OxyAs DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas OxyTs OxyAs OxyG
987	220918	220936	TGTCAACAACC ATTTATAG	ASO-1102	OxyTs OxyGs OxyTs OxyMCs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAts OxyAs OxyG
988	220918	220937	GTGTCAACAAC CATTTATAG	ASO-1103	OxyGs DNAts DNAgs DNAts DNAcs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas OxyTs OxyAs OxyG
989	220919	220936	TGTCAACAACC ATTTATA	ASO-1104	OxyTs OxyGs OxyTs OxyMCs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas OxyTs OxyA
990	220919	220937	GTGTCAACAAC CATTTATA	ASO-1105	OxyGs OxyTs OxyGs DNAts DNAcs DNAas DNAas DNAcs DNAas DNAas DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas OxyTs OxyA
991	221023	221041	AGGTTGGTTTT	ASO-	OxyAs OxyGs OxyGs OxyTs DNAts DNAgs DNAgs DNAts DNAts DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TAAATAGA	1106	DNAts DNAas DNAas DNAas DNAts DNAas OxyGs OxyA
992	221024	221041	AGGTTGGTTTT TAAATAG	ASO-1107	OxyAs OxyGs OxyGs DNAts DNAts DNAgs DNAgs DNAts DNAts DNAts DNAts DNAts DNAas DNAas OxyAs OxyTs OxyAs OxyG
993	221141	221158	TTTAATATTTGT AACTTG	ASO-1108	OxyTs OxyTs OxyTs OxyAs DNAas DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAas DNAas OxyMCs OxyTs OxyTs OxyG
994	221558	221575	ATTTGCTACTAT TCCACT	ASO-1109	OxyAs DNAts DNAts DNAts DNAgs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAts DNAcs OxyMCs OxyAs OxyMCs OxyT
995	221765	221784	CATTTATTCTAA TTTTCCTG	ASO-1110	OxyMCs OxyAs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAcs DNAts DNAas DNAas DNAts DNAts DNAts DNAts DNAcs DNAcs OxyTs OxyG
997	221991	222007	TTAGGATGATG AGTTTA	ASO-1113	OxyTs OxyTs OxyAs OxyGs DNAgs DNAas DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs OxyTs OxyTs OxyTs OxyA
998	222173	222189	AAGGCAGGGTT ATTTGA	ASO-1114	OxyAs OxyAs OxyGs OxyGs DNAcs DNAas DNAgs DNAgs DNAgs DNAts DNAts DNAas DNAts DNAts DNAts OxyGs OxyA
999	222645	222664	CTAATTCTTTCT TCACTTTC	ASO-1115	OxyMCs DNAts DNAas DNAas DNAts DNAts DNAcs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAcs OxyTs OxyTs OxyTs OxyMC
1000	222658	222674	ATGGTTGATTC TAATTC	ASO-1116	OxyAs OxyTs OxyGs OxyGs DNAts DNAts DNAgs DNAas DNAts DNAts DNAcs DNAts DNAas OxyAs OxyTs OxyTs OxyMC
1001	223316	223335	TCATTTTGTTTA TATGTTAA	ASO-1117	OxyTs OxyMCs OxyAs OxyTs DNAts DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAas DNAts DNAgs OxyTs OxyTs OxyAs OxyA
1002	223476	223493	GATAAATATATT GGGTTA	ASO-1118	OxyGs OxyAs OxyTs OxyAs DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAts DNAgs DNAgs OxyGs OxyTs OxyTs OxyA
1003	223778	223794	TGATTCAGAGC ATTACT	ASO-1119	OxyTs OxyGs OxyAs DNAts DNAts DNAcs DNAas DNAgs DNAas DNAgs DNAcs DNAas DNAts DNAts DNAas OxyMCs OxyT
1004	223903	223920	GTCTTTAAGAA TCTGTTT	ASO-1120	OxyGs OxyTs OxyMCs OxyTs DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts OxyGs OxyTs OxyTs OxyT
1005	223903	223921	TGTCTTTAAGA ATCTGTTT	ASO-1121	OxyTs OxyGs OxyTs OxyMCs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts DNAgs OxyTs OxyTs OxyT
1006	223903	223922	CTGTCTTTAAG AATCTGTTT	ASO-1122	OxyMCs OxyTs OxyGs DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts DNAgs DNAts OxyTs OxyT
1007	223904	223921	TGTCTTTAAGA ATCTGTT	ASO-1123	OxyTs OxyGs OxyTs DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs OxyTs OxyGs OxyTs OxyT
1008	223904	223922	CTGTCTTTAAG AATCTGTT	ASO-1124	OxyMCs OxyTs OxyGs DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts OxyGs OxyTs OxyT
1009	223904	223923	GCTGTCTTTAA GAATCTGTT	ASO-1125	OxyGs DNAcs DNAts DNAgs DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts OxyGs OxyTs OxyT
1010	223905	223922	CTGTCTTTAAG AATCTGT	ASO-1126	OxyMCs OxyTs DNAgs DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts OxyMCs OxyTs OxyGs OxyT
1011	223905	223923	GCTGTCTTTAA	ASO-	OxyGs OxyMCs DNAts DNAgs DNAts DNAcs DNAts DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GAATCTGT	1127	DNAas DNAgs DNAas DNAas DNAts DNAcs DNAts OxyGs OxyT
1012	223906	223923	GCTGTCTTTAA GAATCTG	ASO-1128	OxyGs OxyMCs DNAts DNAgs DNAts DNAcs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAas DNAts OxyMCs OxyTs OxyG
1013	223968	223987	TCAATGTTTCC AAACAATTT	ASO-1129	OxyTs OxyMCs OxyAs OxyAs DNAts DNAgs DNAts DNAts DNAts DNAcs DNAcs DNAas DNAas DNAas DNAcs DNAas OxyAs OxyTs OxyTs OxyT
1014	223969	223987	TCAATGTTTCC AAACAATT	ASO-1130	OxyTs OxyMCs OxyAs OxyAs DNAts DNAgs DNAts DNAts DNAts DNAcs DNAcs DNAas DNAas DNAas DNAcs OxyAs OxyAs OxyTs OxyT
1015	223970	223987	TCAATGTTTCC AAACAAT	ASO-1131	OxyTs OxyMCs OxyAs OxyAs DNAts DNAgs DNAts DNAts DNAts DNAcs DNAcs DNAas DNAas DNAas OxyMCs OxyAs OxyAs OxyT
1016	224012	224030	TTAACTTCAAG AGTTTGGA	ASO-0073	OxyTs DNAts DNAas DNAas DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAas DNAgs DNAts DNAts OxyTs OxyGs OxyGs OxyA
1017	224015	224031	GTTAACTTCAA GAGTTT	ASO-1132	OxyGs OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAas OxyGs OxyTs OxyTs OxyT
1018	224056	224073	CTACAGACATT TGGCAAA	ASO-1133	OxyMCs OxyTs DNAas DNAcs DNAas DNAgs DNAas DNAcs DNAas DNAts DNAts DNAts DNAgs DNAgs OxyMCs OxyAs OxyAs OxyA
1019	224397	224413	ATTTTACAGGA TTAGGG	ASO-1134	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAcs DNAas DNAgs DNAgs DNAas DNAts DNAts OxyAs OxyGs OxyGs OxyG
1020	224468	224485	GCTTTATTTAG AAAGAAA	ASO-1135	OxyGs OxyMCs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAas OxyGs OxyAs OxyAs OxyA
1021	224468	224487	AGGCTTTATTT AGAAAGAAA	ASO-1136	OxyAs OxyGs OxyGs OxyMCs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAas DNAgs OxyAs OxyAs OxyA
1022	224469	224487	AGGCTTTATTT AGAAAGAA	ASO-1137	OxyAs OxyGs OxyGs OxyMCs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAas OxyGs OxyAs OxyA
1023	224469	224488	CAGGCTTTATT TAGAAAGAA	ASO-1138	OxyMCs OxyAs OxyGs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas OxyAs OxyGs OxyAs OxyA
1024	224470	224487	AGGCTTTATTT AGAAAGA	ASO-1139	OxyAs OxyGs OxyGs OxyMCs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAas OxyGs OxyA
1025	224470	224488	CAGGCTTTATT TAGAAAGA	ASO-1140	OxyMCs OxyAs OxyGs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas OxyAs OxyGs OxyA
1026	224470	224489	TCAGGCTTTAT TTAGAAAGA	ASO-1141	OxyTs OxyMCs OxyAs DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas OxyAs OxyGs OxyA
1027	224471	224489	TCAGGCTTTAT TTAGAAAG	ASO-1142	OxyTs OxyMCs OxyAs OxyGs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs DNAas OxyAs OxyAs OxyG
1028	224471	224490	CTCAGGCTTTA TTTAGAAAG	ASO-1143	OxyMCs OxyTs DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyG
1029	224472	224490	CTCAGGCTTTA TTTAGAAA	ASO-1144	OxyMCs OxyTs OxyMCs OxyAs DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs OxyAs OxyAs OxyA
1030	224472	224491	TCTCAGGCTTT	ASO-	OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATTTAGAAA	1145	DNAts DNAas DNAts DNAts DNAts DNAas OxyGs OxyAs OxyAs OxyA
1031	224473	224490	CTCAGGCTTTA TTTAGAA	ASO-1146	OxyMCs OxyTs OxyMCs OxyAs DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAgs OxyAs OxyA
1032	224473	224491	TCTCAGGCTTT ATTTAGAA	ASO-1147	OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyAs OxyGs OxyAs OxyA
1033	224473	224492	TTCTCAGGCTT TATTTAGAA	ASO-1148	OxyTs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyAs OxyGs OxyAs OxyA
1034	224474	224491	TCTCAGGCTTT ATTTAGA	ASO-1149	OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyAs OxyGs OxyA
1035	224474	224492	TTCTCAGGCTT TATTTAGA	ASO-1150	OxyTs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas OxyGs OxyA
1036	224474	224493	ATTCTCAGGCT TTATTTAGA	ASO-1151	OxyAs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyAs OxyGs OxyA
1037	224475	224491	TCTCAGGCTTT ATTTAG	ASO-1152	OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts OxyTs OxyTs OxyAs OxyG
1038	224475	224492	TTCTCAGGCTT TATTTAG	ASO-1153	OxyTs OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts OxyTs OxyAs OxyG
1039	224475	224493	ATTCTCAGGCT TTATTTAG	ASO-1154	OxyAs OxyTs OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyAs OxyG
1040	224475	224494	AATTCTCAGGC TTTATTTAG	ASO-1155	OxyAs OxyAs OxyTs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts DNAts OxyTs OxyAs OxyG
1041	224476	224493	ATTCTCAGGCT TTATTTA	ASO-1156	OxyAs OxyTs OxyTs OxyMCs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts OxyTs OxyTs OxyA
1042	224476	224494	AATTCTCAGGC TTTATTTA	ASO-1157	OxyAs OxyAs OxyTs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas OxyTs OxyTs OxyTs OxyA
1043	224476	224495	AAATTCTCAGG CTTTATTTA	ASO-1158	OxyAs OxyAs OxyAs OxyTs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas DNAts OxyTs OxyTs OxyA
1044	224477	224496	CAAATTCTCAG GCTTTATTT	ASO-1159	OxyMCs OxyAs OxyAs OxyAs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas OxyTs OxyTs OxyT
1045	224478	224495	AAATTCTCAGG CTTTATT	ASO-1160	OxyAs OxyAs OxyAs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts OxyTs OxyAs OxyTs OxyT
1046	224478	224496	CAAATTCTCAG GCTTTATT	ASO-1161	OxyMCs OxyAs OxyAs OxyAs DNAts DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAas OxyTs OxyT
1047	224549	224565	TTGAACTTCTAT GGCTA	ASO-1162	OxyTs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts DNAcs DNAts DNAas DNAts DNAgs OxyGs OxyMCs OxyTs OxyA
1048	224549	224566	CTTGAACTTCT ATGGCTA	ASO-1163	OxyMCs DNAts DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts DNAcs DNAts DNAas DNAts DNAgs DNAgs OxyMCs OxyTs OxyA
1049	224549	224567	CCTTGAACTTC	ASO-	OxyMCs DNAcs DNAts DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TATGGCTA	1164	DNAcs DNAts DNAas DNAts DNAgs DNAgs DNAcs OxyTs OxyA
1050	224550	224566	CTTGAACTTCT ATGGCT	ASO-1165	OxyMCs DNAts DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts DNAcs DNAts DNAas DNAts DNAgs OxyGs OxyMCs OxyT
1051	224551	224567	CCTTGAACTTC TATGGC	ASO-1166	OxyMCs DNAcs DNAts DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts DNAcs DNAts DNAas DNAts OxyGs OxyGs OxyMC
1052	224579	224595	CTACTCACCAA ACCACG	ASO-1167	OxyMCs DNAts DNAas DNAcs DNAts DNAcs DNAas DNAcs DNAcs DNAas DNAas DNAas DNAcs OxyMCs OxyAs OxyMCs OxyG
1053	224689	224705	AGTCAAATTGT TATTAG	ASO-1168	OxyAs OxyGs OxyTs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAgs DNAts DNAts DNAas OxyTs OxyTs OxyAs OxyG
1054	225058	225077	ACTAAGGTGAA ATATACACA	ASO-1169	OxyAs OxyMCs OxyTs DNAas DNAas DNAgs DNAgs DNAts DNAgs DNAas DNAas DNAas DNAts DNAas DNAts DNAas OxyMCs OxyAs OxyMCs OxyA
1055	225260	225277	TATGAAAATTAA TGAGTA	ASO-1170	OxyTs OxyAs OxyTs OxyGs DNAas DNAas DNAas DNAas DNAts DNAts DNAas DNAas DNAts DNAgs OxyAs OxyGs OxyTs OxyA
1056	225546	225562	AGGGAGATGTG GTGAAT	ASO-1171	OxyAs OxyGs OxyGs DNAgs DNAas DNAgs DNAas DNAts DNAgs DNAts DNAgs DNAgs DNAts DNAgs OxyAs OxyAs OxyT
1057	225899	225916	ATATTCTTTCTG TGTTAA	ASO-1172	OxyAs OxyTs OxyAs OxyTs DNAts DNAcs DNAts DNAts DNAts DNAcs DNAts DNAgs DNAts DNAgs OxyTs OxyTs OxyAs OxyA
1058	226280	226298	TGTTTTACTGTA ATAGAAA	ASO-1173	OxyTs OxyGs OxyTs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAgs DNAts DNAas DNAas DNAts DNAas OxyGs OxyAs OxyAs OxyA
1059	226469	226488	CATCTTCTATA CTTCTACTG	ASO-1174	OxyMCs OxyAs DNAts DNAcs DNAts DNAts DNAcs DNAts DNAas DNAts DNAas DNAcs DNAts DNAts DNAcs DNAts DNAas DNAcs OxyTs OxyG
1060	226603	226619	TGTCTGATCTG TATGTT	ASO-1175	OxyTs OxyGs OxyTs OxyMCs DNAts DNAgs DNAas DNAts DNAcs DNAts DNAgs DNAts DNAas DNAts DNAgs OxyTs OxyT
1061	227119	227138	GAAGAAGTGTT TATTATCCC	ASO-1176	OxyGs DNAas DNAas DNAgs DNAas DNAas DNAgs DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAts OxyMCs OxyMCs OxyMC
1062	227325	227342	TATGTACTTTTA TTTGGA	ASO-1177	OxyTs OxyAs OxyTs OxyGs DNAts DNAas DNAcs DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAts OxyGs OxyGs OxyA
1063	227695	227713	TAAAACATGCC TTTACTCC	ASO-1178	OxyTs DNAas DNAas DNAas DNAas DNAcs DNAas DNAts DNAgs DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs OxyTs OxyMCs OxyMC
1064	227751	227768	TGGGACTATAA TGGCAGA	ASO-0074	OxyTs DNAgs DNAgs DNAgs DNAas DNAcs DNAts DNAas DNAts DNAas DNAas DNAts DNAgs DNAgs OxyMCs OxyAs OxyGs OxyA
1065	227969	227987	ATTATCTATTAT GTTGTTT	ASO-1179	OxyAs OxyTs OxyTs OxyAs DNAts DNAcs DNAts DNAas DNAts DNAts DNAas DNAts DNAgs DNAts DNAts OxyGs OxyTs OxyTs OxyT
1066	228060	228078	TGAAAAGTAAA TATGGGAA	ASO-1180	OxyTs OxyGs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAas DNAas DNAas DNAts DNAas DNAts DNAgs OxyGs OxyGs OxyAs OxyA
1067	228387	228405	AGAAAAGAGAA TTACTGAC	ASO-1181	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAts DNAas DNAcs OxyTs OxyGs OxyAs OxyMC
1068	228875	228893	GATTTCAATAA	ASO-	OxyGs OxyAs OxyTs OxyTs DNAts DNAcs DNAas DNAas DNAts DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTTAGAAT	1182	DNAcs DNAts DNAts DNAas OxyGs OxyAs OxyAs OxyT
1069	228887	228906	TTTAATAATGTATGATTTCA	ASO-1183	OxyTs OxyTs OxyTs OxyAs DNAas DNAts DNAas DNAas DNAts DNAgs DNAts DNAas DNAts DNAgs DNAas DNAts OxyTs OxyTs OxyMCs OxyA
1070	229468	229484	TTGGTAGTTGTGAGGTA	ASO-1184	OxyTs DNAts DNAgs DNAgs DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAgs DNAas OxyGs OxyGs OxyTs OxyA
1071	229629	229646	TCTTTTCTATTACCATTC	ASO-1185	OxyTs OxyMCs OxyTs OxyTs DNAts DNAts DNAcs DNAts DNAas DNAts DNAts DNAas DNAcs DNAcs OxyAs OxyTs OxyTs OxyMC
1072	230078	230096	AACTAGATGGGGAAAGAAA	ASO-1186	OxyAs OxyAs OxyMCs OxyTs DNAas DNAgs DNAas DNAts DNAgs DNAgs DNAgs DNAgs DNAas DNAas DNAas OxyGs OxyAs OxyAs OxyA
1073	230562	230579	TGAAATGGGAAACTAAGA	ASO-1187	OxyTs OxyGs OxyAs OxyAs DNAas DNAts DNAgs DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAts OxyAs OxyAs OxyGs OxyA
1074	230564	230582	ATATGAAATGGGAAACTAA	ASO-1188	OxyAs OxyTs OxyAs OxyTs DNAgs DNAas DNAas DNAas DNAts DNAgs DNAgs DNAgs DNAas DNAas DNAas OxyMCs OxyTs OxyAs OxyA
1075	230705	230722	AATTGCTTACCACATGCC	ASO-1189	OxyAs OxyAs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas DNAcs DNAas DNAts DNAgs OxyMCs OxyMC
1076	230706	230723	TAATTGCTTACCACATGC	ASO-1190	OxyTs OxyAs OxyAs OxyTs DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas DNAcs DNAas DNAts OxyGs OxyMC
1077	230706	230724	ATAATTGCTTACCACATGC	ASO-1191	OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas DNAcs OxyAs OxyTs OxyGs OxyMC
1078	230706	230725	TATAATTGCTTACCACATGC	ASO-1192	OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas DNAcs DNAas DNAts OxyGs OxyMC
1079	230707	230723	TAATTGCTTACCACATG	ASO-1193	OxyTs OxyAs OxyAs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyTs OxyG
1080	230707	230724	ATAATTGCTTACCACATG	ASO-1194	OxyAs OxyTs OxyAs OxyAs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyTs OxyG
1081	230707	230725	TATAATTGCTTACCACATG	ASO-1195	OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyTs OxyG
1082	230707	230726	ATATAATTGCTTACCACATG	ASO-1196	OxyAs OxyTs DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyTs OxyG
1083	230708	230724	ATAATTGCTTACCACAT	ASO-1197	OxyAs OxyTs OxyAs OxyAs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyAs OxyMCs OxyAs OxyT
1084	230708	230725	TATAATTGCTTACCACAT	ASO-1198	OxyTs OxyAs OxyTs OxyAs DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyT
1085	230708	230726	ATATAATTGCTTACCACAT	ASO-1199	OxyAs OxyTs OxyAs OxyTs DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyT
1086	230708	230727	AATATAATTGCTTACCACAT	ASO-1200	OxyAs OxyAs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAas OxyMCs OxyAs OxyT
1087	230709	230725	TATAATTGCTTA	ASO-	OxyTs OxyAs OxyTs OxyAs DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CCACA	1201	DNAas DNAcs OxyMCs OxyAs OxyMCs OxyA
1088	230709	230726	ATATAATTGCTT ACCACA	ASO-1202	OxyAs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyAs OxyMCs OxyA
1089	230709	230727	AATATAATTGCT TACCACA	ASO-1203	OxyAs OxyAs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyAs OxyMCs OxyA
1090	230709	230728	AAATATAATTG CTTACCACA	ASO-1204	OxyAs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyAs OxyMCs OxyA
1091	230710	230726	ATATAATTGCTT ACCAC	ASO-1205	OxyAs OxyTs OxyAs OxyTs DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas OxyMCs OxyMCs OxyAs OxyMC
1092	230710	230727	AATATAATTGCT TACCAC	ASO-1206	OxyAs OxyAs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas OxyMCs OxyMCs OxyAs OxyMC
1093	230710	230728	AAATATAATTG CTTACCAC	ASO-1207	OxyAs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas OxyMCs OxyMCs OxyAs OxyMC
1094	230710	230729	AAAATATAATTG CTTACCAC	ASO-1208	OxyAs OxyAs OxyAs OxyAs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts DNAas OxyMCs OxyMCs OxyAs OxyMC
1095	230711	230728	AAATATAATTG CTTACCA	ASO-1209	OxyAs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyA
1096	230711	230730	CAAAATATAATT GCTTACCA	ASO-1210	OxyMCs OxyAs OxyAs OxyAs DNAas DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyA
1097	230712	230730	CAAAATATAATT GCTTACC	ASO-1211	OxyMCs OxyAs OxyAs OxyAs DNAas DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAgs DNAcs DNAts OxyTs OxyAs OxyMCs OxyMC
1098	231315	231331	TTTGGTAGGAT GGAGGC	ASO-1212	OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAas DNAgs DNAgs DNAas DNAts DNAgs DNAgs DNAas OxyGs OxyGs OxyMC
1099	231437	231455	GATGTTCAACT TGTATTTT	ASO-1213	OxyGs OxyAs OxyTs OxyGs DNAts DNAts DNAcs DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAas DNAts OxyTs OxyTs OxyT
1100	231724	231742	TCAGATTTTGT AGTATTTA	ASO-1214	OxyTs OxyMCs OxyAs DNAgs DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAas DNAgs DNAts DNAas OxyTs OxyTs OxyTs OxyA
1101	232138	232157	TTTTCCAATATT TACTAGTT	ASO-1215	OxyTs OxyTs OxyTs OxyTs DNAcs DNAcs DNAas DNAas DNAts DNAas DNAts DNAts DNAts DNAas DNAcs DNAts OxyAs OxyGs OxyTs OxyT
1102	232143	232161	ATTATTTTCCAA TATTTAC	ASO-1216	OxyAs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAcs DNAas DNAas DNAts DNAas DNAts OxyTs OxyTs OxyAs OxyMC
1103	232577	232593	AAGTAGTGATG ATGAAT	ASO-1217	OxyAs OxyAs OxyGs OxyTs DNAas DNAgs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAts OxyGs OxyAs OxyAs OxyT
1104	233040	233059	TAGATTTGAAC AAAGATATT	ASO-0075	OxyTs OxyAs OxyGs OxyAs DNAts DNAts DNAts DNAgs DNAas DNAas DNAcs DNAas DNAas DNAas DNAgs DNAas OxyTs OxyAs OxyTs OxyT
1105	233042	233059	TAGATTTGAAC AAAGATA	ASO-1218	OxyTs OxyAs OxyGs OxyAs DNAts DNAts DNAts DNAgs DNAas DNAas DNAcs DNAas DNAas DNAas DNAgs OxyAs OxyTs OxyA
1106	233443	233459	ATAGGAAGGAA	ASO-	OxyAs OxyTs OxyAs DNAgs DNAgs DNAas DNAas DNAgs DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ACTAGG	1219	DNAas DNAas DNAcs OxyTs OxyAs OxyGs OxyG
1107	233828	233844	GAATTTGGTAT TCAGGT	ASO-1220	OxyGs OxyAs OxyAs OxyTs DNAts DNAts DNAgs DNAgs DNAts DNAas DNAts DNAts DNAcs DNAas OxyGs OxyGs OxyT
1108	234122	234141	CATTTATGGGG TATAATATG	ASO-1221	OxyMCs OxyAs OxyTs DNAts DNAts DNAas DNAts DNAgs DNAgs DNAgs DNAgs DNAts DNAas DNAts DNAas DNAas OxyTs OxyAs OxyTs OxyG
1109	234373	234390	TGATATTTGTTC TATTGT	ASO-1222	OxyTs OxyGs OxyAs DNAts DNAas DNAts DNAts DNAts DNAgs DNAts DNAts DNAcs DNAts DNAas OxyTs OxyTs OxyGs OxyT
1110	234379	234397	TTTATTTTGATA TTTGTTC	ASO-1223	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAgs DNAas DNAts DNAas DNAts DNAts DNAts OxyGs OxyTs OxyTs OxyMC
1111	235164	235183	ATAGTGTGTTT TGTGAGTCT	ASO-1224	OxyAs DNAts DNAas DNAgs DNAts DNAgs DNAts DNAgs DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs DNAas DNAgs OxyTs OxyMCs OxyT
1112	235255	235271	AAAGGTTAGAT ATATGA	ASO-1225	OxyAs OxyAs OxyAs OxyGs DNAgs DNAts DNAts DNAas DNAgs DNAas DNAts DNAas DNAts OxyAs OxyTs OxyGs OxyA
1113	235523	235540	TATAAGTTTCTA AGGAGT	ASO-1226	OxyTs OxyAs OxyTs DNAas DNAas DNAgs DNAts DNAts DNAts DNAcs DNAts DNAas DNAas DNAgs OxyGs OxyAs OxyGs OxyT
1114	235870	235888	GATATATAATAA AATGGTA	ASO-1227	OxyGs OxyAs OxyTs OxyAs DNAts DNAas DNAts DNAas DNAas DNAts DNAas DNAas DNAas DNAas DNAts OxyGs OxyGs OxyTs OxyA
1115	236126	236143	TTTGTTTTCTGA GTAGTG	ASO-1228	OxyTs OxyTs OxyTs OxyGs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAgs DNAts DNAas DNAgs OxyTs OxyG
1116	236409	236427	ATTAATGTTTAT TATTTGC	ASO-1229	OxyAs OxyTs OxyTs OxyAs DNAas DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAts OxyTs OxyTs OxyGs OxyMC
1117	236658	236675	AGAAAAGTAGC AAGACAA	ASO-1230	OxyAs OxyGs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAas DNAgs DNAcs DNAas DNAas DNAgs OxyAs OxyMCs OxyAs OxyA
1118	237019	237035	TGAACTGAAGA CTGTTG	ASO-1231	OxyTs OxyGs OxyAs OxyAs DNAcs DNAts DNAgs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAgs DNAts OxyTs OxyG
1119	237093	237112	GTAGAGAAATT TAAGACAGT	ASO-0076	OxyGs OxyTs OxyAs OxyGs DNAas DNAgs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAcs OxyAs OxyGs OxyT
1120	237101	237119	AGTAAATGTAG AGAAATTT	ASO-1232	OxyAs OxyGs OxyTs OxyAs DNAas DNAas DNAts DNAgs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas OxyAs OxyTs OxyTs OxyT
1121	237723	237742	TAAGTGAACAG TTTTGTAGT	ASO-1233	OxyTs OxyAs OxyAs OxyGs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAts DNAts DNAts DNAgs DNAts DNAas OxyGs OxyT
1122	237726	237744	TTTAAGTGAAC AGTTTTGT	ASO-1234	OxyTs OxyTs OxyTs OxyAs DNAas DNAgs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAts DNAts OxyTs OxyGs OxyT
1123	238473	238492	CACATGACATT AAATTGTAC	ASO-1235	OxyMCs OxyAs OxyMCs OxyAs DNAts DNAgs DNAas DNAcs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts OxyGs OxyTs OxyAs OxyMC
1124	238476	238493	ACACATGACAT TAAATTG	ASO-1236	OxyAs OxyMCs OxyAs OxyMCs DNAas DNAts DNAgs DNAas DNAcs DNAas DNAts DNAts DNAas DNAas OxyAs OxyTs OxyTs OxyG
1125	238988	239004	GTATTTGGTGT	ASO-	OxyGs DNAts DNAas DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GGTGGG	1237	DNAgs DNAgs DNAts OxyGs OxyGs OxyG
1126	238992	239008	GATGGTATTTG GTGTGG	ASO-1238	OxyGs OxyAs OxyTs DNAgs DNAgs DNAts DNAas DNAts DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAts OxyGs OxyG
1127	239707	239725	AGGAGAGATGA AGAAGGAA	ASO-1239	OxyAs OxyGs OxyGs DNAas DNAgs DNAas DNAgs DNAas DNAts DNAgs DNAas DNAas DNAgs DNAas DNAas OxyGs OxyGs OxyAs OxyA
1128	240013	240032	AGTATTCTCTC CATTTTATG	ASO-1240	OxyAs DNAgs DNAts DNAas DNAts DNAts DNAcs DNAts DNAcs DNAts DNAcs DNAcs DNAas DNAts DNAts DNAts DNAts OxyAs OxyTs OxyG
1129	240243	240260	GAGAGGATAAA TAGGAAA	ASO-1241	OxyGs OxyAs OxyGs OxyAs DNAgs DNAgs DNAas DNAts DNAas DNAas DNAas DNAts DNAas DNAgs OxyGs OxyAs OxyAs OxyA
1130	240554	240570	CCTGCATCTGT TAATAT	ASO-1242	OxyMCs OxyMCs DNAts DNAgs DNAcs DNAas DNAts DNAcs DNAts DNAgs DNAts DNAts DNAas DNAas OxyTs OxyAs OxyT
1131	240766	240785	ATTATTTATTTA TTTTCCTC	ASO-1243	OxyAs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAcs OxyMCs OxyTs OxyMC
1132	241923	241941	GTGTTGTCTAA CTGAGAGA	ASO-1244	OxyGs DNAts DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAts DNAas DNAas DNAcs DNAts DNAgs DNAas DNAgs OxyAs OxyGs OxyA
1133	241976	241994	TTTTCTTTATCT ATGAACT	ASO-1245	OxyTs OxyTs OxyTs OxyTs DNAcs DNAts DNAts DNAts DNAas DNAts DNAcs DNAts DNAas DNAts DNAgs DNAas OxyAs OxyMCs OxyT
1134	242356	242373	CCTGATGTGAA ATTGTCA	ASO-1246	OxyMCs OxyMCs DNAts DNAgs DNAas DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAts DNAts DNAgs OxyTs OxyMCs OxyA
1135	242729	242748	GTAATAGTGAT AGTTTCCAT	ASO-0077	OxyGs DNAts DNAas DNAas DNAts DNAas DNAgs DNAts DNAgs DNAas DNAts DNAas DNAgs DNAts DNAts DNAts OxyMCs OxyMCs OxyAs OxyT
1136	242869	242887	ATGAAAATGAT GATAGTAA	ASO-1247	OxyAs OxyTs OxyGs OxyAs DNAas DNAas DNAas DNAts DNAgs DNAas DNAts DNAgs DNAas DNAts DNAas OxyGs OxyTs OxyAs OxyA
1137	243066	243083	GTTTAATCATCT TAGAAT	ASO-1248	OxyGs OxyTs OxyTs OxyTs DNAas DNAas DNAts DNAcs DNAas DNAts DNAcs DNAts DNAts DNAas OxyGs OxyAs OxyAs OxyT
1138	243824	243842	TTTGTTGAGTG ATGGTGTC	ASO-1249	OxyTs OxyTs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAgs DNAts DNAgs DNAas DNAts DNAgs DNAts DNAgs OxyTs OxyMC
1139	244141	244159	ATTGTAGGAAA ACTTCAGA	ASO-1250	OxyAs OxyTs OxyTs DNAgs DNAts DNAas DNAgs DNAgs DNAas DNAas DNAas DNAas DNAcs DNAts DNAts OxyMCs OxyAs OxyGs OxyA
1140	244265	244284	ATAGAGAATGA CACCTGGAG	ASO-1251	OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas DNAcs DNAcs DNAts OxyGs OxyGs OxyAs OxyG
1141	244266	244284	ATAGAGAATGA CACCTGGA	ASO-1252	OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas DNAcs DNAcs OxyTs OxyGs OxyGs OxyA
1142	244266	244285	TATAGAGAATG ACACCTGGA	ASO-1253	OxyTs OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas DNAcs DNAcs DNAts OxyGs OxyGs OxyA
1143	244267	244286	ATATAGAGAAT GACACCTGG	ASO-1254	OxyAs DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas DNAcs OxyMCs OxyTs OxyGs OxyG
1144	244268	244286	ATATAGAGAAT	ASO-	OxyAs OxyTs DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GACACCTG	1255	DNAgs DNAas DNAcs DNAas OxyMCs OxyMCs OxyTs OxyG
1145	244268	244287	AATATAGAGAA TGACACCTG	ASO-1256	OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas OxyMCs OxyMCs OxyTs OxyG
1146	244269	244286	ATATAGAGAAT GACACCT	ASO-1257	OxyAs OxyTs OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs OxyAs OxyMCs OxyMCs OxyT
1147	244269	244287	AATATAGAGAA TGACACCT	ASO-1258	OxyAs OxyAs OxyTs OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs OxyAs OxyMCs OxyMCs OxyT
1148	244269	244288	GAATATAGAGA ATGACACCT	ASO-1259	OxyGs OxyAs OxyAs DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAcs DNAas OxyMCs OxyMCs OxyT
1149	244270	244286	ATATAGAGAAT GACACC	ASO-1260	OxyAs OxyTs OxyAs OxyTs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas OxyMCs OxyAs OxyMCs OxyMC
1150	244270	244287	AATATAGAGAA TGACACC	ASO-1261	OxyAs OxyAs OxyTs OxyAs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas OxyMCs OxyAs OxyMCs OxyMC
1151	244270	244288	GAATATAGAGA ATGACACC	ASO-1262	OxyGs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas OxyMCs OxyAs OxyMCs OxyMC
1152	244270	244289	AGAATATAGAG AATGACACC	ASO-1263	OxyAs OxyGs DNAas DNAas DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas OxyMCs OxyAs OxyMCs OxyMC
1153	244271	244288	GAATATAGAGA ATGACAC	ASO-1264	OxyGs OxyAs OxyAs OxyTs DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs OxyAs OxyMCs OxyAs OxyMC
1154	244271	244290	TAGAATATAGA GAATGACAC	ASO-1265	OxyTs OxyAs OxyGs OxyAs DNAas DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs OxyAs OxyMCs OxyAs OxyMC
1155	244274	244291	GTAGAATATAG AGAATGA	ASO-1266	OxyGs OxyTs OxyAs OxyGs DNAas DNAas DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAas OxyAs OxyTs OxyGs OxyA
1156	244351	244367	ACATCATAAGC TCCAGC	ASO-1267	OxyAs OxyMCs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs DNAcs DNAas OxyGs OxyMC
1157	244351	244368	TACATCATAAG CTCCAGC	ASO-1268	OxyTs DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs DNAcs OxyAs OxyGs OxyMC
