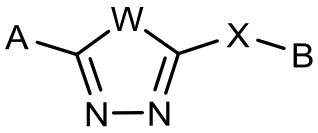
What is claimed is:

1. A method for modifying RNA splicing in order to produce a mature mRNA transcript having an intronic exon (iExon), the method comprising contacting a compound of Formula (I) or a form thereof with a cell containing a pre-mRNA transcript in cell culture or a cell lysate containing a pre-mRNA transcript, wherein the pre-mRNA transcript comprises two exons and an intron, wherein a first exon is upstream of the intron and a second exon is downstream of the intron, wherein the intron comprises in 5' to 3' order: a first 5' splice site, a first branch point, a first 3' splice site, an intronic recognition element for splicing modifier (iREMS), a second branch point, and a second 3' splice site, wherein the iREMS comprises an RNA sequence GAgurngn, wherein r is adenine or guanine and n is any nucleotide, and wherein Formula (I) is:



(I)

or a form thereof, wherein

W is CH=CH or S;

X is CH_2, $CH(C_{1\text{-}4}alkyl)$, $C(C_{1\text{-}4}alkyl)_2$, CH=CH, O, NR_5, or a bond;

A is aryl, heteroaryl, heterocyclyl, or $C_{9\text{-}10}$cycloalkyl,

wherein aryl is selected from phenyl and naphthyl, each optionally substituted with 1, 2, 3, or 4 substituents each selected from R_1,

wherein heteroaryl is a saturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_1,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2, and

wherein $C_{9\text{-}10}$cycloalkyl is a saturated or partially unsaturated bicyclic ring system optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2;

B is heterocyclyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or polycyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_4;

R_1 is halogen, hydroxyl, cyano, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, heterocyclyl-C_{1-4}alkoxy, phenyl, or phenyl-C_{1-4}alkoxy,

wherein heteroaryl is a saturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of phenyl, heteroaryl or heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

R_2 is halogen, hydroxyl, cyano, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{2-4}alkenyl, C_{3-7}cycloalkyl, or heterocyclyl-C_{1-4}alkyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

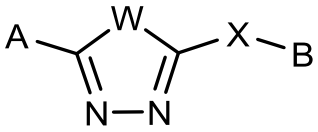
R_3 is halogen, hydroxyl, nitro, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, phenyl, or phenyl-C_{1-4}alkoxy;

R_4 is independently selected from halogen, C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino or hydroxyl-C_{1-4}alkyl-amino; and

R_5 is hydrogen, C_{1-4}alkyl, or hydroxyl-C_{1-4}alkyl;

wherein a form of the compound is selected from the group consisting of a prodrug, salt, hydrate, solvate, clathrate, isotopologue, racemate, enantiomer, diastereomer, stereoisomer, polymorph and tautomer form thereof.

2. A method for modifying RNA splicing in order to modulate the amount of a mature mRNA transcript produced by a pre-mRNA transcript , the method comprising contacting a compound of Formula (I) or a form thereof with a cell containing a pre-mRNA transcript in cell culture or a cell lysate containing a pre-mRNA transcript, wherein the pre-mRNA transcript comprises two exons and an intron, wherein a first exon is upstream of the intron and a second exon is downstream of the intron, wherein the intron comprises a RNA nucleotide sequence comprising in 5' to 3' order: an intronic recognition element for splicing modifier (iREMS), a branch point, and a 3' splice site, wherein the iREMS comprises an RNA sequence GAgurngn, wherein r is adenine or guanine and n is any nucleotide, and wherein Formula (I) is:



(I)

or a form thereof, wherein

W is CH=CH or S;

X is CH_2, $CH(C_{1\text{-}4}alkyl)$, $C(C_{1\text{-}4}alkyl)_2$, CH=CH, O, NR_5, or a bond;

A is aryl, heteroaryl, heterocyclyl, or $C_{9\text{-}10}$cycloalkyl,

wherein aryl is selected from phenyl and naphthyl, each optionally substituted with 1, 2, 3, or 4 substituents each selected from R_1,

wherein heteroaryl is a saturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_1,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2, and

wherein $C_{9\text{-}10}$cycloalkyl is a saturated or partially unsaturated bicyclic ring system optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2;

