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61/910,871 2 December 2013 (02.12.2013) US
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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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5 November 2015

(54) **Title:** ANTISENSE COMPOUNDS AND USES THEREOF

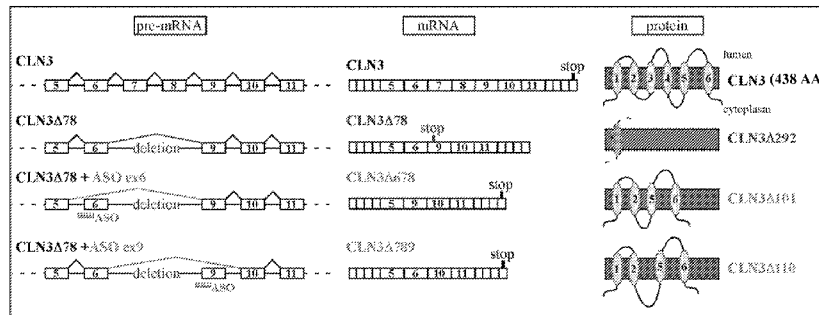


Figure 1

(57) **Abstract:** The present invention provides compounds comprising oligonucleotides complementary to a CLN3 transcript. Certain such compounds are useful for hybridizing to a CLN3 transcript, including but not limited to a CLN3 transcript in a cell. In certain embodiments, such hybridization results in modulation of splicing of the CLN3 transcript. In certain embodiments, such compounds are used to treat one or more symptoms associated with Batten Disease.

WO 2015/084884 A3

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US2014/068225

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>                  IPC(8) - C12N 15/113 (2015.01)                  CPC - C12N 15/113 (2015.01)                  According to International Patent Classification (IPC) or to both national classification and IPC</p>																													
<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols)                  IPC(8) - C12N 15/113 ; C12P 19/34 (2015.01)                  USPC - 536/24.1, 24.5 ; 514/44R, 44A</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                  CPC - A61K 31/7088 ; C12N 15/111, 15/113, 2320/33 ; C12P 19/34 (2015.11) (keyword delimited)</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  Orbit, Google Patents, Google Scholar                  Search terms used: CLN3, ceroid, lipofuscinosis, neuronal, oligonucleotide, polynucleotide, complementary, contiguous, intron, exon, NCL, Batten, DNA, mRNA</p>																													
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>WO 2013/066438 A2 (HARVARD COLLEGE) 10 May 2013 (10.05.2013) entire document</td> <td>1, 2, 5, 6, 8, 120-122</td> </tr> <tr> <td>---</td> <td></td> <td>-----</td> </tr> <tr> <td>Y</td> <td></td> <td>3, 4, 7</td> </tr> <tr> <td>Y</td> <td>WO 2013/118120 A2 (SEEDS LTD AB) 15 August 2013 (15.08.2013) entire document</td> <td>3</td> </tr> <tr> <td>Y</td> <td>WO 2013/020097 A1 (QUARK PHARMA) 07 February 2013 (07.02.2013)</td> <td>4</td> </tr> <tr> <td>Y</td> <td>MILLER et al. "The role of nonsense-mediated decay in neuronal ceroid lipofuscinosis," Hum Mol Genet, 28 March 2013 (28.03.2013), Vol. 22, No. 13, Pgs. 2723-2734. entire document</td> <td>7</td> </tr> <tr> <td>A</td> <td>MARTIN et al. "The sequence and analysis of duplication-rich human chromosome 16," Nature, 23 December 2004 (23.12.2004), Vol. 432, No. 7020, Pgs. 988-994. entire document</td> <td>1-8, 120-122</td> </tr> <tr> <td>A</td> <td>KOUSI et al. "Update of the mutation spectrum and clinical correlations of over 360 mutations in eight genes that underlie the neuronal ceroid lipofuscinoses," Hum Mutat. 16 November 2011 (16.11.2011), Vol. 33, No. 1, Pgs. 42-63. entire document</td> <td>1-8, 120-122</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	WO 2013/066438 A2 (HARVARD COLLEGE) 10 May 2013 (10.05.2013) entire document	1, 2, 5, 6, 8, 120-122	---		-----	Y		3, 4, 7	Y	WO 2013/118120 A2 (SEEDS LTD AB) 15 August 2013 (15.08.2013) entire document	3	Y	WO 2013/020097 A1 (QUARK PHARMA) 07 February 2013 (07.02.2013)	4	Y	MILLER et al. "The role of nonsense-mediated decay in neuronal ceroid lipofuscinosis," Hum Mol Genet, 28 March 2013 (28.03.2013), Vol. 22, No. 13, Pgs. 2723-2734. entire document	7	A	MARTIN et al. "The sequence and analysis of duplication-rich human chromosome 16," Nature, 23 December 2004 (23.12.2004), Vol. 432, No. 7020, Pgs. 988-994. entire document	1-8, 120-122	A	KOUSI et al. "Update of the mutation spectrum and clinical correlations of over 360 mutations in eight genes that underlie the neuronal ceroid lipofuscinoses," Hum Mutat. 16 November 2011 (16.11.2011), Vol. 33, No. 1, Pgs. 42-63. entire document	1-8, 120-122
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>																													
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed																		
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<p>Date of the actual completion of the international search 17 February 2015</p>		<p>Date of mailing of the international search report <b>31 MAR 2015</b></p>																											
<p>Name and mailing address of the ISA/US                  Mail Stop PCT, Attn: ISA/US, Commissioner for Patents                  P.O. Box 1450, Alexandria, Virginia 22313-1450                  Facsimile No. 571-273-3201</p>		<p>Authorized officer:                  Blaine R. Copenheaver                  PCT Helpdesk: 571-272-4300                  PCT OSP: 571-272-7774</p>																											

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/068225

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
- 2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
- 3.  Claims Nos.: 9-119, 123-225  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

- 1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
- 2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
- 3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
- 4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.