1158	244351	244369	ATACATCATAA GCTCCAGC	ASO-1269	OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs DNAcs OxyAs OxyGs OxyMC
1159	244352	244369	ATACATCATAA GCTCCAG	ASO-1270	OxyAs OxyTs OxyAs DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs OxyMCs OxyAs OxyG
1160	244352	244370	CATACATCATA AGCTCCAG	ASO-1271	OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs OxyMCs OxyAs OxyG
1161	244352	244371	ACATACATCAT AAGCTCCAG	ASO-1272	OxyAs OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs DNAcs OxyAs OxyG
1162	244353	244369	ATACATCATAA GCTCCA	ASO-1273	OxyAs OxyTs DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs OxyTs OxyMCs OxyMCs OxyA
1163	244353	244370	CATACATCATA	ASO-	OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AGCTCCA	1274	DNAas DNAas DNAgs DNAcs DNAts OxyMCs OxyMCs OxyA
1164	244353	244371	ACATACATCAT AAGCTCCA	ASO-1275	OxyAs OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs OxyMCs OxyA
1165	244353	244372	TACATACATCA TAAGCTCCA	ASO-1276	OxyTs OxyAs DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts DNAcs OxyMCs OxyA
1166	244354	244370	CATACATCATA AGCTCC	ASO-1277	OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs OxyMCs OxyTs OxyMCs OxyMC
1167	244354	244371	ACATACATCAT AAGCTCC	ASO-1278	OxyAs OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs OxyTs OxyMCs OxyMC
1168	244354	244372	TACATACATCA TAAGCTCC	ASO-1279	OxyTs OxyAs DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs DNAts OxyMCs OxyMC
1169	244354	244373	TTACATACATC ATAAGCTCC	ASO-1280	OxyTs DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs OxyTs OxyMCs OxyMC
1170	244355	244371	ACATACATCAT AAGCTC	ASO-1281	OxyAs OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas OxyGs OxyMCs OxyTs OxyMC
1171	244355	244372	TACATACATCA TAAGCTC	ASO-1282	OxyTs OxyAs OxyMCs OxyAs DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs OxyMCs OxyTs OxyMC
1172	244355	244373	TTACATACATC ATAAGCTC	ASO-1283	OxyTs OxyTs OxyAs OxyMCs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas DNAgs DNAcs OxyTs OxyMC
1173	244355	244374	ATTACATACAT CATAAGCTC	ASO-1284	OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas DNAas OxyGs OxyMCs OxyTs OxyMC
1174	244356	244373	TTACATACATC ATAAGCT	ASO-1285	OxyTs OxyTs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas OxyAs OxyGs OxyMCs OxyT
1175	244356	244374	ATTACATACAT CATAAGCT	ASO-1286	OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas OxyAs OxyGs OxyMCs OxyT
1176	244356	244375	TATTACATACAT CATAAGCT	ASO-1287	OxyTs OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas OxyAs OxyGs OxyMCs OxyT
1177	244357	244373	TTACATACATC ATAAGC	ASO-1288	OxyTs OxyTs OxyAs OxyMCs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts OxyAs OxyAs OxyGs OxyMC
1178	244357	244374	ATTACATACAT CATAAGC	ASO-1289	OxyAs OxyTs OxyTs OxyAs DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts OxyAs OxyAs OxyGs OxyMC
1179	244357	244375	TATTACATACAT CATAAGC	ASO-1290	OxyTs OxyAs OxyTs OxyTs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts OxyAs OxyAs OxyGs OxyMC
1180	244357	244376	TTATTACATACA TCATAAGC	ASO-1291	OxyTs OxyTs OxyAs OxyTs DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas DNAts DNAas OxyAs OxyGs OxyMC
1181	244358	244375	TATTACATACAT CATAAG	ASO-1292	OxyTs OxyAs OxyTs OxyTs DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas OxyTs OxyAs OxyAs OxyG
1182	244358	244376	TTATTACATACA	ASO-	OxyTs OxyTs OxyAs OxyTs DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TCATAAG	1293	DNAas DNAts DNAcs DNAas OxyTs OxyAs OxyAs OxyG
1183	244358	244377	GTTATTACATA CATCATAAG	ASO-1294	OxyGs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs DNAas OxyTs OxyAs OxyAs OxyG
1184	244359	244377	GTTATTACATA CATCATAA	ASO-1295	OxyGs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs OxyAs OxyTs OxyAs OxyA
1185	244359	244378	AGTTATTACATA CATCATAA	ASO-1296	OxyAs OxyGs OxyTs OxyTs DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs OxyAs OxyTs OxyAs OxyA
1186	244360	244377	GTTATTACATA CATCATA	ASO-1297	OxyGs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyTs OxyA
1187	244360	244378	AGTTATTACATA CATCATA	ASO-1298	OxyAs OxyGs OxyTs DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyTs OxyA
1188	244360	244379	TAGTTATTACAT ACATCATA	ASO-1299	OxyTs OxyAs OxyGs OxyTs DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAcs OxyAs OxyTs OxyA
1189	244361	244379	TAGTTATTACAT ACATCAT	ASO-1300	OxyTs OxyAs OxyGs OxyTs DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyT
1190	244361	244380	ATAGTTATTACA TACATCAT	ASO-1301	OxyAs OxyTs OxyAs OxyGs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyMCs OxyAs OxyT
1191	244362	244379	TAGTTATTACAT ACATCA	ASO-1302	OxyTs OxyAs OxyGs OxyTs DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs OxyAs OxyTs OxyMCs OxyA
1192	244362	244380	ATAGTTATTACA TACATCA	ASO-1303	OxyAs OxyTs OxyAs OxyGs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs OxyAs OxyTs OxyMCs OxyA
1193	244362	244381	AATAGTTATTAC ATACATCA	ASO-1304	OxyAs OxyAs OxyTs OxyAs DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs OxyAs OxyTs OxyMCs OxyA
1194	244363	244380	ATAGTTATTACA TACATC	ASO-1305	OxyAs OxyTs OxyAs OxyGs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
1195	244363	244381	AATAGTTATTAC ATACATC	ASO-1306	OxyAs OxyAs OxyTs OxyAs DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
1196	244363	244382	AAATAGTTATTA CATACATC	ASO-1307	OxyAs OxyAs OxyAs OxyTs DNAas DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas DNAts DNAas OxyMCs OxyAs OxyTs OxyMC
1197	244365	244383	TAAATAGTTATT ACATACA	ASO-1308	OxyTs OxyAs OxyAs OxyAs DNAts DNAas DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas OxyTs OxyAs OxyMCs OxyA
1198	244365	244384	ATAAATAGTTAT TACATACA	ASO-1309	OxyAs OxyTs OxyAs OxyAs DNAas DNAts DNAas DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAcs DNAas OxyTs OxyAs OxyMCs OxyA
1199	244713	244732	TATAATATAAAA TTATGTGA	ASO-1310	OxyTs OxyAs OxyTs OxyAs DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAas DNAts OxyGs OxyTs OxyGs OxyA
1200	244952	244969	GATTCTGAACT TAATTTA	ASO-1311	OxyGs OxyAs OxyTs OxyTs DNAcs DNAts DNAgs DNAas DNAas DNAcs DNAts DNAts DNAas DNAas OxyTs OxyTs OxyTs OxyA
1201	245416	245434	AAGATGGTGAA	ASO-	OxyAs DNAas DNAgs DNAas DNAts DNAgs DNAgs DNAts DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TGTGCTAG	1312	DNAas DNAts DNAgs DNAts DNAgs OxyMCs OxyTs OxyAs OxyG
1202	245669	245686	TTTTAATTCCTG AAGCTT	ASO-1313	OxyTs OxyTs DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAcs DNAts DNAgs DNAas DNAas OxyGs OxyMCs OxyTs OxyT
1203	246287	246305	CAAAATGAGGT ATTATATA	ASO-1314	OxyMCs OxyAs OxyAs OxyAs DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAas DNAts DNAts DNAas OxyTs OxyAs OxyTs OxyA
1204	246518	246536	GAGTATCTGAT AAGGGACC	ASO-1315	OxyGs OxyAs DNAgs DNAts DNAas DNAts DNAcs DNAts DNAgs DNAas DNAts DNAas DNAas DNAgs DNAgs DNAgs DNAas OxyMCs OxyMC
1205	246523	246542	ATTAAAGAGTA TCTGATAAG	ASO-0078	OxyAs OxyTs OxyTs OxyAs DNAas DNAas DNAgs DNAas DNAgs DNAts DNAas DNAts DNAcs DNAts DNAgs DNAas OxyTs OxyAs OxyAs OxyG
1206	246727	246746	GTGATGGAAAC TTCAAAAAT	ASO-1316	OxyGs OxyTs OxyGs OxyAs DNAts DNAgs DNAgs DNAas DNAas DNAas DNAcs DNAts DNAts DNAcs DNAas DNAas OxyAs OxyAs OxyAs OxyT
1207	246773	246789	TTGATGAGGTC TTTGGC	ASO-1317	OxyTs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAcs DNAts DNAts DNAts OxyGs OxyGs OxyMC
1208	246773	246790	ATTGATGAGGT CTTTGGC	ASO-1318	OxyAs DNAts DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAcs DNAts DNAts DNAts OxyGs OxyGs OxyMC
1209	246849	246865	ACTTACACAGA TCCATG	ASO-1319	OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyAs OxyTs OxyG
1210	246849	246866	TACTTACACAG ATCCATG	ASO-1320	OxyTs OxyAs OxyMCs OxyTs DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs DNAcs OxyAs OxyTs OxyG
1211	246849	246867	TTACTTACACA GATCCATG	ASO-1321	OxyTs OxyTs OxyAs OxyMCs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs DNAcs DNAas OxyTs OxyG
1212	246849	246868	TTTACTTACACA GATCCATG	ASO-1322	OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyAs OxyTs OxyG
1213	246850	246866	TACTTACACAG ATCCAT	ASO-1323	OxyTs OxyAs OxyMCs OxyTs DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyAs OxyT
1214	246850	246867	TTACTTACACA GATCCAT	ASO-1324	OxyTs OxyTs DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts OxyMCs OxyMCs OxyAs OxyT
1215	246850	246868	TTTACTTACACA GATCCAT	ASO-1325	OxyTs OxyTs OxyTs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyAs OxyT
1216	246850	246869	TTTTACTTACAC AGATCCAT	ASO-1326	OxyTs OxyTs OxyTs DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyAs OxyT
1217	246851	246867	TTACTTACACA GATCCA	ASO-1327	OxyTs OxyTs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts OxyMCs OxyMCs OxyA
1218	246851	246868	TTTACTTACACA GATCCA	ASO-1328	OxyTs OxyTs OxyTs DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas DNAts OxyMCs OxyMCs OxyA
1219	246851	246869	TTTTACTTACAC AGATCCA	ASO-1329	OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas OxyTs OxyMCs OxyMCs OxyA
1220	246851	246870	GTTTTACTTACA	ASO-	OxyGs OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CAGATCCA	1330	DNAas DNAcs DNAas DNAgs DNAas DNAts DNAcs OxyMCs OxyA
1221	246852	246868	TTTACTTACACA GATCC	ASO-1331	OxyTs OxyTs OxyTs DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyMCs OxyMC
1222	246852	246869	TTTTACTTACAC AGATCC	ASO-1332	OxyTs OxyTs OxyTs DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyMCs OxyMC
1223	246852	246870	GTTTTACTTACA CAGATCC	ASO-1333	OxyGs OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas OxyTs OxyMCs OxyMC
1224	246852	246871	AGTTTTACTTAC ACAGATCC	ASO-1334	OxyAs DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs DNAas OxyTs OxyMCs OxyMC
1225	246853	246870	GTTTTACTTACA CAGATC	ASO-1335	OxyGs OxyTs OxyTs OxyTs DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas OxyGs OxyAs OxyTs OxyMC
1226	246853	246871	AGTTTTACTTAC ACAGATC	ASO-1336	OxyAs OxyGs OxyTs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyMC
1227	246853	246872	AAGTTTTACTTA CACAGATC	ASO-1337	OxyAs OxyAs OxyGs OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas DNAgs OxyAs OxyTs OxyMC
1228	246854	246871	AGTTTTACTTAC ACAGAT	ASO-1338	OxyAs OxyGs OxyTs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas OxyGs OxyAs OxyT
1229	246854	246872	AAGTTTTACTTA CACAGAT	ASO-1339	OxyAs OxyAs OxyGs OxyTs DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas OxyGs OxyAs OxyT
1230	246854	246873	GAAGTTTTACT TACACAGAT	ASO-1340	OxyGs OxyAs OxyAs DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas DNAcs DNAas OxyGs OxyAs OxyT
1231	246855	246874	AGAAGTTTTAC TTACACAGA	ASO-1341	OxyAs DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs DNAas OxyMCs OxyAs OxyGs OxyA
1232	246856	246874	AGAAGTTTTAC TTACACAG	ASO-1342	OxyAs OxyGs OxyAs DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs OxyAs OxyMCs OxyAs OxyG
1233	246856	246875	GAGAAGTTTTA CTTACACAG	ASO-1343	OxyGs OxyAs DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas DNAcs OxyAs OxyMCs OxyAs OxyG
1234	246857	246875	GAGAAGTTTTA CTTACACA	ASO-1344	OxyGs OxyAs DNAgs DNAas DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAas OxyMCs OxyAs OxyMCs OxyA
1235	246858	246875	GAGAAGTTTTA CTTACAC	ASO-1345	OxyGs OxyAs OxyGs OxyAs DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyAs OxyMC
1236	247171	247188	AAATCTTTTCTT CTGGGA	ASO-1346	OxyAs OxyAs OxyAs DNAts DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAgs OxyGs OxyGs OxyA
1237	247399	247415	GCCTTTCATTT ACTTAG	ASO-1347	OxyGs OxyMCs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAts DNAts DNAts DNAas DNAcs DNAts OxyTs OxyAs OxyG
1238	247440	247459	AATTATCTTTAT TTTAATGT	ASO-1348	OxyAs OxyAs OxyTs OxyTs DNAas DNAts DNAcs DNAts DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAas OxyAs OxyTs OxyGs OxyT
1239	247882	247899	TTCTAAGTATTC	ASO-	OxyTs OxyTs OxyMCs OxyTs DNAas DNAas DNAgs DNAts DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AATTGC	1349	DNAcs DNAas DNAas DNAts OxyTs OxyGs OxyMC
1240	248013	248028	ACAGTAGAACG TTGCT	ASO-1350	OxyAs OxyMCs OxyAs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAmcs DNAgs DNAts DNAts OxyGs OxyMCs OxyT
1241	248013	248029	AACAGTAGAAC GTTGCT	ASO-1351	OxyAs OxyAs OxyMCs OxyAs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAmcs DNAgs DNAts DNAts OxyGs OxyMCs OxyT
1242	248014	248029	AACAGTAGAAC GTTGC	ASO-1352	OxyAs OxyAs OxyMCs OxyAs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAmcs DNAgs OxyTs OxyTs OxyGs OxyMC
1243	248014	248030	CAACAGTAGAA CGTTGC	ASO-1353	OxyMCs OxyAs OxyAs DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAas DNAas DNAmcs DNAgs OxyTs OxyTs OxyGs OxyMC
1244	248015	248030	CAACAGTAGAA CGTTG	ASO-1354	OxyMCs OxyAs OxyAs OxyMCs DNAas DNAgs DNAts DNAas DNAgs DNAas DNAas DNAcs OxyGs OxyTs OxyTs OxyG
1245	248015	248031	GCAACAGTAGA ACGTTG	ASO-1355	OxyGs OxyMCs OxyAs OxyAs DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAas DNAas DNAmcs DNAgs OxyTs OxyTs OxyG
1246	248051	248068	CAAGCAGTCTA CAGTCTC	ASO-1356	OxyMCs OxyAs DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs DNAas DNAgs DNAts DNAcs OxyTs OxyMC
1247	248053	248069	TCAAGCAGTCT ACAGTC	ASO-1357	OxyTs OxyMCs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs DNAas OxyGs OxyTs OxyMC
1248	248053	248070	TTCAAGCAGTC TACAGTC	ASO-1358	OxyTs DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs DNAas OxyGs OxyTs OxyMC
1249	248054	248070	TTCAAGCAGTC TACAGT	ASO-1359	OxyTs OxyTs OxyMCs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyGs OxyT
1250	248054	248071	CTTCAAGCAGT CTACAGT	ASO-1360	OxyMCs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyGs OxyT
1251	248055	248072	TCTTCAAGCAG TCTACAG	ASO-1361	OxyTs OxyMCs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyG
1252	248055	248074	TTTCTTCAAGC AGTCTACAG	ASO-1362	OxyTs DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyG
1253	248056	248072	TCTTCAAGCAG TCTACA	ASO-1363	OxyTs OxyMCs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas OxyMCs OxyA
1254	248056	248073	TTCTTCAAGCA GTCTACA	ASO-1364	OxyTs OxyTs OxyMCs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas OxyMCs OxyA
1255	248056	248074	TTTCTTCAAGC AGTCTACA	ASO-1365	OxyTs OxyTs DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas OxyMCs OxyA
1256	248056	248075	ATTTCTTCAAG CAGTCTACA	ASO-1366	OxyAs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs DNAts DNAas OxyMCs OxyA
1257	248057	248075	ATTTCTTCAAG CAGTCTAC	ASO-1367	OxyAs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMC
1258	248057	248076	AATTTCTTCAA	ASO-	OxyAs OxyAs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GCAGTCTAC	1368	DNAgs DNAcs DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMC
1259	248058	248076	AATTTCTTCAA GCAGTCTA	ASO-1369	OxyAs OxyAs OxyTs DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAts DNAcs OxyTs OxyA
1260	248060	248077	AAATTTCTTCAA GCAGTC	ASO-1370	OxyAs OxyAs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyTs OxyMC
1261	248060	248078	TAAATTTCTTCA AGCAGTC	ASO-1371	OxyTs DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyTs OxyMC
1262	248060	248079	TTAAATTTCTTC AAGCAGTC	ASO-1372	OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyTs OxyMC
1263	248061	248078	TAAATTTCTTCA AGCAGT	ASO-1373	OxyTs OxyAs OxyAs OxyAs DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyT
1264	248061	248079	TTAAATTTCTTC AAGCAGT	ASO-1374	OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs OxyMCs OxyAs OxyGs OxyT
1265	248061	248080	ATTAAATTTCTT CAAGCAGT	ASO-1375	OxyAs OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs OxyMCs OxyAs OxyGs OxyT
1266	248062	248079	TTAAATTTCTTC AAGCAG	ASO-1376	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs OxyMCs OxyAs OxyG
1267	248062	248080	ATTAAATTTCTT CAAGCAG	ASO-1377	OxyAs OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas OxyGs OxyMCs OxyAs OxyG
1268	248062	248081	CATTAAATTTCT TCAAGCAG	ASO-1378	OxyMCs OxyAs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas OxyGs OxyMCs OxyAs OxyG
1269	248063	248080	ATTAAATTTCTT CAAGCA	ASO-1379	OxyAs OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas OxyAs OxyGs OxyMCs OxyA
1270	248063	248081	CATTAAATTTCT TCAAGCA	ASO-1380	OxyMCs OxyAs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas OxyAs OxyGs OxyMCs OxyA
1271	248063	248082	GCATTAAATTT CTTCAAGCA	ASO-1381	OxyGs OxyMCs OxyAs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAas DNAas DNAgs OxyMCs OxyA
1272	248064	248081	CATTAAATTTCT TCAAGC	ASO-1382	OxyMCs OxyAs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyGs OxyMC
1273	248064	248082	GCATTAAATTT CTTCAAGC	ASO-1383	OxyGs OxyMCs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyGs OxyMC
1274	248064	248083	AGCATTAAATTT CTTCAAGC	ASO-1384	OxyAs OxyGs DNAcs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyGs OxyMC
1275	248065	248082	GCATTAAATTT CTTCAAG	ASO-1385	OxyGs OxyMCs OxyAs OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyG
1276	248065	248083	AGCATTAAATTT CTTCAAG	ASO-1386	OxyAs OxyGs OxyMCs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyG
1277	248066	248083	AGCATTAAATTT	ASO-	OxyAs OxyGs OxyMCs OxyAs DNAts DNAts DNAas DNAas DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTTCAA	1387	DNAts DNAcs DNAts OxyTs OxyMCs OxyAs OxyA
1278	248079	248098	CTTTAGTTTTCT TCTAGCAT	ASO-1388	OxyMCs DNAts DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAas DNAgs DNAcs OxyAs OxyT
1279	248080	248098	CTTTAGTTTTCT TCTAGCA	ASO-1389	OxyMCs OxyTs DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAas DNAgs OxyMCs OxyA
1280	248081	248098	CTTTAGTTTTCT TCTAGC	ASO-1390	OxyMCs OxyTs OxyTs DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts DNAas OxyGs OxyMC
1281	248082	248099	CCTTTAGTTTTC TTCTAG	ASO-1391	OxyMCs OxyMCs DNAts DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAcs DNAts OxyAs OxyG
1282	248083	248100	ACCTTTAGTTTT CTTCTA	ASO-1392	OxyAs OxyMCs DNAcs DNAts DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts OxyMCs OxyTs OxyA
1283	248085	248102	TTACCTTTAGTT TTCTTC	ASO-1393	OxyTs OxyTs OxyAs OxyMCs DNAcs DNAts DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs OxyTs OxyTs OxyMC
1284	248086	248103	CTTACCTTTAG TTTTCTT	ASO-1394	OxyMCs OxyTs OxyTs DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAgs DNAts DNAts DNAts DNAts OxyMCs OxyTs OxyT
1285	248092	248111	TAAAATTTCTTA CCTTTAGT	ASO-1395	OxyTs OxyAs OxyAs DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyAs OxyGs OxyT
1286	248093	248111	TAAAATTTCTTA CCTTTAG	ASO-1396	OxyTs OxyAs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyAs OxyG
1287	248093	248112	GTAAAATTTCTT ACCTTTAG	ASO-1397	OxyGs OxyTs OxyAs OxyAs DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyAs OxyG
1288	248094	248112	GTAAAATTTCTT ACCTTTA	ASO-1398	OxyGs OxyTs OxyAs OxyAs DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyTs OxyA
1289	248094	248113	TGTAAAATTTCT TACCTTTA	ASO-1399	OxyTs OxyGs OxyTs DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyTs OxyA
1290	248095	248113	TGTAAAATTTCT TACCTTT	ASO-1400	OxyTs OxyGs OxyTs DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyTs OxyTs OxyT
1291	248095	248114	ATGTAAAATTTC TTACCTTT	ASO-1401	OxyAs OxyTs OxyGs OxyTs DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyT
1292	248096	248114	ATGTAAAATTTC TTACCTT	ASO-1402	OxyAs OxyTs OxyGs OxyTs DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyTs OxyT
1293	248096	248115	AATGTAAAATTT CTTACCTT	ASO-1403	OxyAs OxyAs OxyTs DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas OxyMCs OxyMCs OxyTs OxyT
1294	248097	248115	AATGTAAAATTT CTTACCT	ASO-1404	OxyAs OxyAs OxyTs OxyGs DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyT
1295	248097	248116	AAATGTAAAATT TCTTACCT	ASO-1405	OxyAs OxyAs OxyAs OxyTs DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyT
1296	248098	248115	AATGTAAAATTT	ASO-	OxyAs OxyAs OxyTs OxyGs DNAts DNAas DNAas DNAas DNAas DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTTACC	1406	DNAts DNAcs DNAts OxyTs OxyAs OxyMCs OxyMC
1297	248098	248116	AAATGTAAAATT TCTTACC	ASO-1407	OxyAs OxyAs OxyAs OxyTs DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAts OxyTs OxyAs OxyMCs OxyMC
1298	248181	248198	ACATAATTGAA AGCCTTT	ASO-1408	OxyAs OxyMCs OxyAs DNAts DNAas DNAas DNAts DNAts DNAgs DNAas DNAas DNAas DNAgs DNAcs OxyMCs OxyTs OxyTs OxyT
1299	248540	248559	CCCTGTGAAAA AAATTAGAA	ASO-1409	OxyMCs OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAts DNAts OxyAs OxyGs OxyAs OxyA
1300	248541	248560	ACCCTGTGAAA AAAATTAGA	ASO-1410	OxyAs OxyMCs OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAas DNAts DNAts DNAas OxyGs OxyA
1301	248542	248559	CCCTGTGAAAA AAATTAG	ASO-1411	OxyMCs OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAas OxyTs OxyTs OxyAs OxyG
1302	248542	248560	ACCCTGTGAAA AAAATTAG	ASO-1412	OxyAs OxyMCs OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAas DNAts OxyTs OxyAs OxyG
1303	248542	248561	CACCCTGTGAA AAAAATTAG	ASO-1413	OxyMCs OxyAs OxyMCs OxyMCs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAas DNAts DNAts OxyAs OxyG
1304	248543	248560	ACCCTGTGAAA AAAATTA	ASO-1414	OxyAs OxyMCs OxyMCs OxyMCs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas OxyAs OxyTs OxyTs OxyA
1305	248543	248561	CACCCTGTGAA AAAAATTA	ASO-1415	OxyMCs OxyAs OxyMCs OxyMCs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas DNAas DNAas OxyTs OxyTs OxyA
1306	248544	248561	CACCCTGTGAA AAAAATT	ASO-1416	OxyMCs OxyAs OxyMCs OxyMCs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas OxyAs OxyAs OxyTs OxyT
1307	248545	248562	GCACCCTGTGA AAAAAAT	ASO-1417	OxyGs OxyMCs OxyAs OxyMCs DNAcs DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAas DNAas DNAas OxyAs OxyAs OxyT
1308	248563	248579	GCATAGTTGTC AAGATG	ASO-1418	OxyGs OxyMCs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAas OxyGs OxyAs OxyTs OxyG
1309	248563	248580	AGCATAGTTGT CAAGATG	ASO-1419	OxyAs OxyGs DNAcs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAas OxyGs OxyAs OxyTs OxyG
1310	248563	248581	CAGCATAGTTG TCAAGATG	ASO-1420	OxyMCs OxyAs OxyGs DNAcs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAas DNAgs DNAas OxyTs OxyG
1311	248564	248580	AGCATAGTTGT CAAGAT	ASO-1421	OxyAs OxyGs OxyMCs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAas OxyGs OxyAs OxyT
1312	248564	248581	CAGCATAGTTG TCAAGAT	ASO-1422	OxyMCs OxyAs OxyGs DNAcs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas DNAas OxyGs OxyAs OxyT
1313	248565	248581	CAGCATAGTTG TCAAGA	ASO-1423	OxyMCs OxyAs OxyGs DNAcs DNAas DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts DNAcs DNAas OxyAs OxyGs OxyA
1314	249516	249533	CATGGAATCAT TTTGAGG	ASO-1424	OxyMCs OxyAs DNAts DNAgs DNAgs DNAas DNAas DNAts DNAcs DNAas DNAts DNAts DNAts DNAts OxyGs OxyAs OxyGs OxyG
1315	249969	249985	ATTGGTTGAAG	ASO-	OxyAs OxyTs OxyTs OxyGs DNAgs DNAts DNAts DNAgs DNAas DNAas DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AGCATT	1425	DNAas DNAgs OxyMCs OxyAs OxyTs OxyT
1316	250211	250228	GTTTATGAAAC AGGTAAC	ASO-1426	OxyGs OxyTs OxyTs OxyTs DNAas DNAts DNAgs DNAas DNAas DNAas DNAcs DNAas DNAgs DNAgs OxyTs OxyAs OxyAs OxyMC
1317	250538	250555	TTTTAGTTTACA TGATGA	ASO-1427	OxyTs OxyTs OxyTs OxyTs DNAas DNAgs DNAts DNAts DNAts DNAas DNAcs DNAas DNAts DNAgs OxyAs OxyTs OxyGs OxyA
1318	250877	250895	ATGATTCAGGG TAAGCAGG	ASO-1428	OxyAs DNAts DNAgs DNAas DNAts DNAts DNAcs DNAas DNAgs DNAgs DNAgs DNAts DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyG
1319	251031	251050	TTATTATTAATT GAGATTGT	ASO-0079	OxyTs OxyTs OxyAs OxyTs DNAts DNAas DNAts DNAts DNAas DNAas DNAts DNAts DNAgs DNAas DNAgs DNAas OxyTs OxyTs OxyGs OxyT
1320	251036	251054	TAATTTATTATT AATTGAG	ASO-1429	OxyTs OxyAs OxyAs OxyTs DNAts DNAts DNAas DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAts OxyTs OxyGs OxyAs OxyG
1321	251421	251438	TGTTACTAAAC TTCTTGA	ASO-1430	OxyTs OxyGs DNAts DNAts DNAas DNAcs DNAts DNAas DNAas DNAas DNAcs DNAts DNAts DNAcs OxyTs OxyTs OxyGs OxyA
1322	251728	251745	CAGACAATTTG GTTTTAC	ASO-1431	OxyMCs OxyAs DNAgs DNAas DNAcs DNAas DNAas DNAts DNAts DNAts DNAgs DNAgs DNAts DNAts OxyTs OxyTs OxyAs OxyMC
1323	251947	251964	AAAGGATACTG GAACTTT	ASO-1432	OxyAs OxyAs OxyAs OxyGs DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAas OxyMCs OxyTs OxyTs OxyT
1324	251947	251966	GAAAAGGATAC TGGAACTTT	ASO-1433	OxyGs OxyAs OxyAs OxyAs DNAas DNAgs DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAas OxyMCs OxyTs OxyTs OxyT
1325	251948	251966	GAAAAGGATAC TGGAACTT	ASO-1434	OxyGs OxyAs OxyAs OxyAs DNAas DNAgs DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAgs DNAas OxyAs OxyMCs OxyTs OxyT
1326	251988	252004	CAGTTGTGTTT ATTGGA	ASO-1435	OxyMCs OxyAs OxyGs DNAts DNAts DNAgs DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAts OxyGs OxyGs OxyA
1327	252038	252055	AGCAAATTTAG AACTAAA	ASO-1436	OxyAs OxyGs OxyMCs OxyAs DNAas DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAcs OxyTs OxyAs OxyAs OxyA
1328	252038	252056	CAGCAAATTTA GAACTAAA	ASO-1437	OxyMCs OxyAs OxyGs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAcs OxyTs OxyAs OxyAs OxyA
1329	252039	252056	CAGCAAATTTA GAACTAA	ASO-1438	OxyMCs OxyAs OxyGs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas OxyMCs OxyTs OxyAs OxyA
1330	252238	252256	GCTGCTGTAAA ATGAGAGT	ASO-1439	OxyGs DNAcs DNAts DNAgs DNAcs DNAts DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAgs DNAas DNAgs OxyAs OxyGs OxyT
1331	252239	252256	GCTGCTGTAAA ATGAGAG	ASO-1440	OxyGs DNAcs DNAts DNAgs DNAcs DNAts DNAgs DNAts DNAas DNAas DNAas DNAas DNAts DNAgs OxyAs OxyGs OxyAs OxyG
1332	252280	252298	TAACTTACCTTT ACTCCAT	ASO-1441	OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyAs OxyT
1333	252281	252298	TAACTTACCTTT ACTCCA	ASO-1442	OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts OxyMCs OxyMCs OxyA
1334	252281	252299	TTAACTTACCTT	ASO-	OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TACTCCA	1443	DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyA
1335	252281	252300	TTTAACTTACCT TTACTCCA	ASO-1444	OxyTs OxyTs DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts DNAcs OxyMCs OxyA
1336	252282	252299	TTAACTTACCTT TACTCC	ASO-1445	OxyTs OxyTs OxyAs OxyAs DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts OxyMCs OxyMC
1337	252282	252300	TTTAACTTACCT TTACTCC	ASO-1446	OxyTs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAcs DNAts OxyMCs OxyMC
1338	252283	252299	TTAACTTACCTT TACTC	ASO-1447	OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas OxyMCs OxyTs OxyMC