B is heterocyclyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or polycyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_4;

R_1 is halogen, hydroxyl, cyano, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, heterocyclyl-C_{1-4}alkoxy, phenyl, or phenyl-C_{1-4}alkoxy,

wherein heteroaryl is a saturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of phenyl, heteroaryl or heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

R_2 is halogen, hydroxyl, cyano, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{2-4}alkenyl, C_{3-7}cycloalkyl, or heterocyclyl-C_{1-4}alkyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

R_3 is halogen, hydroxyl, nitro, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, phenyl, or phenyl-C_{1-4}alkoxy;

R_4 is independently selected from halogen, C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino or hydroxyl-C_{1-4}alkyl-amino; and

R_5 is hydrogen, C_{1-4}alkyl, or hydroxyl-C_{1-4}alkyl;

wherein a form of the compound is selected from the group consisting of a prodrug, salt, hydrate, solvate, clathrate, isotopologue, racemate, enantiomer, diastereomer, stereoisomer, polymorph and tautomer form thereof.

3. The method of claim 1 or 2, wherein the iREMS comprises an RNA sequence GAguragu, and wherein r is adenine or guanine.

4. The method of claim 1 or 2, wherein the iREMS comprises an RNA sequence NNGAgurngn (SEQ ID NO: 1), wherein r is adenine or guanine and n or N is any nucleotide, and wherein the RNA sequence NNGAgurngn (SEQ ID NO: 1) is selected from the group consisting of ANGAgurngn (SEQ ID NO: 4), CNGAgurngn (SEQ ID NO: 5), GNGAgurngn (SEQ ID NO: 6), UNGAgurngn (SEQ ID NO: 7), NAGAgurngn (SEQ ID NO: 8), NCGAgurngn (SEQ ID NO: 9), NGGAgurngn (SEQ ID NO: 10), NUGAgurngn (SEQ ID NO: 11), AAGAgurngn (SEQ ID NO: 12), ACGAgurngn (SEQ ID NO: 13), AGGAgurngn (SEQ ID NO: 14), AUGAgurngn (SEQ ID NO: 15), CAGAgurngn (SEQ ID NO: 16), CCGAgurngn (SEQ ID NO: 17), CGGAgurngn (SEQ ID NO: 18), CUGAgurngn (SEQ ID NO: 19), GAGAgurngn (SEQ ID NO: 20), GCGAgurngn (SEQ ID NO: 21), GGGAgurngn (SEQ ID NO: 22), GUGAgurngn (SEQ ID NO: 23), UAGAgurngn (SEQ ID NO: 24), UCGAgurngn (SEQ ID NO: 25), UGGAgurngn (SEQ ID NO: 52), and UUGAgurngn (SEQ ID NO: 53), wherein r is adenine or guanine and n or N is any nucleotide.

5. The method of claim 1 or 2, wherein the iREMS comprises an RNA sequence NNGAguragu (SEQ ID NO: 2), wherein r is adenine or guanine and N is any nucleotide, and wherein the RNA sequence NNGAguragu (SEQ ID NO: 2) is selected from the group consisting of ANGAguragu (SEQ ID NO: 28), CNGAguragu (SEQ ID NO: 29), GNGAguragu (SEQ ID NO: 30), UNGAguragu (SEQ ID NO: 31), NAGAguragu (SEQ ID NO: 32), NCGAguragu (SEQ ID NO: 33), NGGAguragu (SEQ ID NO: 34), NUGAguragu (SEQ ID NO: 35), AAGAguragu (SEQ ID NO: 36), ACGAguragu (SEQ ID NO: 37), AGGAguragu (SEQ ID NO: 38), AUGAguragu (SEQ ID NO: 39), CAGAguragu (SEQ ID NO: 40), CCGAguragu (SEQ ID NO: 41), CGGAguragu (SEQ ID NO: 42), CUGAguragu (SEQ ID NO: 43), GAGAguragu (SEQ ID NO: 44), GCGAguragu (SEQ ID NO: 45), GGGAguragu (SEQ ID NO: 46), GUGAguragu (SEQ ID NO: 47), UAGAguragu (SEQ ID NO: 48), UCGAguragu (SEQ ID NO: 49), UGGAguragu (SEQ ID NO: 489) and UUGAguragu (SEQ ID NO: 508), wherein r is adenine or guanine, and N is any nucleotide.

