



(43) International Publication Date
14 September 2017 (14.09.2017)

(51) International Patent Classification:
C12N 9/22 (2006.01) C12N 15/87 (2006.01)
C12N 15/11 (2006.01) C12Q 1/68 (2006.01)

(21) International Application Number:
PCT/US2017/021677

(22) International Filing Date:
9 March 2017 (09.03.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/306,504 10 March 2016 (10.03.2016) 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, DJ, 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, 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).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

— with sequence listing part of description (Rule 5.2(a))

(54) Title: TRANSPOSASE-MEDIATED IMAGING OF THE ACCESSIBLE GENOME

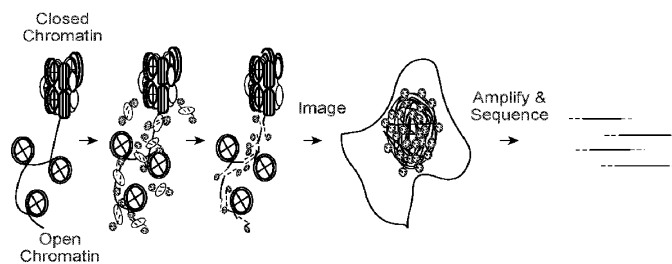


FIG. 1 a

(57) Abstract: Methods for labeling and imaging the accessible genome using a transposase are disclosed. In some embodiments, a bifunctional transposase complex or transposome is used to insert adaptors comprising chemical tags selectively at accessible sites in the genome where active regulatory DNA is located. Various chemical tags can be used for labeling DNA at insertion sites, including, for example, fluorescent dyes for fluorescence imaging, metal particles for electron microscopy or magnetic manipulation of DNA, isotopic labels, or biotin or other ligands, haptens, substrates, or inhibitors that are recognized by streptavidin, antibodies, enzymes, or receptors. Labeling DNA in this manner can be used to provide spatial information regarding the positioning of regulatory DNA in the genome and makes possible the imaging and sorting of cells based on the status of their regulatory DNA.