1339	252284	252301	GTTTAACTTAC CTTTACT	ASO-1448	OxyGs OxyTs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas OxyMCs OxyT
1340	252285	252301	GTTTAACTTAC CTTTAC	ASO-1449	OxyGs OxyTs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyAs OxyMC
1341	252285	252302	TGTTTAACTTAC CTTTAC	ASO-1450	OxyTs OxyGs OxyTs DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyAs OxyMC
1342	252285	252303	CTGTTTAACTTA CCTTTAC	ASO-1451	OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyAs OxyMC
1343	252285	252304	TCTGTTTAACTT ACCTTTAC	ASO-1452	OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyAs OxyMC
1344	252286	252303	CTGTTTAACTTA CCTTTA	ASO-1453	OxyMCs OxyTs DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyTs OxyA
1345	252286	252304	TCTGTTTAACTT ACCTTTA	ASO-1454	OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyTs OxyA
1346	252286	252305	ATCTGTTTAACT TACCTTTA	ASO-1455	OxyAs OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyA
1347	252287	252305	ATCTGTTTAACT TACCTTT	ASO-1456	OxyAs OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyT
1348	252287	252306	CATCTGTTTAA CTTACCTTT	ASO-1457	OxyMCs OxyAs OxyTs DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyT
1349	252288	252305	ATCTGTTTAACT TACCTT	ASO-1458	OxyAs OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyTs OxyT
1350	252288	252306	CATCTGTTTAA CTTACCTT	ASO-1459	OxyMCs OxyAs DNAts DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyTs OxyT
1351	252289	252305	ATCTGTTTAACT TACCT	ASO-1460	OxyAs DNAts DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyT
1352	252289	252306	CATCTGTTTAA CTTACCT	ASO-1461	OxyMCs DNAas DNAts DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyMCs OxyT
1353	252290	252306	CATCTGTTTAA	ASO-	OxyMCs OxyAs OxyTs OxyMCs DNAts DNAgs DNAts DNAts DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CTTACC	1462	DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyMC
1354	252290	252307	GCATCTGTTTA ACTTACC	ASO-1463	OxyGs DNAcs DNAas DNAts DNAcs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAts DNAts OxyAs OxyMCs OxyMC
1355	252336	252355	TAACATTTAAA GATTATCCA	ASO-1464	OxyTs OxyAs OxyAs OxyMCs DNAas DNAts DNAts DNAts DNAas DNAas DNAas DNAgs DNAas DNAts DNAts DNAas OxyTs OxyMCs OxyMCs OxyA
1356	252624	252643	TTATTTGGAAA AGCATTTGG	ASO-1465	OxyTs DNAts DNAas DNAts DNAts DNAts DNAgs DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAas DNAts OxyTs OxyTs OxyGs OxyG
1357	252879	252897	TATTATTTTGTT TAGAAAG	ASO-1466	OxyTs OxyAs OxyTs OxyTs DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyG
1358	253054	253071	GTGTTGATGAA GAATGTA	ASO-1467	OxyGs OxyTs OxyGs DNAts DNAts DNAgs DNAas DNAts DNAgs DNAas DNAas DNAgs DNAas DNAas OxyTs OxyGs OxyTs OxyA
1359	253080	253097	ATTAATTAATTC CCAAGA	ASO-1468	OxyAs OxyTs OxyTs OxyAs DNAas DNAts DNAts DNAas DNAas DNAts DNAts DNAcs DNAcs DNAcs OxyAs OxyAs OxyGs OxyA
1360	253537	253553	TATAAGTTGAA TGGAAG	ASO-1469	OxyTs OxyAs OxyTs OxyAs DNAas DNAgs DNAts DNAts DNAgs DNAas DNAas DNAts DNAgs OxyGs OxyAs OxyAs OxyG
1361	253645	253661	TTCTGAATTGA CCAGTC	ASO-1470	OxyTs OxyTs OxyMCs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas DNAcs DNAcs OxyAs OxyGs OxyTs OxyMC
1362	253645	253662	TTTCTGAATTG ACCAGTC	ASO-1471	OxyTs OxyTs OxyTs OxyMCs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas DNAcs DNAcs DNAas DNAgs OxyTs OxyMC
1363	253647	253664	CTTTTCTGAATT GACCAG	ASO-1472	OxyMCs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas OxyMCs OxyMCs OxyAs OxyG
1364	253648	253665	CCTTTTCTGAA TTGACCA	ASO-1473	OxyMCs DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas OxyMCs OxyMCs OxyA
1365	253649	253666	TCCTTTTCTGA ATTGACC	ASO-1474	OxyTs OxyMCs DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas OxyMCs OxyMC
1366	253649	253667	TTCCTTTTCTGA ATTGACC	ASO-1475	OxyTs OxyTs OxyMCs DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAas DNAas DNAts DNAts DNAgs DNAas OxyMCs OxyMC
1367	253673	253689	CATCTGAACAC TCGAAC	ASO-1476	OxyMCs OxyAs OxyTs OxyMCs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAcs DNAts DNAmcs DNAgs OxyAs OxyAs OxyMC
1368	253673	253690	TCATCTGAACA CTCGAAC	ASO-1477	OxyTs OxyMCs OxyAs DNAts DNAcs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAcs DNAts DNAmcs DNAgs OxyAs OxyAs OxyMC
1369	253673	253691	ATCATCTGAAC ACTCGAAC	ASO-1478	OxyAs OxyTs OxyMCs OxyAs DNAts DNAcs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAcs DNAts DNAmcs DNAgs OxyAs OxyAs OxyMC
1370	253673	253692	CATCATCTGAA CACTCGAAC	ASO-1479	OxyMCs OxyAs DNAts DNAcs DNAas DNAts DNAcs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAcs DNAts DNAmcs DNAgs OxyAs OxyAs OxyMC
1371	253676	253691	ATCATCTGAAC ACTCG	ASO-1480	OxyAs OxyTs OxyMCs OxyAs DNAts DNAcs DNAts DNAgs DNAas DNAas DNAcs DNAas DNAcs OxyTs OxyMCs OxyG
1372	253676	253692	CATCATCTGAA	ASO-	OxyMCs OxyAs DNAts DNAcs DNAas DNAts DNAcs DNAts DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CACTCG	1481	DNAas DNAcs DNAas DNAcs OxyTs OxyMCs OxyG
1373	253861	253879	CAAATTCAATTTCAGAGAA	ASO-1482	OxyMCs OxyAs OxyAs OxyAs DNAts DNAts DNAcs DNAas DNAas DNAts DNAts DNAts DNAcs DNAas DNAgs OxyAs OxyGs OxyAs OxyA
1374	254164	254183	AGGTGTTAAATTTATTGTTT	ASO-1483	OxyAs OxyGs OxyGs DNAts DNAgs DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts OxyGs OxyTs OxyTs OxyT
1375	254301	254319	GTGTGATATAATTATTTTA	ASO-1484	OxyGs OxyTs OxyGs OxyTs DNAgs DNAas DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAas DNAts OxyTs OxyTs OxyTs OxyA
1376	254884	254903	TTAAATGAATATGTGCCTCA	ASO-1485	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAgs DNAas DNAas DNAts DNAas DNAts DNAgs DNAts DNAgs DNAcs DNAcs OxyTs OxyMCs OxyA
1377	254916	254933	TTCTTTATTGTTAGGTAT	ASO-1486	OxyTs OxyTs OxyMCs DNAts DNAts DNAts DNAas DNAts DNAts DNAgs DNAts DNAts DNAas DNAgs OxyGs OxyTs OxyAs OxyT
1378	255212	255231	TATTTAATATGCTATATTTA	ASO-1487	OxyTs OxyAs OxyTs OxyTs DNAts DNAas DNAas DNAts DNAas DNAts DNAgs DNAcs DNAts DNAas DNAts DNAas OxyTs OxyTs OxyTs OxyA
1379	255431	255448	AGAATTTAACATGATATT	ASO-1488	OxyAs OxyGs OxyAs OxyAs DNAts DNAts DNAts DNAas DNAas DNAcs DNAas DNAts DNAgs DNAas OxyTs OxyAs OxyTs OxyT
1380	255686	255703	TAGTATTGAGAGGAAGAT	ASO-1808	OxyTs OxyAs OxyGs OxyTs DNAas DNAts DNAts DNAgs DNAas DNAgs DNAas DNAgs DNAgs DNAas DNAas OxyGs OxyAs OxyT
1381	255869	255888	TATTTATTATTTTCTAAAGG	ASO-1489	OxyTs OxyAs OxyTs OxyTs DNAts DNAas DNAts DNAts DNAas DNAts DNAts DNAts DNAts DNAts DNAcs DNAts DNAas OxyAs OxyAs OxyGs OxyG
1382	256137	256155	TAAAGAATATATCATTACC	ASO-1490	OxyTs OxyAs OxyAs OxyAs DNAgs DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAcs DNAas DNAts OxyTs OxyAs OxyMCs OxyMC
1383	256310	256326	TTCAATTATTAGTGGGG	ASO-1491	OxyTs OxyTs OxyMCs OxyAs DNAas DNAts DNAts DNAas DNAts DNAts DNAas DNAgs DNAts DNAgs OxyGs OxyGs OxyG
1384	256760	256778	GATGAACGTGAAAGACATG	ASO-1492	OxyGs OxyAs OxyTs OxyGs DNAas DNAas DNAmcs DNAgs DNAts DNAgs DNAas DNAas DNAas DNAgs DNAas DNAcs OxyAs OxyTs OxyG
1385	256864	256883	TGCAGAAAATAGAAACAGAG	ASO-1493	OxyTs OxyGs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAas DNAts DNAas DNAgs DNAas DNAas DNAas DNAcs OxyAs OxyGs OxyAs OxyG
1386	256865	256884	ATGCAGAAAATAGAAACAGA	ASO-1494	OxyAs OxyTs OxyGs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAas DNAts DNAas DNAgs DNAas DNAas DNAas OxyMCs OxyAs OxyGs OxyA
1387	256887	256904	TTTGTTGTTTATCTGTGG	ASO-1495	OxyTs DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAcs DNAts OxyGs OxyTs OxyGs OxyG
1388	256887	256905	CTTTGTTGTTTATCTGTGG	ASO-1496	OxyMCs OxyTs DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAcs DNAts DNAgs DNAts OxyGs OxyG
1389	256888	256905	CTTTGTTGTTTATCTGTG	ASO-1497	OxyMCs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAcs OxyTs OxyGs OxyTs OxyG
1390	256889	256906	GCTTTGTTGTTTATCTGT	ASO-1498	OxyGs OxyMCs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts DNAcs DNAts OxyGs OxyT
1391	256890	256908	TGGCTTTGTTG	ASO-	OxyTs DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTTATCTG	1499	DNAts DNAts DNAts DNAas DNAts DNAcs OxyTs OxyG
1392	256891	256909	TTGGCTTTGTT GTTTATCT	ASO-1500	OxyTs DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas DNAts OxyMCs OxyT
1393	256892	256908	TGGCTTTGTTG TTTATC	ASO-1501	OxyTs OxyGs OxyGs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas OxyTs OxyMC
1394	256892	256909	TTGGCTTTGTT GTTTATC	ASO-1502	OxyTs OxyTs OxyGs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas OxyTs OxyMC
1395	256893	256910	GTTGGCTTTGT TGTTTAT	ASO-1503	OxyGs DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts OxyTs OxyTs OxyAs OxyT
1396	256893	256911	CGTTGGCTTTG TTGTTTAT	ASO-1504	OxyMCs DNAgs DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts OxyTs OxyAs OxyT
1397	256893	256912	ACGTTGGCTTT GTTGTTTAT	ASO-1505	OxyAs DNAmcs DNAgs DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts OxyTs OxyAs OxyT
1398	256894	256911	CGTTGGCTTTG TTGTTTA	ASO-1506	OxyMCs OxyGs DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts OxyTs OxyA
1399	256894	256912	ACGTTGGCTTT GTTGTTTA	ASO-1507	OxyAs DNAmcs DNAgs DNAts DNAts DNAgs DNAgs DNAcs DNAts DNAts DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts OxyTs OxyTs OxyA
1400	256918	256935	TATTTTCTTTGG GGCTGG	ASO-1508	OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAgs DNAcs DNAts OxyGs OxyG
1401	256919	256936	ATATTTTCTTTG GGGCTG	ASO-1509	OxyAs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAgs DNAcs OxyTs OxyG
1402	256920	256936	ATATTTTCTTTG GGGCT	ASO-1510	OxyAs DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAgs OxyGs OxyGs OxyMCs OxyT
1403	256920	256937	AATATTTTCTTT GGGGCT	ASO-1511	OxyAs OxyAs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAgs OxyMCs OxyT
1404	256923	256940	AGGAATATTTT CTTTGGG	ASO-1512	OxyAs OxyGs OxyGs DNAas DNAas DNAts DNAas DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAts OxyGs OxyGs OxyG
1405	256975	256992	GTAAAGAACTT AAGAAGG	ASO-1513	OxyGs OxyTs OxyAs OxyAs DNAas DNAgs DNAas DNAas DNAcs DNAts DNAts DNAas DNAas DNAgs OxyAs OxyAs OxyGs OxyG
1406	257413	257432	GTGTTTTAATAA GAGGGAAA	ASO-1514	OxyGs OxyTs OxyGs OxyTs DNAts DNAts DNAts DNAas DNAas DNAts DNAas DNAas DNAgs DNAas DNAgs DNAgs OxyGs OxyAs OxyAs OxyA
1407	257603	257620	ATTGTGTGGAT TTGATTG	ASO-1515	OxyAs OxyTs OxyTs OxyGs DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAts DNAts DNAgs DNAas OxyTs OxyTs OxyG
1408	257607	257624	GTTAATTGTGT GGATTTG	ASO-1516	OxyGs OxyTs DNAts DNAas DNAas DNAts DNAts DNAgs DNAts DNAgs DNAts DNAgs DNAgs DNAas OxyTs OxyTs OxyTs OxyG
1409	258296	258315	TAATCACTATAA TTTGAGGC	ASO-1517	OxyTs OxyAs OxyAs DNAts DNAcs DNAas DNAcs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAgs DNAas OxyGs OxyGs OxyMC
1410	258509	258526	GTTATATTGGT	ASO-	OxyGs OxyTs OxyTs OxyAs DNAts DNAas DNAts DNAts DNAgs DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTGAAAC	1518	DNAts DNAts DNAgs OxyAs OxyAs OxyAs OxyMC
1411	258713	258730	AAAAGACCTTA TTCTTGA	ASO-1519	OxyAs OxyAs OxyAs OxyAs DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyGs OxyA
1412	258713	258731	CAAAAGACCTT ATTCTTGA	ASO-1520	OxyMCs OxyAs OxyAs OxyAs DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyGs OxyA
1413	258713	258732	GCAAAAGACCT TATTCTTGA	ASO-1521	OxyGs DNAcs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyGs OxyA
1414	258714	258731	CAAAAGACCTT ATTCTTG	ASO-1522	OxyMCs OxyAs OxyAs OxyAs DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts OxyMCs OxyTs OxyTs OxyG
1415	258714	258732	GCAAAAGACCT TATTCTTG	ASO-1523	OxyGs OxyMCs OxyAs OxyAs DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAcs DNAts OxyTs OxyG
1416	258714	258733	TGCAAAAGACC TTATTCTTG	ASO-1524	OxyTs OxyGs DNAcs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts DNAcs OxyTs OxyTs OxyG
1417	258715	258732	GCAAAAGACCT TATTCTT	ASO-1525	OxyGs OxyMCs OxyAs DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts OxyTs OxyMCs OxyTs OxyT
1418	258715	258733	TGCAAAAGACC TTATTCTT	ASO-1526	OxyTs OxyGs DNAcs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts OxyTs OxyMCs OxyTs OxyT
1419	258715	258734	ATGCAAAAGAC CTTATTCTT	ASO-1527	OxyAs OxyTs OxyGs DNAcs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts OxyMCs OxyTs OxyT
1420	258716	258732	GCAAAAGACCT TATTCT	ASO-1528	OxyGs OxyMCs OxyAs OxyAs DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts OxyTs OxyMCs OxyT
1421	258716	258733	TGCAAAAGACC TTATTCT	ASO-1529	OxyTs OxyGs OxyMCs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas DNAts DNAts OxyMCs OxyT
1422	258717	258734	ATGCAAAAGAC CTTATTC	ASO-1530	OxyAs OxyTs OxyGs OxyMCs DNAas DNAas DNAas DNAas DNAgs DNAas DNAcs DNAcs DNAts DNAts DNAas OxyTs OxyTs OxyMC
1423	258838	258856	ATGAAATAGTG ACAAGAGC	ASO-1531	OxyAs OxyTs OxyGs OxyAs DNAas DNAas DNAts DNAas DNAgs DNAts DNAgs DNAas DNAcs DNAas DNAas DNAgs OxyAs OxyGs OxyMC
1424	258953	258969	TTACAGTAGTT TGGGGC	ASO-1532	OxyTs OxyTs DNAas DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAgs OxyGs OxyMC
1425	258953	258970	ATTACAGTAGT TTGGGGC	ASO-1533	OxyAs DNAts DNAts DNAas DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAts DNAts DNAts DNAgs DNAgs OxyGs OxyGs OxyMC
1426	258954	258970	ATTACAGTAGT TTGGGG	ASO-1534	OxyAs OxyTs OxyTs DNAas DNAcs DNAas DNAgs DNAts DNAas DNAgs DNAts DNAts DNAts DNAgs OxyGs OxyGs OxyG
1427	258965	258981	CAGGGTTGTGG ATTACA	ASO-1535	OxyMCs OxyAs OxyGs DNAgs DNAgs DNAts DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAts DNAas OxyMCs OxyA
1428	258965	258982	TCAGGGTTGTG GATTACA	ASO-1536	OxyTs OxyMCs DNAas DNAgs DNAgs DNAgs DNAts DNAts DNAgs DNAts DNAgs DNAgs DNAas DNAts DNAts OxyAs OxyMCs OxyA
1429	258966	258982	TCAGGGTTGTG	ASO-	OxyTs OxyMCs DNAas DNAgs DNAgs DNAgs DNAts DNAts DNAgs DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GATTAC	1537	DNAgs DNAgs DNAas OxyTs OxyTs OxyAs OxyMC
1430	258967	258982	TCAGGGTTGTG GATTA	ASO-1538	OxyTs OxyMCs DNAas DNAgs DNAgs DNAgs DNAts DNAts DNAgs DNAts DNAgs DNAgs OxyAs OxyTs OxyTs OxyA
1431	258984	259001	TCTGAATACCT TGTTTCC	ASO-1539	OxyTs OxyMCs DNAts DNAgs DNAas DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAgs DNAts DNAts DNAts OxyMCs OxyMC
1432	259095	259111	GTGGTAGAAAA TGGTTA	ASO-1540	OxyGs OxyTs OxyGs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAas DNAas DNAts DNAgs OxyGs OxyTs OxyTs OxyA
1433	259409	259426	ACTCAAAAGTA ACACTAA	ASO-1541	OxyAs OxyMCs OxyTs OxyMCs DNAas DNAas DNAas DNAas DNAgs DNAts DNAas DNAas DNAcs DNAas OxyMCs OxyTs OxyAs OxyA
1434	259752	259769	AATTGGACACA TGGAATA	ASO-1542	OxyAs OxyAs OxyTs OxyTs DNAgs DNAgs DNAas DNAcs DNAas DNAcs DNAas DNAts DNAgs DNAgs OxyAs OxyAs OxyTs OxyA
1435	260259	260275	TTAATGTGACC TAGTAT	ASO-1543	OxyTs OxyTs OxyAs DNAas DNAts DNAgs DNAts DNAgs DNAas DNAcs DNAcs DNAts DNAas OxyGs OxyTs OxyAs OxyT
1436	260398	260417	ATTTTAGAGATT CAGTATTC	ASO-0080	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAgs DNAas DNAgs DNAas DNAts DNAts DNAcs DNAas DNAgs DNAts OxyAs OxyTs OxyTs OxyMC
1437	260451	260468	TCAGTAATGGA AAACAGA	ASO-1544	OxyTs OxyMCs OxyAs OxyGs DNAts DNAas DNAas DNAts DNAgs DNAgs DNAas DNAas DNAas DNAas OxyMCs OxyAs OxyGs OxyA
1438	260810	260828	TGGAATTATAA TGAATAAT	ASO-1545	OxyTs OxyGs OxyGs OxyAs DNAas DNAts DNAts DNAas DNAts DNAas DNAas DNAts DNAgs DNAas DNAas OxyTs OxyAs OxyAs OxyT
1439	261157	261173	TGTAGAAGCAG CGGAAG	ASO-1546	OxyTs DNAgs DNAts DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAas DNAgs DNAmcs DNAgs OxyGs OxyAs OxyAs OxyG
1440	261162	261179	GTGATTTGTAG AAGCAGC	ASO-1547	OxyGs OxyTs DNAgs DNAas DNAts DNAts DNAts DNAgs DNAts DNAas DNAgs DNAas DNAas DNAgs DNAcs OxyAs OxyGs OxyMC
1441	261398	261417	CCTGATGAGAA GAAAACACA	ASO-1548	OxyMCs OxyMCs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas DNAas DNAas OxyMCs OxyAs OxyMCs OxyA
1442	261399	261417	CCTGATGAGAA GAAAACAC	ASO-1549	OxyMCs OxyMCs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas DNAas OxyAs OxyMCs OxyAs OxyMC
1443	261399	261418	TCCTGATGAGA AGAAAACAC	ASO-1550	OxyTs OxyMCs OxyMCs DNAts DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas DNAas DNAas OxyMCs OxyAs OxyMC
1444	261400	261417	CCTGATGAGAA GAAAACA	ASO-1551	OxyMCs OxyMCs OxyTs OxyGs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas OxyAs OxyAs OxyMCs OxyA
1445	261400	261418	TCCTGATGAGA AGAAAACA	ASO-1552	OxyTs OxyMCs OxyMCs OxyTs DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas DNAas OxyAs OxyAs OxyMCs OxyA
1446	261401	261418	TCCTGATGAGA AGAAAAC	ASO-1553	OxyTs OxyMCs OxyMCs OxyTs DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAas OxyAs OxyAs OxyAs OxyMC
1447	261451	261469	ATACCTTTCAC ATCTTCAT	ASO-1554	OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAcs DNAts OxyTs OxyMCs OxyAs OxyT
1448	261451	261470	CATACCTTTCA	ASO-	OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			CATCTTCAT	1555	DNAas DNAcs DNAas DNAts DNAcs DNAts DNAts DNAcs OxyAs OxyT
1449	261452	261469	ATACCTTTCAC ATCTTCA	ASO-1556	OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAcs OxyTs OxyTs OxyMCs OxyA
1450	261452	261470	CATACCTTTCA CATCTTCA	ASO-1557	OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAcs DNAts DNAts OxyMCs OxyA
1451	261453	261469	ATACCTTTCAC ATCTTC	ASO-1558	OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyTs OxyTs OxyMC
1452	261453	261470	CATACCTTTCA CATCTTC	ASO-1559	OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyTs OxyTs OxyMC
1453	261453	261471	TCATACCTTTC ACATCTTC	ASO-1560	OxyTs OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAcs DNAts OxyTs OxyMC
1454	261453	261472	ATCATACCTTT CACATCTTC	ASO-1561	OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyTs OxyTs OxyMC
1455	261454	261471	TCATACCTTTC ACATCTT	ASO-1562	OxyTs OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyTs OxyT
1456	261454	261472	ATCATACCTTT CACATCTT	ASO-1563	OxyAs OxyTs OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAcs OxyTs OxyT
1457	261454	261473	AATCATACCTTT CACATCTT	ASO-1564	OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas OxyTs OxyMCs OxyTs OxyT
1458	261455	261472	ATCATACCTTT CACATCT	ASO-1565	OxyAs OxyTs OxyMCs OxyAs DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyT
1459	261455	261473	AATCATACCTTT CACATCT	ASO-1566	OxyAs OxyAs OxyTs OxyMCs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts OxyMCs OxyT
1460	261455	261474	AAATCATACCT TTCACATCT	ASO-1567	OxyAs OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas DNAcs OxyAs OxyTs OxyMCs OxyT
1461	261456	261472	ATCATACCTTT CACATC	ASO-1568	OxyAs OxyTs OxyMCs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas OxyMCs OxyAs OxyTs OxyMC
1462	261456	261473	AATCATACCTTT CACATC	ASO-1569	OxyAs OxyAs OxyTs OxyMCs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas OxyMCs OxyAs OxyTs OxyMC
1463	261456	261474	AAATCATACCT TTCACATC	ASO-1570	OxyAs OxyAs OxyAs OxyTs DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas OxyMCs OxyAs OxyTs OxyMC
1464	261456	261475	TAAATCATACC TTTCACATC	ASO-1571	OxyTs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs DNAas OxyMCs OxyAs OxyTs OxyMC
1465	261457	261475	TAAATCATACC TTTCACAT	ASO-1572	OxyTs OxyAs OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs OxyAs OxyMCs OxyAs OxyT
1466	261457	261476	TTAAATCATAC CTTTCACAT	ASO-1573	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs OxyAs OxyMCs OxyAs OxyT
1467	261458	261475	TAAATCATACC	ASO-	OxyTs OxyAs OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTTCACA	1574	DNAts DNAts DNAts OxyMCs OxyAs OxyMCs OxyA
1468	261458	261476	TTAAATCATAC CTTTCACA	ASO-1575	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts OxyMCs OxyAs OxyMCs OxyA
1469	261458	261477	GTTAAATCATA CCTTTCACA	ASO-1576	OxyGs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts DNAts DNAcs OxyAs OxyMCs OxyA
1470	261459	261475	TAAATCATACC TTTCAC	ASO-1577	OxyTs OxyAs OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyMCs OxyAs OxyMC
1471	261459	261476	TTAAATCATAC CTTTCAC	ASO-1578	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyMCs OxyAs OxyMC
1472	261459	261477	GTTAAATCATA CCTTTCAC	ASO-1579	OxyGs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts DNAts OxyTs OxyMCs OxyAs OxyMC
1473	261460	261477	GTTAAATCATA CCTTTCA	ASO-1580	OxyGs OxyTs OxyTs OxyAs DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs DNAts OxyTs OxyTs OxyMCs OxyA
1474	261461	261477	GTTAAATCATA CCTTTC	ASO-1581	OxyGs OxyTs OxyTs OxyAs DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAcs DNAcs OxyTs OxyTs OxyTs OxyMC
1475	261720	261737	TCATTATTAGTT GTCATT	ASO-1582	OxyTs OxyMCs OxyAs OxyTs DNAts DNAas DNAts DNAts DNAas DNAgs DNAts DNAts DNAgs DNAts OxyMCs OxyAs OxyTs OxyT
1476	261878	261894	TTGAGATGACT AAAAGT	ASO-1583	OxyTs OxyTs OxyGs OxyAs DNAgs DNAas DNAts DNAgs DNAas DNAcs DNAts DNAas DNAas OxyAs OxyAs OxyGs OxyT
1477	262307	262323	CAGATGAGGTT TAATTA	ASO-1584	OxyMCs OxyAs OxyGs OxyAs DNAts DNAgs DNAas DNAgs DNAgs DNAts DNAts DNAts DNAas OxyAs OxyTs OxyTs OxyA
1478	262642	262661	AATAAAATTCTT GACACAGC	ASO-1585	OxyAs OxyAs OxyTs OxyAs DNAas DNAas DNAas DNAts DNAts DNAcs DNAts DNAts DNAgs DNAas DNAcs DNAas DNAcs OxyAs OxyGs OxyMC
1479	262932	262951	TATTTAAAGATT CAGTTTCT	ASO-1586	OxyTs OxyAs OxyTs OxyTs DNAts DNAas DNAas DNAas DNAgs DNAas DNAts DNAts DNAcs DNAas DNAgs DNAts OxyTs OxyTs OxyMCs OxyT
1480	263205	263221	TGAATTGGAGA ACTGTT	ASO-1587	OxyTs OxyGs OxyAs OxyAs DNAts DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAas DNAcs OxyTs OxyGs OxyTs OxyT
1481	263524	263541	TCAATATTAAAA GGGTTA	ASO-1588	OxyTs OxyMCs OxyAs OxyAs DNAts DNAas DNAts DNAts DNAas DNAas DNAas DNAas DNAgs DNAgs OxyGs OxyTs OxyTs OxyA
1482	263847	263863	CTTGGATGTTA GTTATA	ASO-1589	OxyMCs OxyTs OxyTs DNAgs DNAgs DNAas DNAts DNAgs DNAts DNAts DNAas DNAgs DNAts OxyTs OxyAs OxyTs OxyA
1483	264041	264058	TGCAGAAGTAT GTATGGG	ASO-1590	OxyTs OxyGs DNAcs DNAas DNAgs DNAas DNAas DNAgs DNAts DNAas DNAts DNAgs DNAts DNAas DNAts OxyGs OxyGs OxyG
1484	264416	264435	ATCTCTGACTA CTTTTGCTT	ASO-1591	OxyAs DNAts DNAcs DNAts DNAcs DNAts DNAgs DNAas DNAcs DNAts DNAas DNAcs DNAts DNAts DNAts DNAts DNAgs DNAcs OxyTs OxyT
1485	264689	264705	ATTCATATAAA GGGTAG	ASO-1592	OxyAs OxyTs OxyTs OxyMCs DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAgs DNAgs OxyGs OxyTs OxyAs OxyG
1486	264691	264709	CAAGATTCATA	ASO-	OxyMCs OxyAs OxyAs DNAgs DNAas DNAts DNAts DNAcs DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TAAAGGGT	0081	DNAas DNAts DNAas DNAas DNAas OxyGs OxyGs OxyGs OxyT
1487	264912	264928	AAAATGTGGTT AGAGCT	ASO-1593	OxyAs OxyAs OxyAs OxyAs DNAts DNAgs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAgs OxyAs OxyGs OxyMCs OxyT
1488	266049	266067	AGTGAGATACT GGAAACAG	ASO-0082	OxyGs OxyTs OxyGs DNAas DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAas OxyAs OxyMCs OxyAs OxyG
1489	266049	266066	GTGAGATACTG GAAACAG	ASO-1594	OxyAs OxyGs OxyTs DNAgs DNAas DNAgs DNAas DNAts DNAas DNAcs DNAts DNAgs DNAgs DNAas DNAas DNAas OxyMCs OxyAs OxyG
1490	266057	266074	GAGCTGAAGTG AGATACT	ASO-1595	OxyGs OxyAs OxyGs DNAcs DNAts DNAgs DNAas DNAas DNAgs DNAts DNAgs DNAas DNAgs DNAas DNAts DNAas OxyMCs OxyT
1491	272888	272905	ATGAAACTGTG TTACATT	ASO-1596	OxyAs OxyTs OxyGs OxyAs DNAas DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAts DNAas OxyMCs OxyAs OxyTs OxyT
1492	272889	272906	AATGAAACTGT GTTACAT	ASO-1597	OxyAs OxyAs OxyTs OxyGs DNAas DNAas DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAts DNAas OxyMCs OxyAs OxyT
1493	273186	273203	AAGAAAAGCTA TTTATAG	ASO-1598	OxyAs OxyAs OxyGs OxyAs DNAas DNAas DNAas DNAgs DNAcs DNAts DNAas DNAts DNAts DNAts OxyAs OxyTs OxyAs OxyG
1494	273436	273452	CGATAATGGAA CAGTAG	ASO-1599	OxyMCs OxyGs OxyAs DNAts DNAas DNAas DNAts DNAgs DNAgs DNAas DNAas DNAcs DNAas OxyGs OxyTs OxyAs OxyG
1495	273657	273676	ATAAAGTAAATT ATATTTGG	ASO-1600	OxyAs OxyTs OxyAs OxyAs DNAas DNAgs DNAts DNAas DNAas DNAas DNAts DNAts DNAas DNAts DNAas DNAts OxyTs OxyTs OxyGs OxyG
1496	273952	273970	CTGCTGTTATG AGGAAACC	ASO-0083	OxyMCs DNAts DNAgs DNAcs DNAts DNAgs DNAts DNAts DNAas DNAts DNAgs DNAas DNAgs DNAgs DNAas DNAas OxyAs OxyMCs OxyMC
1497	274086	274104	GTTTTATAATAA TATGTAT	ASO-1601	OxyGs OxyTs OxyTs OxyTs DNAts DNAas DNAts DNAas DNAas DNAts DNAas DNAas DNAts DNAas DNAts OxyGs OxyTs OxyAs OxyT
1498	274365	274384	AATATTAATTTA ATTTTAGA	ASO-1602	OxyAs OxyAs OxyTs OxyAs DNAts DNAts DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAts OxyTs OxyAs OxyGs OxyA
1499	274705	274724	TATTAAAATTGC ACAGGATT	ASO-1603	OxyTs OxyAs OxyTs DNAts DNAas DNAas DNAas DNAas DNAts DNAts DNAgs DNAcs DNAas DNAcs DNAas DNAgs OxyGs OxyAs OxyTs OxyT
1500	274973	274992	TCATCTTTCTTT TCTAAATC	ASO-1604	OxyTs OxyMCs OxyAs DNAts DNAcs DNAts DNAts DNAts DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAas DNAas OxyAs OxyTs OxyMC
1501	275483	275502	ATTATAATCTTT TCTTACCT	ASO-1605	OxyAs OxyTs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAcs OxyMCs OxyT
1502	275484	275502	ATTATAATCTTT TCTTACC	ASO-1606	OxyAs OxyTs OxyTs DNAas DNAts DNAas DNAas DNAts DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts OxyTs OxyAs OxyMCs OxyMC
1503	275895	275912	CATTGGTGAAG AGATATG	ASO-1607	OxyMCs OxyAs OxyTs OxyTs DNAgs DNAgs DNAts DNAgs DNAas DNAas DNAgs DNAas DNAgs DNAas OxyTs OxyAs OxyTs OxyG
1504	276227	276246	CTTGGTACATT ATCTTGCAG	ASO-1608	OxyMCs DNAts DNAts DNAgs DNAgs DNAts DNAas DNAcs DNAas DNAts DNAts DNAas DNAts DNAcs DNAts DNAts DNAgs DNAcs OxyAs OxyG
1505	276472	276491	TACTTGTCCTTT	ASO-	OxyTs OxyAs OxyMCs DNAts DNAts DNAgs DNAts DNAcs DNAcs DNAts DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ATCATTAG	1609	DNAts DNAas DNAts DNAcs DNAas DNAts DNAts OxyAs OxyG
1506	276737	276753	TGTAAGGTAAA GTCTTT	ASO-1610	OxyTs OxyGs OxyTs OxyAs DNAas DNAgs DNAgs DNAts DNAas DNAas DNAas DNAgs DNAts OxyMCs OxyTs OxyTs OxyT
1507	277053	277072	GTAAGATTAGA CTGTGCTAC	ASO-1611	OxyGs DNAts DNAas DNAas DNAgs DNAas DNAts DNAts DNAas DNAgs DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAcs OxyTs OxyAs OxyMC
1508	277421	277440	ATTGTATTTCTT GATTTTAC	ASO-1612	OxyAs OxyTs OxyTs OxyGs DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs DNAas DNAts DNAts OxyTs OxyTs OxyAs OxyMC
1509	277611	277627	CCAGGAATAGC TTTAAA	ASO-1613	OxyMCs OxyMCs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAgs DNAcs DNAts DNAts OxyTs OxyAs OxyAs OxyA
1510	277919	277936	ATCTGAATTTT GTGTTAG	ASO-1614	OxyAs OxyTs OxyMCs OxyTs DNAgs DNAas DNAas DNAts DNAts DNAts DNAts DNAgs DNAts DNAgs DNAts OxyTs OxyAs OxyG
1511	278181	278200	TATTATTTCTTG TTTTAGCC	ASO-0084	OxyTs OxyAs DNAts DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs DNAts DNAts DNAts DNAts DNAas DNAgs OxyMCs OxyMC