6. The method of claim 1 or 2, wherein the pre-mRNA transcript is a pre-mRNA transcript of a gene selected from the group consisting of: ARL15, C12orf4, CDH18, CHEK1, DHFR, ELMO2, HDX, LOC400927, LRRC42, MEAF6, MYCBP2, PAPD4, PDE7A, PDXDC2P, POMT2, TAF2, TRIM65, WDR27, ZNF37BP, ADAMTS19, BECN1, CACNB4, CADM2, CHRM2, CMAHP, DENND4A, ERC2, EVC, FHOD3, GXYLT1, HTT, KDM6A, MACROD2, MEMO1, NUPL1, PDXDC1, RASIP1, SENP6, SPIDR, TET1, TIAM1, TNRC6A, URGCP-MRPS24, WDR90, ZFP82, ZNF618, ZNF680 , AGPS, AKT1, ANXA11, ARHGAP5, ATF6, ASAP1, BHMT2, BIN3, C11orf30, C11orf73, C1orf27, CENP1, DCAF17, ENAH, EXOC6B, FAM162A, FAM174A, FAM208B, HOXB3, IFT57, IVD, KIAA1524, KIAA1715, KIDINS220, LYRM1, MFN2, MORF4L1, NGF, RERE, SF3B3, SLC25A17, SNX24, SNX7, STRADB, STXBP6, TASP1, TBCA, TCF4, TMEM214, TNRC6A, UBE2D3, UBE2L3, VDAC2, WNK1, XRN2, ZFP82, ZNF138, ZNF350, and ZNF777.

7. The method of claim 1 or 2, wherein the pre-mRNA transcript is a pre-mRNA transcript of a gene selected from the group consisting of ABCB8, ATG5, DIAPH3, MMS22L, NIPA1, RAF1, ZFAND1, ACVR1B, AXIN1, FBL, DCAF17 2a, GNG12, HMGXB4, MADD, MRPL45, NSUN4, PITPNB, PPIP5K2, SOS2, STAT1, STRN3, TNS3, DCAF17 6a, DMXL1, FER, FNDC3A, GALC, GBP1, HSD17B12, LARP7, OXCT1, SREK1, SSBP1, CRYL1, CTNS, DENND5A, DGK1, DLGAP4, ENTPD1, ERGIC3, GNAQ, GTSF1, L3MBTL2, MAN1A2, MMS19, PMS1, PRPF31, SKP1, STRN, STRN4, SUPT20H, UBAP2L, and VPS29.

8. The method of claim 1 or 2, wherein the pre-mRNA transcript is a pre-mRNA transcript of the HTT gene.

9. The method of any one of claims 1 to 7, wherein the cell containing the pre-mRNA transcript in cell culture is contacted with the compound of Formula (I).

10. The method of any one of claims 1 to 7, wherein the cell lysate containing the pre-mRNA transcript is contacted with the compound of Formula (I).

11. A method for regulating the amount of a functional protein produced in a cell, wherein the method comprises contacting in cell culture a compound of Formula (I) or a form thereof with a cell transfected with an artificial gene construct or a vector comprising the artificial gene construct,

wherein the artificial gene construct comprises

(A) an RNA sequence comprising exons and one or more introns, wherein at least one intron comprises an iREMS that is downstream of a branch point and a 3’ splice site, and wherein the iREMS comprises an RNA sequence GAgurngn, wherein r is adenine or guanine and n is any nucleotide;

(B) an RNA sequence comprising two exons and an intron, wherein a first exon is upstream of the intron and a second exon is downstream of the intron, wherein the RNA nucleotide sequence of the intron comprises in 5' to 3' order: a first 5' splice site, a first branch point, a first 3' splice site, an iREMS, a second branch point and a second 3' splice site, wherein the iREMS comprises an RNA sequence GAgurngn, and wherein r is adenine or guanine and n is any nucleotide;

