(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 April 2019 (18.04.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/073072 A1

(51) International Patent Classification:
C12N 15/10 (2006.01)

(21) International Application Number:
PCT/EP2018/078016

(22) International Filing Date:
15 October 2018 (15.10.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
17196317.6 13 October 2017 (13.10.2017) EP

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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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, 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.

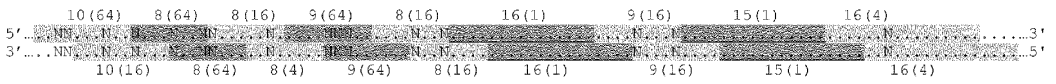
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*
— *with sequence listing part of description (Rule 5.2(a))*

(54) Title: A NOVEL METHOD FOR SYNTHESIS OF POLYNUCLEOTIDES USING A DIVERSE LIBRARY OF OLIGONUCLEOTIDES

FIGURE 1

B)



(57) Abstract: A method for synthesizing a target double stranded (ds) polynucleotide having a predefined sequence, comprising a) providing an oligonucleotide library within an array device, which comprises a diversity of oligonucleotide library members, wherein each of the library members has a different nucleotide sequence and is contained in a separate library containment in an aqueous solution, which diversity includes single stranded oligonucleotides (ss oligos) and double stranded oligonucleotides (ds oligos) with at least one overhang and covers at least 10.000 pairs of matching oligonucleotides, b) in a first step, transferring at least a first pair of matching oligonucleotides from said library into a first reaction containment using a liquid handler and assembling the matching oligonucleotides thereby obtaining a first reaction product comprising at least one overhang, c) in a second and further steps, transferring at least a second and further pairs of matching oligonucleotides from said library into a second and further reaction containments, respectively, using a liquid handler and assembling the matching oligonucleotides thereby obtaining a second and further reaction products each comprising at least one overhang, respectively, d) assembling said first, second and further reaction products in a predetermined workflow, thereby producing said target ds polynucleotide with an overhang, optionally followed by a finalization step to prepare blunt ends, wherein said pairs of matching oligonucleotides used in step b) and c) and assembly workflow are determined using an algorithm to produce said target ds polynucleotide.

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