

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
29 June 2023 (29.06.2023)



(10) International Publication Number
WO 2023/119252 A1

(51) International Patent Classification:

C12Q 1/6806 (2018.01) *C40B 50/06* (2006.01)
C12N 15/10 (2006.01) *G16B 20/00* (2019.01)
C12Q 1/68 (2018.01) *G16B 30/00* (2019.01)
C40B 40/02 (2006.01)

DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, ME, 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).

(21) International Application Number:

PCT/IB2022/062748

(22) International Filing Date:

23 December 2022 (23.12.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/293,711 24 December 2021 (24.12.2021) 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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE,
KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU,
LY, MA, MD, 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, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, CV,
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,

Published:

- with international search report (Art. 21(3))
- with sequence listing part of description (Rule 5.2(a))
- in black and white; the international application as filed
contained color or greyscale and is available for download
from PATENTSCOPE

WO 2023/119252 A1

(54) Title: COMPOSITIONS AND METHODS FOR IDENTIFICATION OF GENE FUSIONS

(57) Abstract: The present invention relates to compositions and methods for identification of gene fusions. More specifically, the present invention relates to compositions and methods for ligating single stranded polynucleotides of unknown sequence. The resulting sequencing library, with inserts derived from the set of PCR amplified adapter-ligated DNA molecules are then subjected to computational analysis that includes filtering and error correction steps for the purposes of identifying among this set, any target gene with atypical exon configuration, or target gene which has been fused with any other DNA sequence such as a partner gene in a fusion configuration. Such genomic structural rearrangements or fusion events are clinically actionable with targeted inhibitors.