1512	278185	278203	ACATATTATTTC TTGTTTT	ASO-1615	OxyAs OxyMCs OxyAs OxyTs DNAas DNAts DNAts DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs OxyTs OxyTs OxyTs OxyT
1513	278624	278643	TTTAAATGAAT GAATCCAAG	ASO-1616	OxyTs OxyTs OxyTs OxyAs DNAas DNAas DNAts DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAts DNAcs OxyMCs OxyAs OxyAs OxyG
1514	278626	278644	TTTTAAATGAAT GAATCCA	ASO-1617	OxyTs OxyTs OxyTs OxyTs DNAas DNAas DNAas DNAts DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas OxyTs OxyMCs OxyMCs OxyA
1515	279074	279090	GATAATATAGC TTTGGC	ASO-1618	OxyGs OxyAs OxyTs OxyAs DNAas DNAts DNAas DNAts DNAas DNAgs DNAcs DNAts DNAts DNAts OxyGs OxyGs OxyMC
1516	279461	279480	TTCAGTTTTCTT AGATGCAT	ASO-1619	OxyTs OxyTs DNAcs DNAas DNAgs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAgs DNAas DNAts DNAgs OxyMCs OxyAs OxyT
1517	279663	279679	AATGGAGTTGG TGAGCA	ASO-1620	OxyAs OxyAs OxyTs OxyGs DNAgs DNAas DNAgs DNAts DNAts DNAgs DNAgs DNAts DNAgs DNAas DNAgs OxyMCs OxyA
1518	280077	280093	GATAACATTTG GTCAGA	ASO-1621	OxyGs OxyAs DNAts DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAgs DNAgs DNAts OxyMCs OxyAs OxyGs OxyA
1519	280136	280152	TCTGGAGGGAT GTAATT	ASO-1622	OxyTs OxyMCs OxyTs OxyGs DNAgs DNAas DNAgs DNAgs DNAgs DNAas DNAts DNAgs DNAts DNAas OxyAs OxyTs OxyT
1520	280658	280676	TCTACCAATTA AATATTTA	ASO-1623	OxyTs OxyMCs OxyTs OxyAs DNAcs DNAcs DNAas DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAas OxyTs OxyTs OxyTs OxyA
1521	280662	280679	TCCTCTACCAA TTAAATA	ASO-1624	OxyTs OxyMCs OxyMCs DNAts DNAcs DNAts DNAas DNAcs DNAcs DNAas DNAas DNAts DNAts DNAas OxyAs OxyAs OxyTs OxyA
1522	281482	281499	CTATGATATGA ATGTATG	ASO-1625	OxyMCs OxyTs OxyAs OxyTs DNAgs DNAas DNAts DNAas DNAts DNAgs DNAas DNAas DNAts DNAgs OxyTs OxyAs OxyTs OxyG
1523	281493	281509	TGACTTAATGC TATGAT	ASO-1626	OxyTs OxyGs OxyAs DNAcs DNAts DNAts DNAas DNAas DNAts DNAgs DNAcs DNAts DNAas OxyTs OxyGs OxyAs OxyT
1524	282021	282039	GTTATTATTATT	ASO-	OxyGs OxyTs OxyTs DNAas DNAts DNAts DNAas DNAts DNAts DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TTCAGGT	1627	DNAts DNAts DNAts DNAcs DNAas OxyGs OxyGs OxyT
1525	282239	282258	TATGTAGTTTG GGTATTTAT	ASO-0085	OxyTs OxyAs OxyTs OxyGs DNAts DNAas DNAgs DNAts DNAts DNAts DNAgs DNAgs DNAgs DNAts DNAas DNAts DNAts DNAts OxyAs OxyT
1526	282245	282261	CTTTATGTAGTT TGGGT	ASO-1628	OxyMCs OxyTs OxyTs DNAts DNAas DNAts DNAgs DNAts DNAas DNAgs DNAts DNAts DNAts DNAgs OxyGs OxyGs OxyT
1527	282662	282681	TTAAATTCACAT TTTACTTT	ASO-1629	OxyTs OxyTs OxyAs OxyAs DNAas DNAts DNAts DNAcs DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas OxyMCs OxyTs OxyTs OxyT
1528	282946	282964	CTCCATAACAT TTACCATC	ASO-1630	OxyMCs OxyTs OxyMCs DNAcs DNAas DNAts DNAas DNAas DNAcs DNAas DNAts DNAts DNAts DNAts DNAas DNAcs DNAcs DNAas OxyTs OxyMC
1529	282952	282969	ATTCTCTCCAT AACATTT	ASO-1631	OxyAs OxyTs OxyTs OxyMCs DNAts DNAcs DNAts DNAcs DNAcs DNAas DNAts DNAas DNAas DNAcs OxyAs OxyTs OxyTs OxyT
1530	283532	283549	TGTTAGTTTTAT TCTCAG	ASO-1632	OxyTs OxyGs OxyTs DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAas DNAts DNAts DNAcs DNAts OxyMCs OxyAs OxyG
1531	283823	283841	GACAATAGTAA GAATTTTA	ASO-1633	OxyGs OxyAs OxyMCs OxyAs DNAas DNAts DNAas DNAgs DNAts DNAas DNAas DNAgs DNAas DNAas DNAts OxyTs OxyTs OxyTs OxyA
1532	284117	284136	TAAAGGTGTTC TTAGTTTAA	ASO-1634	OxyTs OxyAs OxyAs OxyAs DNAgs DNAgs DNAts DNAgs DNAts DNAts DNAcs DNAts DNAts DNAas DNAgs DNAts OxyTs OxyTs OxyAs OxyA
1533	284473	284490	TCTTGTTGAAA TATTGGG	ASO-1635	OxyTs OxyMCs OxyTs OxyTs DNAgs DNAts DNAts DNAgs DNAas DNAas DNAas DNAts DNAas DNAts DNAts OxyGs OxyGs OxyG
1534	284474	284491	TTCTTGTTGAA ATATTGG	ASO-1636	OxyTs OxyTs OxyMCs OxyTs DNAts DNAgs DNAts DNAts DNAgs DNAas DNAas DNAas DNAts DNAas OxyTs OxyTs OxyGs OxyG
1535	285623	285640	TTGCAAGACTT ATTTAGG	ASO-1637	OxyTs OxyTs OxyGs OxyMCs DNAas DNAas DNAgs DNAas DNAcs DNAts DNAts DNAas DNAts DNAts DNAts DNAas OxyGs OxyG
1536	285794	285811	TATGTTGCATT CATCTAT	ASO-1638	OxyTs OxyAs DNAts DNAgs DNAts DNAts DNAgs DNAcs DNAas DNAts DNAts DNAcs DNAas DNAts DNAcs OxyTs OxyAs OxyT
1537	285985	286002	GCCAATTTACA AAACATA	ASO-1639	OxyGs OxyMCs OxyMCs OxyAs DNAas DNAts DNAts DNAts DNAas DNAcs DNAas DNAas DNAas DNAas DNAcs OxyAs OxyTs OxyA
1538	286389	286405	GCTCTCAGTCA TATTTC	ASO-1640	OxyGs OxyMCs DNAts DNAcs DNAts DNAcs DNAas DNAgs DNAts DNAcs DNAas DNAts DNAas DNAts DNAts OxyTs OxyMC
1539	286862	286881	GTAGGTTTTAA TTTCTTTCA	ASO-1641	OxyGs OxyTs OxyAs DNAgs DNAgs DNAts DNAts DNAts DNAts DNAas DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAts OxyMCs OxyA
1540	286962	286979	GAGTTAATTTC AAAGTGT	ASO-1642	OxyGs OxyAs OxyGs DNAts DNAts DNAas DNAas DNAts DNAts DNAts DNAcs DNAas DNAas DNAas OxyGs OxyTs OxyGs OxyT
1541	287329	287348	TGCTAATCAAT TTTATATTA	ASO-1643	OxyTs OxyGs OxyMCs OxyTs DNAas DNAas DNAts DNAcs DNAas DNAas DNAts DNAts DNAts DNAts DNAas DNAts DNAas OxyTs OxyTs OxyA
1542	287332	287350	TCTGCTAATCA ATTTTATA	ASO-0086	OxyTs OxyMCs OxyTs OxyGs DNAcs DNAts DNAas DNAas DNAts DNAcs DNAas DNAas DNAts DNAts DNAts DNAts OxyAs OxyTs OxyA
1543	287693	287712	TTAAGAGTTGA	ASO-	OxyTs DNAts DNAas DNAas DNAgs DNAas DNAgs DNAts DNAts DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TGACATGGA	1644	DNAts DNAgs DNAas DNAcs DNAas OxyTs OxyGs OxyGs OxyA
1544	287941	287960	GTATTTATAAA GATTTTCAT	ASO-1645	OxyGs OxyTs OxyAs OxyTs DNAts DNAts DNAas DNAts DNAas DNAas DNAas DNAgs DNAas DNAts DNAts DNAts OxyTs OxyMCs OxyAs OxyT
1545	288096	288112	GATCATTTAGA ATAAGT	ASO-1646	OxyGs OxyAs OxyTs OxyMCs DNAas DNAts DNAts DNAts DNAas DNAgs DNAas DNAas DNAts OxyAs OxyAs OxyGs OxyT
1546	288493	288510	TAATGTTGGGG AGAGGAA	ASO-1647	OxyTs OxyAs DNAas DNAts DNAgs DNAts DNAts DNAgs DNAgs DNAgs DNAgs DNAas DNAgs DNAas OxyGs OxyGs OxyAs OxyA
1547	288769	288786	ACTGACTACTT AATTACT	ASO-1648	OxyAs OxyMCs OxyTs OxyGs DNAas DNAcs DNAts DNAas DNAcs DNAts DNAts DNAas DNAas DNAts DNAts OxyAs OxyMCs OxyT
1548	289061	289077	AATATGTCTAG TTCTAT	ASO-1649	OxyAs OxyAs OxyTs OxyAs DNAts DNAgs DNAts DNAcs DNAts DNAas DNAgs DNAts DNAts OxyMCs OxyTs OxyAs OxyT
1549	289356	289373	TTTTCAGTTGTT TAGATT	ASO-1650	OxyTs OxyTs OxyTs OxyTs DNAcs DNAas DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAas OxyGs OxyAs OxyTs OxyT
1550	289661	289678	TGGTTAGACAA TATATAT	ASO-1651	OxyTs OxyGs OxyGs OxyTs DNAts DNAas DNAgs DNAas DNAcs DNAas DNAas DNAts DNAas DNAts OxyAs OxyTs OxyAs OxyT
1551	289937	289954	TCTTTGATAACT GTACTT	ASO-1652	OxyTs OxyMCs OxyTs OxyTs DNAts DNAgs DNAas DNAts DNAas DNAas DNAcs DNAts DNAgs DNAts OxyAs OxyMCs OxyTs OxyT
1552	290501	290520	ATTTCTAACTG CATTCTAAA	ASO-1653	OxyAs OxyTs OxyTs OxyTs DNAcs DNAts DNAas DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAts DNAts DNAcs OxyTs OxyAs OxyAs OxyA
1553	290504	290521	TATTTCTAACTG CATTCT	ASO-1654	OxyTs OxyAs DNAts DNAts DNAts DNAcs DNAts DNAas DNAas DNAcs DNAts DNAgs DNAcs DNAas DNAts OxyTs OxyMCs OxyT
1554	290896	290915	TGGAAATAATT TAAGTATAA	ASO-1655	OxyTs OxyGs OxyGs OxyAs DNAas DNAas DNAts DNAas DNAas DNAts DNAts DNAts DNAas DNAas DNAgs DNAts OxyAs OxyTs OxyAs OxyA
1555	291057	291074	ATGGCATATAG GAAATGT	ASO-1656	OxyAs OxyTs OxyGs OxyGs DNAcs DNAas DNAts DNAas DNAts DNAas DNAgs DNAgs DNAas DNAas DNAas OxyTs OxyGs OxyT
1556	291849	291865	TGAACTCTTCT AAAACC	ASO-1657	OxyTs OxyGs OxyAs OxyAs DNAcs DNAts DNAcs DNAts DNAts DNAcs DNAts DNAas DNAas DNAas DNAas OxyMCs OxyMC
1557	292523	292541	CTCTCTTGCTT TTCTACAT	ASO-1658	OxyMCs DNAts DNAcs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAts DNAcs DNAts DNAas DNAcs OxyAs OxyT
1558	292632	292649	CTTGGTTTAAC AGATAAA	ASO-1659	OxyMCs OxyTs OxyTs OxyGs DNAgs DNAts DNAts DNAts DNAas DNAas DNAcs DNAas DNAgs DNAas OxyTs OxyAs OxyAs OxyA
1559	292673	292692	GATTTGGTTAC TATAACAAT	ASO-0087	OxyGs OxyAs OxyTs OxyTs DNAts DNAgs DNAgs DNAts DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAas OxyMCs OxyAs OxyAs OxyT
1560	292795	292811	TGGAAGAGTAA GATAAG	ASO-1660	OxyTs OxyGs OxyGs OxyAs DNAas DNAgs DNAas DNAgs DNAts DNAas DNAas DNAgs DNAas OxyTs OxyAs OxyAs OxyG
1561	293377	293393	TATAGTAGTCA GCTTGT	ASO-1661	OxyTs OxyAs OxyTs OxyAs DNAgs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAgs DNAcs DNAts DNAts OxyGs OxyT
1562	293389	293406	TGAATCATTTG	ASO-	OxyTs OxyGs OxyAs OxyAs DNAts DNAcs DNAas DNAts DNAts DNAts DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TATATAG	1662	DNAts DNAas DNAts OxyAs OxyTs OxyAs OxyG
1563	293844	293860	AGTTTATAGAG TGTGAA	ASO-1663	OxyAs OxyGs OxyTs OxyTs DNAts DNAas DNAts DNAas DNAgs DNAas DNAgs DNAts DNAgs OxyTs OxyGs OxyAs OxyA
1564	294150	294166	CAGTTAGGCAA TAGGTG	ASO-1664	OxyMCs DNAas DNAgs DNAts DNAts DNAas DNAgs DNAgs DNAcs DNAas DNAas DNAts DNAas OxyGs OxyGs OxyTs OxyG
1565	294498	294513	TTACTTCATCG AGACT	ASO-1665	OxyTs OxyTs OxyAs OxyMCs DNAts DNAts DNAcs DNAas DNAts DNAmcs DNAgs DNAas DNAgs OxyAs OxyMCs OxyT
1566	294500	294516	ATTTTACTTCAT CGAGA	ASO-1666	OxyAs OxyTs OxyTs OxyTs DNAts DNAas DNAcs DNAts DNAts DNAcs DNAas DNAts DNAcs OxyGs OxyAs OxyGs OxyA
1567	294955	294973	TTTATTTTCTTG TATAGCC	ASO-1667	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAts DNAts DNAcs DNAts DNAts DNAgs DNAts DNAas DNAts DNAas DNAgs OxyMCs OxyMC
1568	295332	295350	AGAAGTGACAT ATGAATCA	ASO-1668	OxyAs OxyGs OxyAs OxyAs DNAgs DNAts DNAgs DNAas DNAcs DNAas DNAts DNAas DNAts DNAgs DNAas OxyAs OxyTs OxyMCs OxyA
1569	295458	295477	TATTGAACTTTA TATAATTA	ASO-1669	OxyTs OxyAs OxyTs OxyTs DNAgs DNAas DNAas DNAcs DNAts DNAts DNAts DNAas DNAts DNAas DNAts DNAas OxyAs OxyTs OxyTs OxyA
1570	296319	296336	TCTTGCTTTCG TGCTAAA	ASO-1670	OxyTs OxyMCs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs DNAts DNAgs DNAcs OxyTs OxyAs OxyAs OxyA
1571	296320	296336	TCTTGCTTTCG TGCTAA	ASO-1671	OxyTs OxyMCs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs DNAts DNAgs DNAcs OxyTs OxyAs OxyA
1572	296320	296337	CTCTTGCTTTC GTGCTAA	ASO-1672	OxyMCs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs DNAts DNAgs DNAcs OxyTs OxyAs OxyA
1573	296323	296341	TAATCTCTTGC TTTCGTGC	ASO-1673	OxyTs OxyAs OxyAs DNAts DNAcs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs DNAts OxyGs OxyMC
1574	296323	296342	ATAATCTCTTG CTTTCGTGC	ASO-1674	OxyAs DNAts DNAas DNAas DNAts DNAcs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs DNAts OxyGs OxyMC
1575	296324	296342	ATAATCTCTTG CTTTCGTG	ASO-1675	OxyAs DNAts DNAas DNAas DNAts DNAcs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAcs OxyGs OxyTs OxyG
1576	296324	296343	GATAATCTCTT GCTTTCGTG	ASO-1676	OxyGs OxyAs DNAts DNAas DNAas DNAts DNAcs DNAts DNAcs DNAts DNAts DNAgs DNAcs DNAts DNAts DNAts DNAmcs DNAgs OxyTs OxyG
1577	297079	297098	GAAAACATTTC TTAAGCTGA	ASO-0088	OxyAs OxyAs OxyAs OxyAs DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAas DNAgs OxyMCs OxyTs OxyGs OxyA
1578	297079	297097	AAAACATTTCTT AAGCTGA	ASO-1677	OxyGs OxyAs OxyAs OxyAs DNAas DNAcs DNAas DNAts DNAts DNAts DNAcs DNAts DNAts DNAas DNAas DNAgs DNAcs OxyTs OxyGs OxyA
1579	297198	297216	TACAAACATAT AAAAGAGA	ASO-1678	OxyTs OxyAs OxyMCs OxyAs DNAas DNAas DNAcs DNAas DNAts DNAas DNAts DNAas DNAas DNAas DNAas OxyGs OxyAs OxyGs OxyA
1580	297595	297612	CTTTTCAATCAT ATTCAC	ASO-1679	OxyMCs OxyTs OxyTs OxyTs DNAts DNAcs DNAas DNAas DNAts DNAcs DNAas DNAts DNAas DNAts OxyTs OxyMCs OxyAs OxyMC
1581	297953	297971	AATTATAGTATT	ASO-	OxyAs OxyAs OxyTs OxyTs DNAas DNAts DNAas DNAgs DNAts DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			ACAGTAA	1680	DNAts DNAas DNAcs DNAas OxyGs OxyTs OxyAs OxyA
1582	298036	298053	TGCTTCAGTAT ATATCTT	ASO-1681	OxyTs OxyGs DNAcs DNAts DNAts DNAcs DNAas DNAgs DNAts DNAas DNAts DNAas DNAts DNAas OxyTs OxyMCs OxyTs OxyT
1583	299320	299338	CAAAGATATTA GTGAACTG	ASO-1682	OxyMCs OxyAs OxyAs OxyAs DNAgs DNAas DNAts DNAas DNAts DNAts DNAas DNAgs DNAts DNAgs DNAas OxyAs OxyMCs OxyTs OxyG
1584	299326	299342	TAGGCAAAGAT ATTAGT	ASO-1683	OxyTs OxyAs OxyGs OxyGs DNAcs DNAas DNAas DNAas DNAgs DNAas DNAts DNAas DNAts DNAts OxyAs OxyGs OxyT
1585	299788	299807	TCCTCTATAAAT ATGGTTTT	ASO-1684	OxyTs OxyMCs OxyMCs DNAts DNAcs DNAts DNAas DNAts DNAas DNAas DNAas DNAts DNAas DNAts DNAgs DNAgs DNAts DNAts OxyTs OxyT
1586	299887	299905	GCTTAAAATCA AATATATA	ASO-1685	OxyGs OxyMCs OxyTs OxyTs DNAas DNAas DNAas DNAas DNAts DNAcs DNAas DNAas DNAas DNAts DNAas OxyTs OxyAs OxyTs OxyA
1587	300239	300255	AAGGTAGATCA AATGGA	ASO-1686	OxyAs OxyAs OxyGs OxyGs DNAts DNAas DNAgs DNAas DNAts DNAcs DNAas DNAas DNAas OxyTs OxyGs OxyGs OxyA
1588	300543	300560	AAGGTTTAAGA GAGGAAG	ASO-1687	OxyAs OxyAs OxyGs OxyGs DNAts DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAgs OxyGs OxyAs OxyAs OxyG
1589	300798	300816	TATTGTGTTTAA GTTTATT	ASO-0089	OxyTs OxyAs OxyTs OxyTs DNAgs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas DNAgs DNAts DNAts OxyTs OxyAs OxyTs OxyT
1590	300801	300819	TATTATTGTGTT TAAGTTT	ASO-1688	OxyTs OxyAs OxyTs OxyTs DNAas DNAts DNAts DNAgs DNAts DNAgs DNAts DNAts DNAts DNAas DNAas OxyGs OxyTs OxyTs OxyT
1591	301617	301636	TTTTGTTGTTTC ATGTGTAA	ASO-1689	OxyTs OxyTs OxyTs DNAts DNAgs DNAts DNAts DNAgs DNAts DNAts DNAts DNAcs DNAas DNAts DNAgs DNAts DNAgs OxyTs OxyAs OxyA
1592	301676	301694	AGATTTTTCTGT AAAAGAA	ASO-1690	OxyAs OxyGs OxyAs OxyTs DNAts DNAts DNAts DNAts DNAcs DNAts DNAgs DNAts DNAas DNAas DNAas OxyAs OxyGs OxyAs OxyA
1593	301775	301793	GAATAAATGTA CCATTTTC	ASO-1691	OxyGs OxyAs OxyAs OxyTs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs DNAcs DNAas DNAts OxyTs OxyTs OxyTs OxyMC
1594	301776	301795	AGGAATAAATG TACCATTTT	ASO-1692	OxyAs OxyGs OxyGs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs DNAcs DNAas OxyTs OxyTs OxyTs OxyT
1595	301777	301795	AGGAATAAATG TACCATTT	ASO-1693	OxyAs OxyGs OxyGs OxyAs DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs DNAcs OxyAs OxyTs OxyTs OxyT
1596	301777	301796	TAGGAATAAAT GTACCATTT	ASO-1694	OxyTs OxyAs OxyGs OxyGs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs DNAcs DNAas OxyTs OxyTs OxyT
1597	301778	301795	AGGAATAAATG TACCATT	ASO-1695	OxyAs OxyGs OxyGs OxyAs DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs OxyMCs OxyAs OxyTs OxyT
1598	301778	301796	TAGGAATAAAT GTACCATT	ASO-1696	OxyTs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs OxyMCs OxyAs OxyTs OxyT
1599	301778	301797	TTAGGAATAAA TGTACCATT	ASO-1697	OxyTs OxyTs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAcs OxyMCs OxyAs OxyTs OxyT
1600	301779	301796	TAGGAATAAAT	ASO-	OxyTs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GTACCAT	1698	DNAgs DNAts DNAas OxyMCs OxyMCs OxyAs OxyT
1601	301779	301797	TTAGGAATAAA TGTACCAT	ASO-1699	OxyTs OxyTs OxyAs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas OxyMCs OxyMCs OxyAs OxyT
1602	301779	301798	ATTAGGAATAA ATGTACCAT	ASO-1700	OxyAs OxyTs OxyTs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts DNAas OxyMCs OxyMCs OxyAs OxyT
1603	301780	301797	TTAGGAATAAA TGTACCA	ASO-1701	OxyTs OxyTs OxyAs OxyGs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts OxyAs OxyMCs OxyMCs OxyA
1604	301780	301798	ATTAGGAATAA ATGTACCA	ASO-1702	OxyAs OxyTs OxyTs OxyAs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts OxyAs OxyMCs OxyMCs OxyA
1605	301780	301799	AATTAGGAATA AATGTACCA	ASO-1703	OxyAs OxyAs OxyTs OxyTs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs DNAts OxyAs OxyMCs OxyMCs OxyA
1606	301781	301798	ATTAGGAATAA ATGTACC	ASO-1704	OxyAs OxyTs OxyTs OxyAs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs OxyTs OxyAs OxyMCs OxyMC
1607	301781	301799	AATTAGGAATA AATGTACC	ASO-1705	OxyAs OxyAs OxyTs OxyTs DNAas DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs OxyTs OxyAs OxyMCs OxyMC
1608	301788	301807	TGTTATTAAATT AGGAATAA	ASO-1706	OxyTs OxyGs OxyTs OxyTs DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts DNAas DNAgs DNAgs DNAas OxyAs OxyTs OxyAs OxyA
1609	301793	301810	GCATGTTATTA AATTAGG	ASO-1707	OxyGs OxyMCs OxyAs OxyTs DNAgs DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAas DNAts DNAts OxyAs OxyGs OxyG
1610	302323	302340	TATATTATACAT TAACTG	ASO-1708	OxyTs OxyAs OxyTs OxyAs DNAts DNAts DNAas DNAts DNAas DNAcs DNAas DNAts DNAts DNAas OxyAs OxyMCs OxyTs OxyG
1611	302378	302396	TTATATATAGTT TTATGAA	ASO-1709	OxyTs OxyTs OxyAs OxyTs DNAas DNAts DNAas DNAts DNAas DNAgs DNAts DNAts DNAts DNAts DNAas OxyTs OxyGs OxyAs OxyA
1612	302987	303005	TCATTAGGTGT AAGGAAAA	ASO-1710	OxyTs OxyMCs OxyAs OxyTs DNAts DNAas DNAgs DNAgs DNAts DNAgs DNAts DNAas DNAas DNAgs DNAgs OxyAs OxyAs OxyAs OxyA
1613	303219	303237	GTTTATTTGTTT GTAAATG	ASO-1711	OxyGs OxyTs OxyTs OxyTs DNAas DNAts DNAts DNAts DNAgs DNAts DNAts DNAts DNAgs DNAts DNAas OxyAs OxyAs OxyTs OxyG
1614	303388	303407	CTGAAATAGGT TAAAATATT	ASO-1712	OxyMCs OxyTs OxyGs OxyAs DNAas DNAas DNAts DNAas DNAgs DNAgs DNAts DNAts DNAas DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyT
1615	303883	303900	ATATCAAGTTT CAGGTAT	ASO-1713	OxyAs OxyTs OxyAs DNAts DNAcs DNAas DNAas DNAgs DNAts DNAts DNAts DNAcs DNAas DNAgs OxyGs OxyTs OxyAs OxyT
1616	304085	304101	GCTGGAGAGAT ATATTT	ASO-1714	OxyGs OxyMCs OxyTs OxyGs DNAgs DNAas DNAgs DNAas DNAgs DNAas DNAts DNAas DNAts DNAas OxyTs OxyTs OxyT
1617	304347	304366	AGCTGAAAGAG AAAAACATG	ASO-1715	OxyAs OxyGs OxyMCs DNAts DNAgs DNAas DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAas DNAas DNAas OxyMCs OxyAs OxyTs OxyG
1618	304348	304366	AGCTGAAAGAG AAAAACAT	ASO-1716	OxyAs OxyGs OxyMCs DNAts DNAgs DNAas DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAas DNAas OxyAs OxyMCs OxyAs OxyT
1619	304348	304367	AAGCTGAAAGA	ASO-	OxyAs OxyAs OxyGs OxyMCs DNAts DNAgs DNAas DNAas DNAas DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GAAAAACAT	1717	DNAas DNAgs DNAas DNAas DNAas DNAas OxyAs OxyMCs OxyAs OxyT
1620	304374	304392	TGGATTGGTTT ATTGCTTT	ASO-1718	OxyTs OxyGs DNAgs DNAas DNAts DNAts DNAgs DNAgs DNAts DNAts DNAts DNAas DNAts DNAts DNAgs DNAcs OxyTs OxyTs OxyT
1621	304458	304474	CATGTACTGTG TGAGCC	ASO-1719	OxyMCs OxyAs DNAts DNAgs DNAts DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAgs DNAas DNAgs OxyMCs OxyMC
1622	304459	304475	CCATGTACTGT GTGAGC	ASO-1720	OxyMCs DNAcs DNAas DNAts DNAgs DNAts DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAts DNAgs DNAas OxyGs OxyMC
1623	304584	304600	TATTTACTTGAT GGGTA	ASO-1721	OxyTs OxyAs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAts DNAgs OxyGs OxyGs OxyTs OxyA
1624	304584	304601	ATATTTACTTGA TGGGTA	ASO-1722	OxyAs OxyTs OxyAs OxyTs DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAts DNAgs DNAgs OxyGs OxyTs OxyA
1625	304584	304602	AATATTTACTTG ATGGGTA	ASO-1723	OxyAs OxyAs OxyTs DNAas DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAts DNAgs OxyGs OxyGs OxyTs OxyA
1626	304585	304602	AATATTTACTTG ATGGGT	ASO-1724	OxyAs OxyAs OxyTs DNAas DNAts DNAts DNAts DNAas DNAcs DNAts DNAts DNAgs DNAas DNAts OxyGs OxyGs OxyGs OxyT
1627	304648	304665	AACAATGGAAT AAGTAGA	ASO-1725	OxyAs OxyAs OxyMCs OxyAs DNAas DNAts DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAgs OxyTs OxyAs OxyGs OxyA
1628	304966	304984	CTCCTGATAAT ATATTGGC	ASO-1726	OxyMCs OxyTs OxyMCs DNAcs DNAts DNAgs DNAas DNAts DNAas DNAas DNAts DNAas DNAts DNAas DNAts DNAts DNAgs OxyGs OxyMC
1629	305066	305082	TAGAGTGGTGA GGTGAG	ASO-1727	OxyTs DNAas DNAgs DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAgs DNAas DNAgs DNAgs OxyTs OxyGs OxyAs OxyG
1630	305517	305534	CCTATTTTCAAT TATTCC	ASO-1728	OxyMCs OxyMCs OxyTs DNAas DNAts DNAts DNAts DNAts DNAcs DNAas DNAas DNAts DNAts DNAas DNAts DNAts OxyMCs OxyMC
1631	305595	305613	AAGAGATCAAC AGTGGACC	ASO-0090	OxyAs OxyAs DNAgs DNAas DNAgs DNAas DNAts DNAcs DNAas DNAas DNAcs DNAas DNAgs DNAts DNAgs DNAgs OxyAs OxyMCs OxyMC
1632	305842	305859	TTGGGAATAAA TTTCAGC	ASO-1729	OxyTs OxyTs OxyGs DNAgs DNAgs DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAts DNAts OxyMCs OxyAs OxyGs OxyMC
1633	305982	305998	TACTGTATGAA TGTAAC	ASO-1730	OxyTs OxyAs OxyMCs OxyTs DNAgs DNAts DNAas DNAts DNAgs DNAas DNAas DNAts DNAgs OxyTs OxyAs OxyAs OxyMC
1634	306082	306098	AGAAGCCCCAT TTAAGC	ASO-1731	OxyAs DNAgs DNAas DNAas DNAgs DNAcs DNAcs DNAcs DNAcs DNAas DNAts DNAts DNAts DNAas DNAas OxyGs OxyMC
1635	306087	306104	ATTAAGAGAAG CCCCATT	ASO-1732	OxyAs DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs DNAcs OxyMCs OxyAs OxyTs OxyT
1636	306087	306105	TATTAAGAGAA GCCCCATT	ASO-1733	OxyTs DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs DNAcs OxyMCs OxyAs OxyTs OxyT
1637	306088	306104	ATTAAGAGAAG CCCCAT	ASO-1734	OxyAs DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs OxyMCs OxyMCs OxyAs OxyT
1638	306088	306105	TATTAAGAGAA	ASO-	OxyTs DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			GCCCCAT	1735	DNAas DNAgs DNAcs DNAcs OxyMCs OxyMCs OxyAs OxyT
1639	306088	306106	CTATTAAGAGA AGCCCCAT	ASO-1736	OxyMCs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs DNAcs OxyMCs OxyAs OxyT
1640	306089	306105	TATTAAGAGAA GCCCCA	ASO-1737	OxyTs OxyAs DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs OxyMCs OxyMCs OxyA
1641	306089	306106	CTATTAAGAGA AGCCCCA	ASO-1738	OxyMCs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs OxyMCs OxyMCs OxyA
1642	306090	306106	CTATTAAGAGA AGCCCC	ASO-1739	OxyMCs OxyTs OxyAs DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs OxyMCs OxyMC
1643	306090	306107	CCTATTAAGAG AAGCCCC	ASO-1740	OxyMCs DNAcs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs DNAcs OxyMCs OxyMC
1644	306091	306107	CCTATTAAGAG AAGCCC	ASO-1741	OxyMCs DNAcs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs OxyMCs OxyMCs OxyMC
1645	306091	306108	GCCTATTAAGA GAAGCCC	ASO-1742	OxyGs DNAcs DNAcs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAas DNAgs DNAcs OxyMCs OxyMC
1646	306092	306108	GCCTATTAAGA GAAGCC	ASO-1743	OxyGs DNAcs DNAcs DNAts DNAas DNAts DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas OxyAs OxyGs OxyMCs OxyMC
1647	306109	306126	CATTTGGAATA CAGGGTG	ASO-1744	OxyMCs OxyAs OxyTs DNAts DNAts DNAgs DNAgs DNAas DNAas DNAts DNAas DNAcs DNAas DNAgs DNAgs OxyGs OxyTs OxyG
1648	306110	306126	CATTTGGAATA CAGGGT	ASO-1745	OxyMCs OxyAs OxyTs OxyTs DNAts DNAgs DNAgs DNAas DNAas DNAts DNAas DNAcs DNAas DNAgs OxyGs OxyGs OxyT
1649	306471	306488	ATTTACTTTTGA TGTGAA	ASO-1746	OxyAs OxyTs OxyTs OxyTs DNAas DNAcs DNAts DNAts DNAts DNAts DNAgs DNAas DNAts DNAgs OxyTs OxyGs OxyAs OxyA
1650	306687	306704	TTTAAATTTCAG CTTGAC	ASO-1747	OxyTs OxyTs DNAts DNAas DNAas DNAas DNAts DNAts DNAts DNAcs DNAas DNAgs DNAcs DNAts OxyTs OxyGs OxyAs OxyMC
1651	306870	306887	ATTTGTTAAAA GCTCTGA	ASO-1748	OxyAs OxyTs OxyTs DNAts DNAgs DNAts DNAts DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts OxyMCs OxyTs OxyGs OxyA
1652	307270	307287	TATGTATAAGA GATGTTT	ASO-1749	OxyTs OxyAs OxyTs OxyGs DNAts DNAas DNAts DNAas DNAas DNAgs DNAas DNAgs DNAas DNAts OxyGs OxyTs OxyTs OxyT
1653	307498	307515	ATGCACTCAGA AACATGC	ASO-1750	OxyAs DNAts DNAgs DNAcs DNAas DNAcs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAcs OxyAs OxyTs OxyGs OxyMC
1654	307499	307517	TCATGCACTCA GAAACATG	ASO-1751	OxyTs OxyMCs OxyAs DNAts DNAgs DNAcs DNAas DNAcs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAcs OxyAs OxyTs OxyG
1655	307500	307517	TCATGCACTCA GAAACAT	ASO-1752	OxyTs OxyMCs OxyAs DNAts DNAgs DNAcs DNAas DNAcs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas OxyMCs OxyAs OxyT
1656	307500	307518	TTCATGCACTC AGAAACAT	ASO-1753	OxyTs OxyTs OxyMCs OxyAs DNAts DNAgs DNAcs DNAas DNAcs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAcs OxyAs OxyT
1657	307584	307600	GTTGAAGTGTA	ASO-	OxyGs OxyTs OxyTs OxyGs DNAas DNAas DNAgs DNAts DNAgs DNAts DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AACAAT	1754	DNAas DNAas OxyMCs OxyAs OxyAs OxyT
1658	307687	307703	TGATGAAGAGT TGTACT	ASO-1755	OxyTs OxyGs OxyAs DNAts DNAgs DNAas DNAas DNAgs DNAas DNAgs DNAts DNAts DNAgs OxyTs OxyAs OxyMCs OxyT
1659	308035	308052	GATGTGAATTT TTCCAGT	ASO-1756	OxyGs DNAas DNAts DNAgs DNAts DNAgs DNAas DNAas DNAts DNAts DNAts DNAts DNAts DNAcs OxyMCs OxyAs OxyGs OxyT
1660	308141	308158	ACAGGATAAAG AAAAGAG	ASO-1757	OxyAs OxyMCs OxyAs OxyGs DNAgs DNAas DNAts DNAas DNAas DNAas DNAgs DNAas DNAas DNAas OxyAs OxyGs OxyAs OxyG
1661	308374	308393	ATTATAAACCTT TAAAATCT	ASO-1758	OxyAs OxyTs OxyTs OxyAs DNAts DNAas DNAas DNAas DNAcs DNAcs DNAts DNAts DNAts DNAas DNAas DNAas OxyAs OxyTs OxyMCs OxyT
1662	308896	308912	AGGACTGTGAA TTACTA	ASO-1759	OxyAs OxyGs OxyGs DNAas DNAcs DNAts DNAgs DNAts DNAgs DNAas DNAas DNAts DNAts DNAas OxyMCs OxyTs OxyA
1663	309052	309069	ATCAGAAAAGC TTCAACC	ASO-1760	OxyAs OxyTs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyMCs OxyMC
1664	309052	309070	TATCAGAAAAG CTTCAACC	ASO-1761	OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyMCs OxyMC
1665	309052	309071	TTATCAGAAAA GCTTCAACC	ASO-1762	OxyTs OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts DNAcs OxyAs OxyAs OxyMCs OxyMC
1666	309053	309070	TATCAGAAAAG CTTCAAC	ASO-1763	OxyTs OxyAs OxyTs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyMC
1667	309053	309071	TTATCAGAAAA GCTTCAAC	ASO-1764	OxyTs OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyMC
1668	309053	309072	ATTATCAGAAA AGCTTCAAC	ASO-1765	OxyAs OxyTs OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts DNAts OxyMCs OxyAs OxyAs OxyMC
1669	309054	309072	ATTATCAGAAA AGCTTCAA	ASO-1766	OxyAs OxyTs OxyTs OxyAs DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs DNAcs DNAts OxyTs OxyMCs OxyAs OxyA
1670	309056	309074	TAATTATCAGA AAAGCTTC	ASO-1767	OxyTs OxyAs OxyAs OxyTs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas DNAgs OxyMCs OxyTs OxyTs OxyMC
1671	309057	309074	TAATTATCAGA AAAGCTT	ASO-1768	OxyTs OxyAs OxyAs OxyTs DNAts DNAas DNAts DNAcs DNAas DNAgs DNAas DNAas DNAas DNAas OxyGs OxyMCs OxyTs OxyT
1672	309065	309082	TTGTGTAATAAT TATCAG	ASO-1769	OxyTs OxyTs OxyGs OxyTs DNAgs DNAts DNAas DNAas DNAts DNAas DNAas DNAts DNAts DNAas OxyTs OxyMCs OxyAs OxyG
1673	309383	309402	TAGAAGATAAT AAATGTGTA	ASO-1770	OxyTs OxyAs OxyGs OxyAs DNAas DNAgs DNAas DNAts DNAas DNAas DNAts DNAas DNAas DNAas DNAts DNAgs OxyTs OxyGs OxyTs OxyA
1674	309427	309443	ATATACAGTGT CCCATG	ASO-1771	OxyAs OxyTs DNAas DNAts DNAas DNAcs DNAas DNAgs DNAts DNAgs DNAts DNAcs DNAcs OxyMCs OxyAs OxyTs OxyG
1675	309427	309444	TATATACAGTG TCCCATG	ASO-1772	OxyTs DNAas DNAts DNAas DNAts DNAas DNAcs DNAas DNAgs DNAts DNAgs DNAts DNAcs DNAcs OxyMCs OxyAs OxyTs OxyG
1676	309428	309444	TATATACAGTG	ASO-	OxyTs OxyAs OxyTs DNAas DNAts DNAas DNAcs DNAas DNAgs DNAts DNAgs

