

embodiments, a PRC2-associated region is a region of an RNA that immunoprecipitates with an antibody that binds specifically to SUZ12, EED, EZH2 or RBBP4 (which as noted above are components of PRC2), or a region of genomic DNA that encodes that RNA region.

[0038] In some embodiments, a PRC2-associated region is a region of an RNA that is protected from nucleases (e.g., RNases) in an RNA-immunoprecipitation assay that employs an antibody that targets a component of PRC2, or a region of genomic DNA that encodes that protected RNA region. In some embodiments, a PRC2-associated region is a region of an RNA that is protected from nucleases (e.g., RNases) in an RNA-immunoprecipitation assay that employs an antibody that targets SUZ12, EED, EZH2 or RBBP4, or a region of genomic DNA that encodes that protected RNA region.

[0039] In some embodiments, a PRC2-associated region is a region of an RNA within which occur a relatively high frequency of sequence reads in a sequencing reaction of products of an RNA-immunoprecipitation assay that employs an antibody that targets a component of PRC2, or a region of genomic DNA that encodes that RNA region. In some embodiments, a PRC2-associated region is a region of an RNA within which occur a relatively high frequency of sequence reads in a sequencing reaction of products of an RNA-immunoprecipitation assay that employs an antibody that binds specifically to SUZ12, EED, EZH2 or RBBP4, or a region of genomic DNA that encodes that protected RNA region. In such embodiments, the PRC2-associated region may be referred to as a "peak."

[0040] In some embodiments, a PRC2-associated region comprises a sequence of 40 to 60 nucleotides that interact with PRC2 complex. In some embodiments, a PRC2-associated region comprises a sequence of 40 to 60 nucleotides that encode an RNA that interacts with PRC2. In some embodiments, a PRC2-associated region comprises a sequence of up to 5 kb in length that comprises a sequence (e.g., of 40 to 60 nucleotides) that interacts with PRC2. In some embodiments, a PRC2-associated region comprises a sequence of up to 5 kb in length within which an RNA is encoded that has a sequence (e.g., of 40 to 60 nucleotides) that is known to interact with PRC2. In some embodiments, a PRC2-associated region comprises a sequence of about 4 kb in length that comprise a sequence (e.g., of 40 to 60 nucleotides) that interacts with PRC2. In some embodiments, a PRC2-associated region comprises a sequence of about 4 kb in length within which an RNA is encoded that includes a sequence (e.g., of 40 to 60 nucleotides) that is known to interact with PRC2. In some embodiments, a PRC2-associated region has a sequence as set forth in any one of SEQ ID NOS: 5 to 462.

[0041] In some embodiments, single stranded oligonucleotides are provided that specifically bind to, or are complementary to, a PRC2-associated region in a genomic region that encompasses or that is in proximity to the UTRN gene. In some embodiments, single stranded oligonucleotides are provided that specifically bind to, or are complementary to, a PRC2-associated region that has a sequence as set forth in any one of SEQ ID NOS: 5 to 462. In some embodiments, single stranded oligonucleotides are provided that specifically bind to, or are complementary to, a PRC2-associated region that has a sequence as set forth in any one of SEQ ID NOS: 4 to 462 combined with up to 2 kb, up to 5 kb, or up to 10 kb of flanking sequences from a corresponding genomic region to which these SEQ IDs map (e.g., in a human genome). In some embodiments, single stranded oligonucleotides have a

sequence as set forth in any one of SEQ ID NOS: 463 to 497728. In some embodiments, single stranded oligonucleotides have a sequence as set forth in Table 4.

[0042] Without being bound by a theory of invention, these oligonucleotides are able to interfere with the binding of and function of PRC2, by preventing recruitment of PRC2 to a specific chromosomal locus. For example, a single administration of single stranded oligonucleotides designed to specifically bind a PRC2-associated region lncRNA can stably displace not only the lncRNA, but also the PRC2 that binds to the lncRNA, from binding chromatin. After displacement, the full complement of PRC2 is not recovered for up to 24 hours. Further, lncRNA can recruit PRC2 in a cis fashion, repressing gene expression at or near the specific chromosomal locus from which the lncRNA was transcribed.

[0043] Methods of modulating gene expression are provided, in some embodiments, that may be carried out in vitro, ex vivo, or in vivo. It is understood that any reference to uses of compounds throughout the description contemplates use of the compound in preparation of a pharmaceutical composition or medicament for use in the treatment of muscular dystrophies, including DMD, BMD, and myotonic dystrophy. Thus, as one nonlimiting example, this aspect of the invention includes use of such single stranded oligonucleotides in the preparation of a medicament for use in the treatment of disease, wherein the treatment involves upregulating expression of UTRN.

[0044] In further aspects of the invention, methods are provided for selecting a candidate oligonucleotide for activating expression of UTRN. The methods generally involve selecting as a candidate oligonucleotide, a single stranded oligonucleotide comprising a nucleotide sequence that is complementary to a PRC2-associated region (e.g., a nucleotide sequence as set forth in any one of SEQ ID NOS: 5 to 462). In some embodiments, sets of oligonucleotides may be selected that are enriched (e.g., compared with a random selection of oligonucleotides) in oligonucleotides that activate expression of UTRN.

Single Stranded Oligonucleotides for Modulating Expression of UTRN

[0045] In one aspect of the invention, single stranded oligonucleotides complementary to the PRC2-associated regions are provided for modulating expression of UTRN in a cell. In some embodiments, expression of UTRN is upregulated or increased. In some embodiments, single stranded oligonucleotides complementary to these PRC2-associated regions inhibit the interaction of PRC2 with long RNA transcripts such that gene expression is upregulated or increased. In some embodiments, single stranded oligonucleotides complementary to these PRC2-associated regions inhibit the interaction of PRC2 with long RNA transcripts, resulting in reduced methylation of histone H3 and reduced gene inactivation, such that gene expression is upregulated or increased. In some embodiments, this interaction may be disrupted or inhibited due to a change in the structure of the long RNA that prevents or reduces binding to PRC2. The oligonucleotide may be selected using any of the methods disclosed herein for selecting a candidate oligonucleotide for activating expression of UTRN.

[0046] The single stranded oligonucleotide may comprise a region of complementarity that is complementary with a PRC2-associated region of a nucleotide sequence set forth in any one of SEQ ID NOS: 1 to 4. The region of complemen-