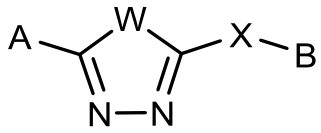
(C) an RNA sequence comprising two exons and an intron, wherein a first exon is upstream of the intron and a second exon is downstream of the intron, wherein the RNA nucleotide sequence of the intron comprises in 5' to 3' order: an iREMS, a branch point and a 3' splice site, wherein the iREMS comprises an RNA sequence GAgurngn, and wherein r is adenine or guanine and n is any nucleotide;

(D) an RNA sequence comprising three exons and two introns, wherein a first exon is upstream of a first intron, a second exon, a second intron, and a third exon, wherein the first intron is upstream of the second exon, the second intron and the third exon, wherein the second intron is upstream of the third exon, wherein the RNA sequence of the first intron comprises in 5’ to 3’ order: a first 5’ splice site, a first branch point, a first 3’ splice site, and the RNA sequence of the second intron comprises in 5’ to 3’ order: a second 5’ splice site, an

iREMS, a second branch point and a second 3’ splice site, wherein the iREMS comprises an RNA sequence GAgurngn, wherein r is adenine or guanine and n is any nucleotide;
(E) a DNA sequence encoding exons and one or more introns, wherein the nucleotide sequence encoding at least one intron comprises a nucleotide sequence encoding an iREMS that is downstream of the nucleotide sequence encoding a branch point and the nucleotide sequence encoding a 3’ splice site, and wherein the iREMS is encoded by a nucleotide sequence comprising a DNA sequence GAgtrngn, wherein r is adenine or guanine and n is any nucleotide;
(F) a DNA sequence encoding two exons and an intron, wherein a nucleotide sequence encoding a first exon is upstream of a nucleotide sequence encoding the intron and a nucleotide sequence encoding a second exon is downstream of the nucleotide sequence encoding the intron, wherein the nucleotide sequence encoding the intron comprises in 5' to 3' order: a nucleotide sequence encoding a first 5' splice site, a nucleotide sequence encoding a first branch point, a nucleotide sequence encoding a first 3' splice site, a nucleotide sequence encoding an iREMS, a nucleotide sequence encoding a second branch point and a nucleotide sequence encoding a second 3' splice site, wherein the nucleotide sequence encoding the iREMS comprises a DNA sequence GAgtrngn, wherein r is adenine or guanine and n is any nucleotide; or
(G) DNA sequence encoding two exons and an intron, wherein the nucleotide sequence encoding a first exon is upstream of the nucleotide sequence encoding the intron and the nucleotide sequence encoding a second exon is downstream of the nucleotide sequence encoding the intron, wherein the nucleotide sequence encoding the intron comprises in 5' to 3' order: a nucleotide sequence encoding an iREMS, a nucleotide sequence encoding a branch point and a nucleotide sequence encoding a 3' splice site, wherein the nucleotide sequence encoding the iREMS comprises an DNA sequence GAgtrngn, wherein r is adenine or guanine and n is any nucleotide; and
(H) a DNA sequence encoding three exons and two introns, wherein a nucleotide sequence encoding a first exon is upstream of a nucleotide sequence encoding a first intron, a nucleotide sequence encoding a second exon, a nucleotide sequence encoding a second

intron, and a nucleotide sequence encoding a third exon, wherein the nucleotide sequence encoding the first intron is upstream of the nucleotide sequence encoding the second exon, the nucleotide sequence encoding the second intron and the nucleotide sequence encoding the third exon, wherein the nucleotide sequence encoding the second intron is upstream of the nucleotide sequence encoding the third exon, wherein the nucleotide sequence encoding the first intron comprises in 5' to 3' order: a nucleotide sequence encoding a first 5' splice site, a nucleotide sequence encoding a first branch point, a nucleotide sequence encoding a first 3' splice site, and the nucleotide sequence encoding the second intron comprises in 5' to 3' order: a nucleotide sequence encoding a second 5' splice site, a nucleotide sequence encoding an iREMS, a nucleotide sequence encoding a second branch point and a nucleotide sequence encoding a second 3' splice site, wherein the iREMS is encoded by a nucleotide sequence comprising a DNA sequence GAgtrngn, wherein r is adenine or guanine and n is any nucleotide; and

wherein Formula (I) is:



(I)

or a form thereof, wherein

W is CH=CH or S;