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			TCCCAT	1773	DNAts DNAcs DNAcs OxyMCs OxyAs OxyT
1677	309473	309490	TAACTCTTAAAT ATATCA	ASO-1774	OxyTs OxyAs OxyAs OxyMCs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas DNAts OxyAs OxyTs OxyMCs OxyA
1678	309473	309491	TTAACTCTTAAA TATATCA	ASO-1775	OxyTs OxyTs OxyAs OxyAs DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas DNAts OxyAs OxyTs OxyMCs OxyA
1679	309473	309492	ATTAACTCTTAA ATATATCA	ASO-1776	OxyAs OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas DNAts OxyAs OxyTs OxyMCs OxyA
1680	309474	309492	ATTAACTCTTAA ATATATC	ASO-1777	OxyAs OxyTs OxyTs OxyAs DNAas DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas OxyTs OxyAs OxyTs OxyMC
1681	309474	309493	TATTAACTCTTA AATATATC	ASO-1778	OxyTs OxyAs OxyTs OxyTs DNAas DNAas DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas DNAts DNAas OxyTs OxyAs OxyTs OxyMC
1682	309476	309494	TTATTAACTCTT AAATATA	ASO-1779	OxyTs OxyTs OxyAs OxyTs DNAts DNAas DNAas DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyA
1683	309476	309495	TTTATTAACTCT TAAATATA	ASO-1780	OxyTs OxyTs OxyTs OxyAs DNAts DNAts DNAas DNAas DNAcs DNAts DNAcs DNAts DNAts DNAas DNAas DNAas OxyTs OxyAs OxyTs OxyA
1684	309482	309500	ACAAATTTATTA ACTCTTA	ASO-1781	OxyAs OxyMCs OxyAs OxyAs DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAcs DNAts OxyMCs OxyTs OxyTs OxyA
1685	309482	309501	CACAAATTTATT AACTCTTA	ASO-1782	OxyMCs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAcs DNAts OxyMCs OxyTs OxyTs OxyA
1686	309483	309501	CACAAATTTATT AACTCTT	ASO-1783	OxyMCs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAcs OxyTs OxyMCs OxyTs OxyT
1687	309483	309502	TCACAAATTTAT TAACTCTT	ASO-1784	OxyTs OxyMCs OxyAs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas DNAcs OxyTs OxyMCs OxyTs OxyT
1688	309484	309501	CACAAATTTATT AACTCT	ASO-1785	OxyMCs OxyAs OxyMCs OxyAs DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyMCs OxyTs OxyMCs OxyT
1689	309484	309502	TCACAAATTTAT TAACTCT	ASO-1786	OxyTs OxyMCs OxyAs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyMCs OxyTs OxyMCs OxyT
1690	309484	309503	ATCACAAATTTA TTAACTCT	ASO-1787	OxyAs OxyTs OxyMCs OxyAs DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas DNAas OxyMCs OxyTs OxyMCs OxyT
1691	309485	309502	TCACAAATTTAT TAACTC	ASO-1788	OxyTs OxyMCs OxyAs OxyMCs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas OxyAs OxyMCs OxyTs OxyMC
1692	309485	309503	ATCACAAATTTA TTAACTC	ASO-1789	OxyAs OxyTs OxyMCs OxyAs DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas OxyAs OxyMCs OxyTs OxyMC
1693	309485	309504	AATCACAAATTT ATTAACTC	ASO-1790	OxyAs OxyAs OxyTs OxyMCs DNAas DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAas DNAts DNAts DNAas OxyAs OxyMCs OxyTs OxyMC
1694	309489	309508	CAGAAATCACA AATTTATTA	ASO-1791	OxyMCs OxyAs OxyGs OxyAs DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAas OxyTs OxyTs OxyA
1695	309490	309509	GCAGAAATCAC	ASO-	OxyGs OxyMCs OxyAs OxyGs DNAas DNAas DNAas DNAts DNAcs DNAas

