



- (51) **International Patent Classification:**
G06F 19/00 (2018.01)
- (21) **International Application Number:**
PCT/US2021/048910
- (22) **International Filing Date:**
02 September 2021 (02.09.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/075,009 04 September 2020 (04.09.2020) US
- (71) **Applicant:** 10X GENOMICS, INC. [US/US]; 6230 Stoneridge Mall Road, Pleasanton, California 94588-3260 (US).
- (72) **Inventors:** WANG, Li; c/o 10x Genomics, Inc., 6230 Stoneridge Mall Road, Pleasanton, California 94588-3260 (US).
- (US). KANG, Yiming; c/o Genomics, Inc., 6230 Stoneridge Mall Road, Pleasanton, California 94588-3260 (US).
- (74) **Agent:** NOVAK, Jason J.; Haynes and Boone, LLP, 2323 Victory Avenue, Ste. 700, Dallas, Texas 75219 (US).
- (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, IT, 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, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(54) **Title:** SYSTEMS AND METHODS FOR IDENTIFYING FEATURE LINKAGES IN MULTI-GENOMIC FEATURE DATA FROM SINGLE-CELL PARTITIONS

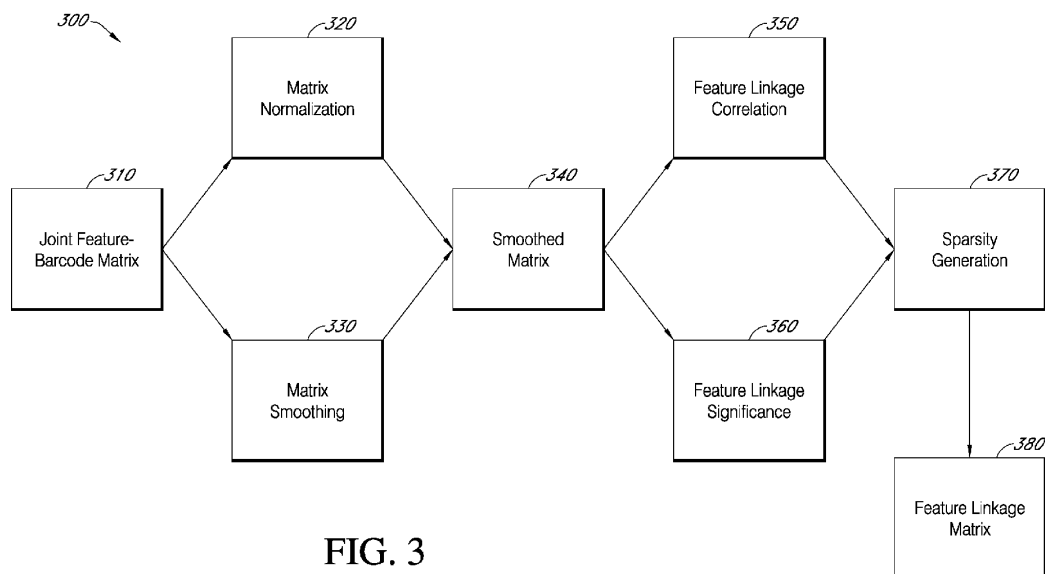


FIG. 3

(57) **Abstract:** Methods and systems for generating linkage correlations and linkage significances between a first genomic feature and a second genomic feature identified for each of a plurality of cells may be provided. For example, the method may comprise receiving a data matrix comprising a first genomic feature and a second genomic feature identified for each of a plurality of cells; smoothing the data matrix to generate a smoothed matrix; generating linkage correlations between the first genomic feature and second genomic feature identified for each of the plurality of cells in the data matrix; generating linkage significances using multiplication of a plurality of linkage matrices; and outputting the linkage correlations and linkage significances for each of the plurality of cells in the data matrix.

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:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*