X is CH_2, $CH(C_{1\text{-}4}alkyl)$, $C(C_{1\text{-}4}alkyl)_2$, CH=CH, O, NR_5, or a bond;

A is aryl, heteroaryl, heterocyclyl, or $C_{9\text{-}10}$cycloalkyl,

wherein aryl is selected from phenyl and naphthyl, each optionally substituted with 1, 2, 3, or 4 substituents each selected from R_1,

wherein heteroaryl is a saturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_1,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or tricyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2, and

wherein C_{9-10}cycloalkyl is a saturated or partially unsaturated bicyclic ring system optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_2;

B is heterocyclyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic, bicyclic or polycyclic ring system having 1, 2, or 3 heteroatom ring members independently selected from N, O, or S, each optionally substituted with 1, 2, 3, 4, or 5 substituents each selected from R_4;

R_1 is halogen, hydroxyl, cyano, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, heterocyclyl-C_{1-4}alkoxy, phenyl, or phenyl-C_{1-4}alkoxy,

wherein heteroaryl is a saturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of phenyl, heteroaryl or heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

R_2 is halogen, hydroxyl, cyano, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{2-4}alkenyl, C_{3-7}cycloalkyl, or heterocyclyl-C_{1-4}alkyl,

wherein heterocyclyl is a saturated or partially unsaturated monocyclic or bicyclic ring system having 1, 2, or 3 heteroatom ring members selected from N, O, and S, and

wherein each instance of heterocyclyl is optionally substituted with 1, or 2 substituents each selected from R_3;

R_3 is halogen, hydroxyl, nitro, oxo, hydroxyl-imino, C_{1-4}alkyl, halo-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino, amino-C_{1-4}alkyl, C_{1-4}alkyl-amino-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkyl, amino-carbonyl, C_{1-4}alkyl-amino-carbonyl, $(C_{1-4}alkyl)_2$-amino-carbonyl, C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, $(C_{1-4}alkyl)_2$-amino-carbonyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl-amino, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, C_{1-4}alkyl-carbonyl, C_{1-4}alkoxy, halo-C_{1-4}alkoxy, amino-C_{1-4}alkoxy, hydroxyl-C_{1-4}alkoxy, C_{1-4}alkyl-C_{1-4}alkoxy, C_{1-4}alkyl-amino-C_{1-4}alkoxy, $(C_{1-4}alkyl)_2$-amino-C_{1-4}alkoxy, C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkoxy, C_{1-4}alkoxy-C_{1-4}alkoxy, C_{1-4}alkoxy-carbonyl, C_{1-4}alkoxy-carbonyl-amino, C_{1-4}alkoxy-carbonyl-amino-C_{1-4}alkoxy, C_{2-4}alkenyl, C_{2-4}alkenyl-amino-carbonyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl-C_{1-4}alkoxy, C_{3-7}cycloalkenyl, heteroaryl, heteroaryl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino, heteroaryl-C_{1-4}alkyl-amino-carbonyl-C_{1-4}alkyl, heteroaryl-C_{1-4}alkyl-carbonyl-amino-C_{1-4}alkyl, heterocyclyl, heterocyclyl-C_{1-4}alkyl, phenyl, or phenyl-C_{1-4}alkoxy;

R_4 is independently selected from halogen, C_{1-4}alkyl, hydroxyl-C_{1-4}alkyl, amino, C_{1-4}alkyl-amino, $(C_{1-4}alkyl)_2$-amino or hydroxyl-C_{1-4}alkyl-amino; and

R_5 is hydrogen, C_{1-4}alkyl, or hydroxyl-C_{1-4}alkyl;

wherein a form of the compound is selected from the group consisting of a prodrug, salt, hydrate, solvate, clathrate, isotopologue, racemate, enantiomer, diastereomer, stereoisomer, polymorph and tautomer form thereof.

12. The method of claim 11, wherein the cell is a patient cell.

13. The method of claim 12, wherein the patient is human.

14. The method of any one of claims 11 to 13, wherein the vector is a viral vector selected from the group consisting of an adeno-associated virus (AAV), a self-complimentary adeno-associated virus (scAAV), an adenovirus, a retrovirus, a lentivirus, a Newcastle disease virus (NDV), a herpes virus, an alphavirus, and a vaccinia virus.