FIG. 1A (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
			AAATTTATT	1792	DNAcs DNAas DNAas DNAas DNAts DNAts DNAts DNAas OxyTs OxyT
1696	309491	309510	AGCAGAAATCA CAAATTTAT	ASO-0091	OxyAs OxyGs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas DNAts OxyTs OxyTs OxyAs OxyT
1697	309491	309509	GCAGAAATCAC AAATTTAT	ASO-0092	OxyGs OxyMCs OxyAs DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas DNAts OxyTs OxyTs OxyAs OxyT
1698	309492	309511	CAGCAGAAATC ACAAATTTA	ASO-0093	OxyAs OxyGs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas OxyTs OxyTs OxyTs OxyA
1699	309492	309510	AGCAGAAATCA CAAATTTA	ASO-1793	OxyMCs OxyAs OxyGs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas OxyTs OxyTs OxyTs OxyA
1700	309493	309511	CAGCAGAAATC ACAAATTT	ASO-1794	OxyMCs OxyAs OxyGs OxyMCs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas OxyTs OxyTs OxyT
1701	309493	309512	TCAGCAGAAAT CACAAATTT	ASO-1795	OxyTs OxyMCs OxyAs OxyGs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas DNAas DNAas OxyTs OxyTs OxyT
1702	309494	309512	TCAGCAGAAAT CACAAATT	ASO-1796	OxyTs OxyMCs OxyAs OxyGs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas OxyAs OxyAs OxyTs OxyT
1703	309494	309513	GTCAGCAGAAA TCACAAATT	ASO-1797	OxyGs OxyTs OxyMCs DNAas DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs DNAas OxyAs OxyAs OxyTs OxyT
1704	309495	309513	GTCAGCAGAAA TCACAAAT	ASO-1798	OxyGs OxyTs OxyMCs OxyAs DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyAs OxyAs OxyT
1705	309495	309514	TGTCAGCAGAA ATCACAAAT	ASO-1799	OxyTs OxyGs OxyTs OxyMCs DNAas DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyAs OxyAs OxyT
1706	309496	309513	GTCAGCAGAAA TCACAAA	ASO-1800	OxyGs OxyTs OxyMCs OxyAs DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas OxyMCs OxyAs OxyAs OxyA
1707	309496	309514	TGTCAGCAGAA ATCACAAA	ASO-1801	OxyTs OxyGs OxyTs OxyMCs DNAas DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyAs OxyA
1708	309497	309514	TGTCAGCAGAA ATCACAA	ASO-1802	OxyTs OxyGs OxyTs OxyMCs DNAas DNAgs DNAcs DNAas DNAgs DNAas DNAas DNAas DNAts DNAcs DNAas DNAcs OxyAs OxyA
1709	310121	310138	GAGAGGTAAAT ACAATCT	ASO-1803	OxyGs OxyAs OxyGs OxyAs DNAgs DNAgs DNAts DNAas DNAas DNAas DNAts DNAas DNAcs DNAas DNAas OxyTs OxyMCs OxyT
1710	310122	310140	AGGAGAGGTAA ATACAATC	ASO-0094	OxyAs OxyGs OxyGs OxyAs DNAgs DNAas DNAgs DNAgs DNAts DNAas DNAas DNAas DNAts DNAas DNAcs DNAas OxyAs OxyTs OxyMC
1711	310224	310241	TAGGAATGCAA TGATGAA	ASO-1804	OxyTs OxyAs OxyGs OxyGs DNAas DNAas DNAts DNAgs DNAcs DNAas DNAas DNAts DNAgs DNAas DNAts DNAgs OxyAs OxyA
1712	310486	310503	ATCATTCTAGT CACTCTG	ASO-1805	OxyAs DNAts DNAcs DNAas DNAts DNAts DNAcs DNAts DNAas DNAgs DNAts DNAcs DNAas DNAcs OxyTs OxyMCs OxyTs OxyG
1713	310832	310849	GTGTCATCTAT GTTTACC	ASO-1806	OxyTs OxyAs OxyGs OxyTs DNAas DNAts DNAts DNAgs DNAas DNAgs DNAas DNAgs DNAgs DNAas DNAas OxyGs OxyAs OxyT

FIG. 1B

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
225	56869	56886	119837	119854	--	--	TAAAAAGTGG TAGATTCC	ASO-0293	OxyTs OxyAs OxyAs OxyAs DNAas DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAas DNAgs DNAas OxyTs OxyTs OxyMCs OxyMC
226	56869	56887	119837	119855	--	--	TTAAAAAGTG GTAGATTCC	ASO-0295	OxyTs OxyTs OxyAs OxyAs DNAas DNAas DNAas DNAgs DNAts DNAgs DNAgs DNAts DNAas DNAgs DNAas OxyTs OxyTs OxyMCs OxyMC
265	69183	69202	69439	69458	--	--	ATATTCATACA TACATATTC	ASO-0333	OxyAs OxyTs OxyAs OxyTs DNAts DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts DNAas DNAcs DNAas DNAts OxyAs OxyTs OxyTs OxyMC
287	76153	76170	77746	77763	--	--	AGAGAATGAA AGTCTACA	ASO-0354	OxyAs OxyGs OxyAs DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMCs OxyA
288	76153	76171	77746	77764	--	--	CAGAGAATGA AAGTCTACA	ASO-0356	OxyMCs OxyAs OxyGs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMCs OxyA
289	76153	76172	77746	77765	--	--	CCAGAGAATG AAAGTCTACA	ASO-0358	OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs DNAts DNAas OxyMCs OxyA
290	76154	76171	77747	77764	--	--	CAGAGAATGA AAGTCTAC	ASO-0360	OxyMCs OxyAs OxyGs OxyAs DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMC
291	76154	76172	77747	77765	--	--	CCAGAGAATG AAAGTCTAC	ASO-0362	OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyAs OxyMC
292	76154	76173	77747	77766	--	--	ACCAGAGAAT GAAAGTCTAC	ASO-0364	OxyAs OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs DNAts OxyAs OxyMC

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
293	76155	76172	77748	77765	--	--	CCAGAGAATG AAAGTCTA	ASO-0366	OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts OxyMCs OxyTs OxyA
294	76155	76173	77748	77766	--	--	ACCAGAGAAT GAAAGTCTA	ASO-0368	OxyAs OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts DNAcs OxyTs OxyA
295	76155	76174	77748	77767	--	--	AACCAGAGAA TGAAAGTCTA	ASO-0370	OxyAs OxyAs OxyMCs DNAcs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs OxyTs OxyMCs OxyTs OxyA
296	76156	76173	77749	77766	--	--	ACCAGAGAAT GAAAGTCT	ASO-0372	OxyAs OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs DNAts OxyMCs OxyT
297	76156	76174	77749	77767	--	--	AACCAGAGAA TGAAAGTCT	ASO-0374	OxyAs OxyAs OxyMCs OxyMCs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas DNAgs OxyTs OxyMCs OxyT
298	76157	76173	77750	77766	--	--	ACCAGAGAAT GAAAGTC	ASO-0376	OxyAs OxyMCs OxyMCs OxyAs DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas DNAas OxyGs OxyTs OxyMC
299	76157	76174	77750	77767	--	--	AACCAGAGAA TGAAAGTC	ASO-0378	OxyAs OxyAs OxyMCs OxyMCs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas OxyAs OxyGs OxyTs OxyMC
300	76157	76175	77750	77768	--	--	GAACCAGAGA ATGAAAGTC	ASO-0380	OxyGs OxyAs OxyAs OxyMCs DNAcs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas DNAas OxyAs OxyGs OxyTs OxyMC
301	76158	76175	77751	77768	--	--	GAACCAGAGA ATGAAAGT	ASO-0382	OxyGs OxyAs OxyAs OxyMCs DNAcs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs DNAas OxyAs OxyAs OxyGs OxyT
302	76159	76178	77752	77771	--	--	ATGGAACCAG AGAATGAAAG	ASO-0384	OxyAs OxyTs OxyGs DNAgs DNAas DNAas DNAcs DNAcs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs OxyAs OxyAs

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
									OxyAs OxyG
303	76160	76178	77753	77771	--	--	ATGGAACCAG AGAATGAAA	ASO-0386	OxyAs OxyTs OxyGs OxyGs DNAas DNAas DNAcs DNAcs DNAas DNAgs DNAas DNAgs DNAas DNAas DNAts DNAgs OxyAs OxyAs OxyA
385	102012	102028	103215	103231	--	--	AATGTAACTTG TTGAGT	ASO-0463	OxyAs OxyAs OxyTs OxyGs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyGs OxyT
386	102012	102029	103215	103232	--	--	AAATGTAACTT GTTGAGT	ASO-0465	OxyAs OxyAs OxyAs OxyTs DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyGs OxyT
387	102012	102030	103215	103233	--	--	GAAATGTAACT TGTTGAGT	ASO-0467	OxyGs OxyAs OxyAs OxyAs DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyGs OxyT
388	102012	102031	103215	103234	--	--	AGAAATGTAA CTTGTTGAGT	ASO-0469	OxyAs OxyGs OxyAs OxyAs DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts DNAgs OxyAs OxyGs OxyT
389	102013	102029	103216	103232	--	--	AAATGTAACTT GTTGAG	ASO-0471	OxyAs OxyAs OxyAs OxyTs DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts OxyTs OxyGs OxyAs OxyG
390	102013	102030	103216	103233	--	--	GAAATGTAACT TGTTGAG	ASO-0473	OxyGs OxyAs OxyAs OxyAs DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts OxyTs OxyGs OxyAs OxyG
391	102013	102031	103216	103234	--	--	AGAAATGTAA CTTGTTGAG	ASO-0475	OxyAs OxyGs OxyAs DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts OxyTs OxyGs OxyAs OxyG
392	102013	102032	103216	103235	--	--	TAGAAATGTAA CTTGTTGAG	ASO-0477	OxyTs OxyAs OxyGs OxyAs DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts DNAts OxyGs OxyAs OxyG
393	102014	102031	103217	103234	--	--	AGAAATGTAA CTTGTTGA	ASO-0479	OxyAs OxyGs OxyAs OxyAs DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs OxyTs OxyTs OxyGs OxyA
394	102014	102032	103217	103235	--	--	TAGAAATGTAA	ASO-	OxyTs OxyAs OxyGs OxyAs DNAas DNAas

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
							CTTGTTGA	0481	DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts OxyTs OxyGs OxyA
395	102014	102033	103217	103236	--	--	CTAGAAATGTA ACTTGTTGA	ASO-0483	OxyMCs OxyTs OxyAs DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs DNAts OxyTs OxyGs OxyA
396	102015	102032	103218	103235	--	--	TAGAAATGTAA CTTGTTG	ASO-0485	OxyTs OxyAs OxyGs OxyAs DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts OxyGs OxyTs OxyTs OxyG
397	102015	102033	103218	103236	--	--	CTAGAAATGTA ACTTGTTG	ASO-0487	OxyMCs OxyTs OxyAs OxyGs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs OxyTs OxyTs OxyG
398	102015	102034	103218	103237	--	--	CCTAGAAATG TAACTTGTTG	ASO-0489	OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts OxyGs OxyTs OxyTs OxyG
399	102016	102033	103219	103236	--	--	CTAGAAATGTA ACTTGTT	ASO-0491	OxyMCs OxyTs OxyAs OxyGs DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts OxyTs OxyGs OxyTs OxyT
400	102016	102034	103219	103237	--	--	CCTAGAAATG TAACTTGTT	ASO-0493	OxyMCs OxyMCs OxyTs OxyAs DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts DNAgs OxyTs OxyT
401	102016	102035	103219	103238	--	--	ACCTAGAAAT GTAACTTGTT	ASO-0495	OxyAs OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts DNAts OxyGs OxyTs OxyT
402	102017	102034	103220	103237	--	--	CCTAGAAATG TAACTTGT	ASO-0497	OxyMCs OxyMCs OxyTs DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs OxyTs OxyTs OxyGs OxyT
403	102017	102035	103220	103238	--	--	ACCTAGAAAT GTAACTTGT	ASO-0499	OxyAs OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts OxyTs OxyGs OxyT

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
404	102017	102036	103220	103239	--	--	CACCTAGAAA TGTAACTTGT	ASO-0501	OxyMCs OxyAs DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs DNAts OxyTs OxyGs OxyT
405	102018	102035	103221	103238	--	--	ACCTAGAAAT GTAACTTG	ASO-0503	OxyAs OxyMCs OxyMCs OxyTs DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas OxyMCs OxyTs OxyTs OxyG
406	102018	102036	103221	103239	--	--	CACCTAGAAA TGTAACTTG	ASO-0505	OxyMCs OxyAs OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs OxyTs OxyTs OxyG
407	102018	102037	103221	103240	--	--	ACACCTAGAA ATGTAACTTG	ASO-0507	OxyAs OxyMCs OxyAs OxyMCs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas DNAas DNAcs OxyTs OxyTs OxyG
408	102019	102036	103222	103239	--	--	CACCTAGAAA TGTAACTT	ASO-0509	OxyMCs OxyAs OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas OxyAs OxyMCs OxyTs OxyT
409	102019	102037	103222	103240	--	--	ACACCTAGAA ATGTAACTT	ASO-0511	OxyAs OxyMCs OxyAs OxyMCs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts DNAas OxyAs OxyMCs OxyTs OxyT
410	102020	102036	103223	103239	--	--	CACCTAGAAA TGTAACT	ASO-0513	OxyMCs OxyAs OxyMCs OxyMCs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts OxyAs OxyAs OxyMCs OxyT
411	102020	102037	103223	103240	--	--	ACACCTAGAA ATGTAACT	ASO-0515	OxyAs OxyMCs OxyAs OxyMCs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas DNAts DNAgs DNAts OxyAs OxyAs OxyMCs OxyT
412	102024	102041	103227	103244	--	--	CTATACACCTA GAAATGT	ASO-0517	OxyMCs OxyTs OxyAs DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAas OxyAs OxyTs OxyGs OxyT
413	102024	102042	103227	103245	--	--	ACTATACACCT AGAAATGT	ASO-0519	OxyAs OxyMCs OxyTs OxyAs DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas OxyTs OxyGs

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
									OxyT
414	102024	102043	103227	103246	--	--	TACTATACACC TAGAAATGT	ASO-0521	OxyTs OxyAs OxyMCs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas DNAas DNAas OxyTs OxyGs OxyT
415	102025	102043	103228	103246	--	--	TACTATACACC TAGAAATG	ASO-0523	OxyTs OxyAs OxyMCs OxyTs DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas OxyAs OxyAs OxyTs OxyG
416	102026	102043	103229	103246	--	--	TACTATACACC TAGAAAT	ASO-0525	OxyTs OxyAs OxyMCs OxyTs DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyT
417	102026	102044	103229	103247	--	--	CTACTATACAC CTAGAAAT	ASO-0527	OxyMCs OxyTs OxyAs OxyMCs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyT
418	102026	102045	103229	103248	--	--	CCTACTATACA CCTAGAAAT	ASO-0529	OxyMCs OxyMCs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyAs OxyT
419	102027	102044	103230	103247	--	--	CTACTATACAC CTAGAAA	ASO-0531	OxyMCs OxyTs OxyAs OxyMCs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyA
420	102027	102045	103230	103248	--	--	CCTACTATACA CCTAGAAA	ASO-0533	OxyMCs OxyMCs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyAs OxyA
421	102027	102046	103230	103249	--	--	TCCTACTATAC ACCTAGAAA	ASO-0535	OxyTs OxyMCs OxyMCs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs DNAas OxyAs OxyA
422	102028	102047	103231	103250	--	--	TTCCTACTATA CACCTAGAA	ASO-0537	OxyTs OxyTs OxyMCs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas DNAgs OxyAs OxyA
423	102029	102046	103232	103249	--	--	TCCTACTATAC	ASO-	OxyTs OxyMCs DNAcs DNAts DNAas DNAcs

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
							ACCTAGA	0539	DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts DNAas OxyGs OxyA
424	102030	102047	103233	103250	--	--	TTCCTACTATA CACCTAG	ASO-0541	OxyTs OxyTs OxyMCs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs DNAts OxyAs OxyG
425	102031	102047	103234	103250	--	--	TTCCTACTATA CACCTA	ASO-0543	OxyTs OxyTs OxyMCs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas DNAcs DNAcs OxyTs OxyA
426	102033	102049	103236	103252	--	--	TGTTCCTACTA TACACC	ASO-0545	OxyTs OxyGs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs OxyAs OxyMCs OxyMC
427	102033	102050	103236	103253	--	--	TTGTTCCTACT ATACACC	ASO-0547	OxyTs DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs OxyAs OxyMCs OxyMC
428	102033	102051	103236	103254	--	--	TTTGTTCCTAC TATACACC	ASO-0549	OxyTs DNAts DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs DNAas OxyMCs OxyMC
429	102034	102050	103237	103253	--	--	TTGTTCCTACT ATACAC	ASO-0551	OxyTs OxyTs OxyGs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts OxyAs OxyMCs OxyAs OxyMC
430	102034	102051	103237	103254	--	--	TTTGTTCCTAC TATACAC	ASO-0553	OxyTs OxyTs OxyTs DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts OxyAs OxyMCs OxyAs OxyMC
431	102034	102052	103237	103255	--	--	TTTTGTTCCTA CTATACAC	ASO-0555	OxyTs OxyTs OxyTs DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts OxyAs OxyMCs OxyAs OxyMC
432	102034	102053	103237	103256	--	--	GTTTTGTTCCT ACTATACAC	ASO-0557	OxyGs OxyTs DNAts DNAts DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas DNAcs OxyAs OxyMC
433	102035	102051	103238	103254	--	--	TTTGTTCCTAC TATACA	ASO-0559	OxyTs OxyTs OxyTs OxyGs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas OxyMCs OxyA
434	102035	102052	103238	103255	--	--	TTTTGTTCCTA	ASO-	OxyTs OxyTs DNAts DNAts DNAgs DNAts

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
							CTATACA	0561	DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas OxyTs OxyAs OxyMCs OxyA
435	102035	102053	103238	103256	--	--	GTTTTGTTCCT ACTATACA	ASO-0563	OxyGs OxyTs DNAts DNAts DNAts DNAgs DNAts DNAts DNAcs DNAcs DNAts DNAas DNAcs DNAts DNAas DNAts DNAas OxyMCs OxyA
512	131977	131994	135062	135079	--	--	TGGAGATTTA GGATATTG	ASO-0635	OxyTs OxyGs OxyGs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas DNAts OxyAs OxyTs OxyTs OxyG
513	131977	131995	135062	135080	--	--	GTGGAGATTT AGGATATTG	ASO-0637	OxyGs OxyTs OxyGs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas DNAts DNAas OxyTs OxyTs OxyG
514	131977	131996	135062	135081	--	--	AGTGGAGATT TAGGATATTG	ASO-0639	OxyAs OxyGs OxyTs DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas DNAts DNAas DNAts OxyTs OxyG
515	131978	131996	135063	135081	--	--	AGTGGAGATT TAGGATATT	ASO-0641	OxyAs OxyGs OxyTs OxyGs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas DNAts DNAas OxyTs OxyT
516	131978	131997	135063	135082	--	--	CAGTGGAGAT TTAGGATATT	ASO-0643	OxyMCs OxyAs OxyGs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas DNAts OxyAs OxyTs OxyT
517	131979	131997	135064	135082	--	--	CAGTGGAGAT TTAGGATAT	ASO-0645	OxyMCs OxyAs DNAgs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs OxyAs OxyTs OxyAs OxyT
518	131979	131998	135064	135083	--	--	TCAGTGGAGA TTTAGGATAT	ASO-0647	OxyTs OxyMCs DNAas DNAgs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas OxyTs OxyAs OxyT
519	131980	131997	135065	135082	--	--	CAGTGGAGAT TTAGGATA	ASO-0649	OxyMCs OxyAs OxyGs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs OxyAs OxyTs OxyA
520	131980	131998	135065	135083	--	--	TCAGTGGAGA	ASO-	OxyTs OxyMCs OxyAs DNAgs DNAts DNAgs

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
							TTTAGGATA	0651	DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs DNAas OxyTs OxyA
521	131981	131997	135066	135082	--	--	CAGTGGAGAT TTAGGAT	ASO-0653	OxyMCs OxyAs DNAgs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas OxyGs OxyGs OxyAs OxyT
522	131981	131998	135066	135083	--	--	TCAGTGGAGA TTTAGGAT	ASO-0655	OxyTs OxyMCs OxyAs OxyGs DNAts DNAgs DNAgs DNAas DNAgs DNAas DNAts DNAts DNAts DNAas DNAgs DNAgs OxyAs OxyT
523	132017	132034	135100	135117	--	--	TGTATAATTCA CAATGTT	ASO-0657	OxyTs OxyGs OxyTs OxyAs DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAcs DNAas DNAas OxyTs OxyGs OxyTs OxyT
524	132017	132035	135100	135118	--	--	ATGTATAATTC ACAATGTT	ASO-0659	OxyAs OxyTs OxyGs OxyTs DNAas DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAcs DNAas DNAas OxyTs OxyGs OxyTs OxyT
525	132017	132036	135100	135119	--	--	GATGTATAATT CACAATGTT	ASO-0661	OxyGs OxyAs OxyTs OxyGs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAcs DNAas DNAas DNAts OxyGs OxyTs OxyT
526	132018	132036	135101	135119	--	--	GATGTATAATT CACAATGT	ASO-0663	OxyGs OxyAs OxyTs OxyGs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAcs DNAas DNAas OxyTs OxyGs OxyT
527	132019	132036	135102	135119	--	--	GATGTATAATT CACAATG	ASO-0665	OxyGs OxyAs OxyTs OxyGs DNAts DNAas DNAts DNAas DNAas DNAts DNAts DNAcs DNAas DNAcs OxyAs OxyAs OxyTs OxyG
694	176158	176177	176250	176269	176267	176286	TATAGTATAGA TTAGTATAT	ASO-0823	OxyTs OxyAs OxyTs OxyAs DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts DNAts DNAas DNAgs DNAts OxyAs OxyTs OxyAs OxyT
695	176159	176178	176250	176269	--	--	GTATAGTATAG ATTAGTATA	ASO-0826	OxyGs OxyTs OxyAs OxyTs DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts DNAts DNAas DNAgs DNAts OxyAs OxyTs OxyA
696	176160	176178	176267	176286	--	--	GTATAGTATAG ATTAGTAT	ASO-0828	OxyGs OxyTs OxyAs OxyTs DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas

FIG. 1B (cont.)

SEQ ID No.	Start #1 (SEQ ID NO: 1)	End #1 (SEQ ID NO: 1)	Start #2 (SEQ ID NO: 1)	End #2 (SEQ ID NO: 1)	Start #3 (SEQ ID NO: 1)	End #3 (SEQ ID NO: 1)	ASO Sequence	ASO No.	ASO with Chemical Structure
									DNAts DNAts DNAas DNAgs OxyTs OxyAs OxyT
697	176160	176179	176268	176287	--	--	AGTATAGTATA GATTAGTAT	ASO-0830	OxyAs OxyGs OxyTs DNAas DNAts DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts DNAts DNAas OxyGs OxyTs OxyAs OxyT
698	176161	176178	176269	176287	--	--	GTATAGTATAG ATTAGTA	ASO-0832	OxyGs OxyTs OxyAs OxyTs DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts DNAts OxyAs OxyGs OxyTs OxyA
699	176161	176179	176269	176288	--	--	AGTATAGTATA GATTAGTA	ASO-0834	OxyAs OxyGs OxyTs DNAas DNAts DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts DNAts OxyAs OxyGs OxyTs OxyA
700	176162	176178	176270	176287	--	--	GTATAGTATAG ATTAGT	ASO-0836	OxyGs OxyTs OxyAs OxyTs DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts OxyTs OxyAs OxyGs OxyT
701	176162	176179	176270	176288	--	--	AGTATAGTATA GATTAGT	ASO-0838	OxyAs OxyGs OxyTs DNAas DNAts DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas DNAts OxyTs OxyAs OxyGs OxyT
702	176163	176179	176271	176287	--	--	AGTATAGTATA GATTAG	ASO-0840	OxyAs OxyGs OxyTs OxyAs DNAts DNAas DNAgs DNAts DNAas DNAts DNAas DNAgs DNAas OxyTs OxyTs OxyAs OxyG
996	221987	222003	235946	235962	--	--	GATGATGAGT TTAAGGG	ASO-1111	OxyGs OxyAs OxyTs DNAgs DNAas DNAts DNAgs DNAas DNAgs DNAts DNAts DNAts DNAas OxyAs OxyGs OxyGs OxyG

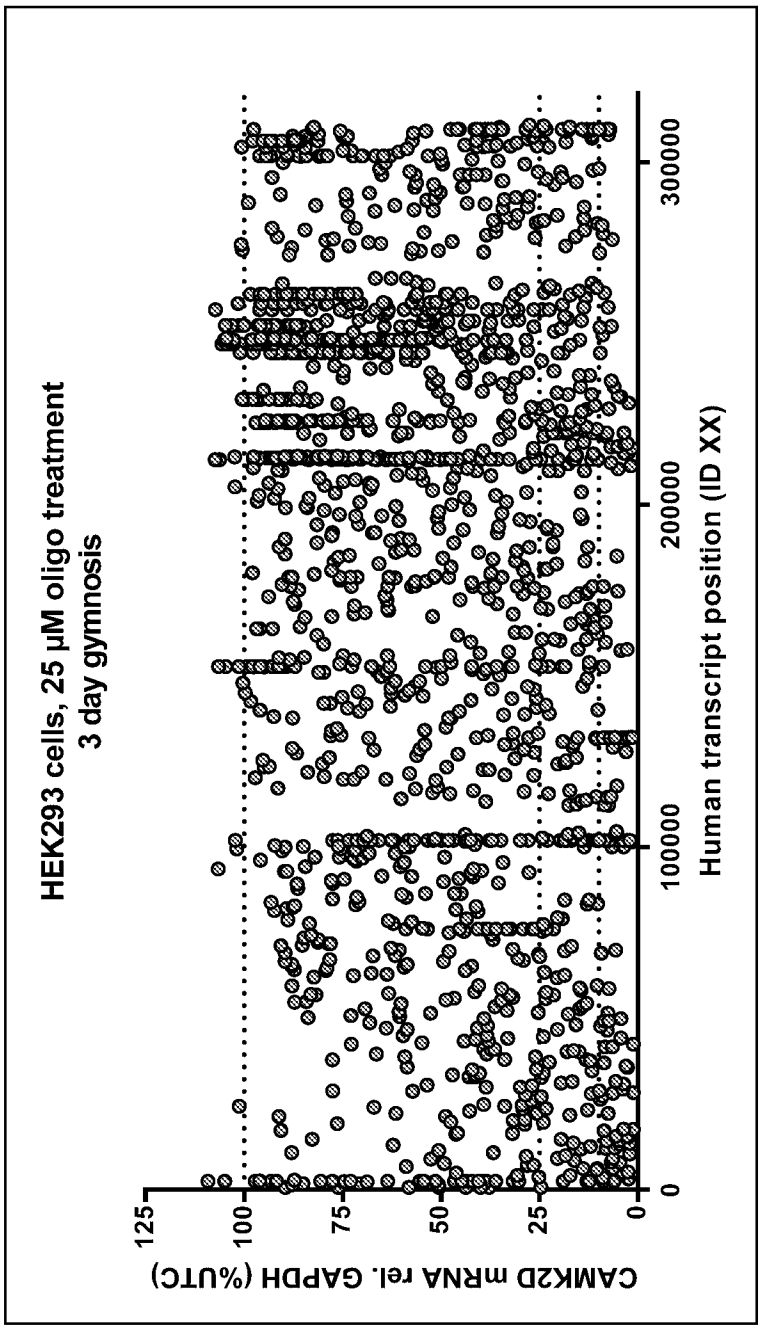

HEK293 cells, 25 µM oligo treatment
3 day gymnosis
CAMK2D mRNA rel. GAPDH (%UTC)
125
100
75
50
25
0
0
100000
200000
300000
Human transcript position (ID XX)

FIG. 2

FIG. 3

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	DES No.	ASO with Design	ASO No.
24	2566	2583	DES-0002	GAtaattttggcagCATA	ASO-0002
25	2566	2584	DES-0003	TGAtaattttggcagcATA	ASO-0003
27	2567	2584	DES-0005	TGAtaattttggcagCAT	ASO-0005
55	3576	3593	DES-0135	ATTTgcaataaataTGGA	ASO-0135
61	5256	5274	DES-0141	GATTtattttcagtaTTTG	ASO-0141
63	6204	6221	DES-0143	ACTTtatataatttGACA	ASO-0143
71	8068	8085	DES-0150	TTTCtttaaatcaaTACT	ASO-0150
75	9246	9263	DES-0154	TGTAtagtgagataTTTT	ASO-0154
79	10665	10684	DES-0158	GAAAttcaaattatccAGAA	ASO-0158
84	12135	12154	DES-0162	AGAAaatactgaattaTACA	ASO-0162
85	12329	12346	DES-0163	GTAGaatggatcaaAATT	ASO-0163
92	14390	14407	DES-0170	ATCTtagttttggaTTTG	ASO-0170
102	17218	17235	DES-0179	ACAGttttatagatAAGA	ASO-0179
105	17708	17725	DES-0182	AGTCattaattcttTATC	ASO-0182
114	21808	21826	DES-0190	TCCtttgtatttcttgAAT	ASO-0190
128	26381	26397	DES-0203	GAGAtcaataaagTATA	ASO-0203
130	28249	28265	DES-0208	AGATatagttactTAAC	ASO-0208
138	29430	29446	DES-0212	AATAttattggttGAGC	ASO-0212
158	35743	35762	DES-0231	TACatattatattactcCTC	ASO-0231

FIG. 3 (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	DES No.	ASO with Design	ASO No.
161	37100	37119	DES-0234	ATTTagcacatacattTAAC	ASO-0234
178	41742	41758	DES-0249	CACAaatcattagTCTA	ASO-0249
180	42531	42548	DES-0251	TTCAtattatgctgTTTT	ASO-0251
186	44345	44361	DES-0257	AAAGtgagtgttaAGGT	ASO-0257
190	46568	46586	DES-0261	TGTttctaggtttcatTTT	ASO-0261
195	47770	47788	DES-0265	TAATttatcatgtatTCAG	ASO-0265
200	49272	49289	DES-0270	GAAAtctgtgaataCTTT	ASO-0270
202	50024	50041	DES-0272	CATTaaatatacttGTTC	ASO-0272
234	58780	58796	DES-0304	GTTGagaatacagATTG	ASO-0304
264	69068	69086	DES-0332	ATACattttacattaTTCT	ASO-0332
327	84562	84581	DES-0409	TTTgtttcaccattttaTAC	ASO-0409
387	102012	102030	DES-0467	GAAAtgtaacttgttGAGT	ASO-0467
390	102013	102030	DES-0473	GAAAtgtaacttgtTGAG	ASO-0473
396	102015	102032	DES-0485	TAGAaatgtaacttGTTG	ASO-0485
441	103690	103708	DES-0570	AAATcgttctttacaTGAA	ASO-0570
446	104608	104625	DES-0574	ATTAttatggtgttTTGT	ASO-0574
457	114694	114710	DES-0583	TAGAtttataaggATTG	ASO-0583
463	116502	116519	DES-0589	TTTatgaagtttctgTGG	ASO-0589
467	117904	117921	DES-0593	GTCTtatattacatCAAA	ASO-0593
513	131977	131995	DES-0637	GTGgagatttaggataTTG	ASO-0637

FIG. 3 (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	DES No.	ASO with Design	ASO No.
516	131978	131997	DES-0643	CAGtggagatttaggatATT	ASO-0643
519	131980	131997	DES-0649	CAGtggagatttaggATA	ASO-0649
523	132017	132034	DES-0657	TGTAtaattcacaaTGTT	ASO-0657
524	132017	132035	DES-0659	ATGTataattcacaaTGTT	ASO-0659
636	157447	157465	DES-0769	TTTAttaatctcattTACT	ASO-0769
640	159834	159851	DES-0773	ACACtattttagttCTTT	ASO-0773
657	165142	165160	DES-0788	ATTtattgagtacaggCAG	ASO-0788
659	166220	166239	DES-0790	ATGgtctattaaatgtgCAA	ASO-0790
700	176162	176178	DES-0836	GTATagtatagatTAGT	ASO-0836
740	184958	184975	DES-0874	TTGTttagtattcaTTTC	ASO-0874
822	209852	209868	DES-0951	TGccactatgtcttCAA	ASO-0951
827	210416	210435	DES-0956	TTAgatattcattgttcAGT	ASO-0956
832	211327	211344	DES-0960	TTTTaatttcaaccAGTA	ASO-0960
965	216411	216429	DES-1081	TTTAactttactataTTGG	ASO-1081
981	220916	220933	DES-1096	CAAcaaccatttatAGCA	ASO-1096
982	220916	220934	DES-1097	TCaacaaccatttataGCA	ASO-1097
983	220917	220934	DES-1098	TCAAcaaccatttatAGC	ASO-1098
984	220917	220935	DES-1099	GTCaacaaccatttataGC	ASO-1099
986	220918	220935	DES-1101	GTCAacaaccatttaTAG	ASO-1101
989	220919	220936	DES-1104	TGTCaacaaccatttaTA	ASO-1104

FIG. 3 (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	DES No.	ASO with Design	ASO No.
1015	223970	223987	DES-1131	TCAAtgtttccaaaCAAT	ASO-1131
1065	227969	227987	DES-1179	ATTAtctattatgttGTTT	ASO-1179
1071	229629	229646	DES-1185	TCTTttctattaccATTC	ASO-1185
1155	244274	244291	DES-1266	GTAGaatatagagaATGA	ASO-1266
1247	248053	248069	DES-1357	TCaagcagtctacaGTC	ASO-1357
1249	248054	248070	DES-1359	TTCaagcagtctacAGT	ASO-1359
1326	251988	252004	DES-1435	CAGttgtgtttattGGA	ASO-1435
1359	253080	253097	DES-1468	ATTAattaattcccAAGA	ASO-1468
1363	253647	253664	DES-1472	CttttctgaattgaCCAG	ASO-1472
1371	253676	253691	DES-1480	ATCAtctgaacacTCG	ASO-1480
1387	256887	256904	DES-1495	TttgttgtttatctGTGG	ASO-1495
1389	256888	256905	DES-1497	CtttgttgtttatcTGTG	ASO-1497
1390	256889	256906	DES-1498	GCtttgttgtttatctGT	ASO-1498
1409	258296	258315	DES-1517	TAAtcactataatttgaGGC	ASO-1517
1415	258714	258732	DES-1523	GCAAaagaccttattctTG	ASO-1523
1420	258716	258732	DES-1528	GCAAaagaccttatTCT	ASO-1528
1429	258966	258982	DES-1537	TCagggttgtggaTTAC	ASO-1537
1475	261720	261737	DES-1582	TCATtattagttgtCATT	ASO-1582
1508	277421	277440	DES-1612	ATTGtatttcttgattTTAC	ASO-1612
1524	282021	282039	DES-1627	GTTattattattttcaGGT	ASO-1627

FIG. 3 (cont.)

SEQ ID No.	Start (SEQ ID NO: 1)	End (SEQ ID NO: 1)	DES No.	ASO with Design	ASO No.
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1662	308896	308912	DES-1759	AGGactgtgaattaCTA	ASO-1759
1663	309052	309069	DES-1760	ATCagaaaagcttcAACC	ASO-1760
1676	309428	309444	DES-1773	TATatacagtgtccCAT	ASO-1773
1685	309482	309501	DES-1782	CACAaatttattaactCTTA	ASO-1782
1686	309483	309501	DES-1783	CACAaatttattaacTCTT	ASO-1783
1687	309483	309502	DES-1784	TCACaaatttattaacTCTT	ASO-1784
1688	309484	309501	DES-1785	CACAaatttattaaCTCT	ASO-1785
1690	309484	309503	DES-1787	ATCAcaaatttattaaCTCT	ASO-1787

FIG. 4

ASO_NO	Single point, 25 μM, HEK293, mRNA, %UTC	Single point, 500 nM, human iPSC-CM, mRNA, %UTC
ASO-0003	12.99	
ASO-0005	12.40	
ASO-0190	17.39	
ASO-0231	2.69	12.27
ASO-0261	7.88	43.24
ASO-0409	18.68	
ASO-0589	17.40	
ASO-0637	4.23	17.48
ASO-0643	10.78	
ASO-0649	8.04	
ASO-0788	13.01	
ASO-0790	11.02	
ASO-0956	5.12	15.39
ASO-1359	14.79	19.47
ASO-1435	6.76	12.42
ASO-1517	19.20	
ASO-1627	10.31	
ASO-1632	13.79	
ASO-1759	12.88	
ASO-1773	12.70	

FIG. 5

ASO_NO	CAMK2D/GAPDH (% ctrl)
ASO-0002	82
ASO-1104	56
ASO-1099	87
ASO-1096	69
ASO-1101	65
ASO-1097	77
ASO-1098	77
ASO-0951	75
ASO-1528	81
ASO-1756	76
ASO-1784	70
ASO-1472	83
ASO-1787	69
ASO-1760	71
ASO-1783	59
ASO-1782	74
ASO-1497	70
ASO-1498	67
ASO-1785	66
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ASO-1357	88
ASO-1537	78
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ASO-1480	70

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