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(71) **Applicant:** 10X GENOMICS, INC. [US/US]; 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US).

(72) **Inventors:** HAMEL, Jessica; c/o 10X Genomics, INC., 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US). SREENIVASA GOPALAN, Vijay Kumar; c/o 10X Genomics, INC., 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US). WANG, Li; c/o 10X Genomics, INC., 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US). MAHESHWARI, Arundhati Shamon; c/o 10X Genomics, INC., 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US). STAAB, Jasper; c/o 10X Genomics, INC., 6230 Stoneridge Mall Road, Pleasanton, CA 94588-3260 (US).

(74) **Agent:** LOVEJOY, Brett A. et al.; Morgan, Lewis & Bockius LLP, One Market, Spear Street Tower, San Francisco, CA 94105 (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,

(54) Title: SYSTEMS AND METHODS FOR JOINT INTERACTIVE VISUALIZATION OF GENE EXPRESSION AND DNA CHROMATIN ACCESSIBILITY

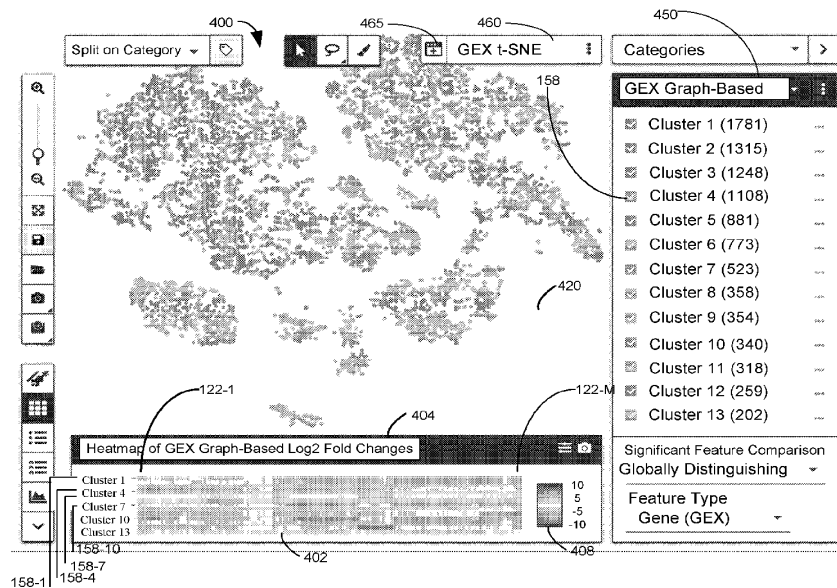


Figure 4A

(57) **Abstract:** Systems and methods for visualizing patterns in discrete attribute value datasets are provided. A dataset comprises a discrete attribute value for each gene in a plurality of genes, for each cell in a plurality of cells. The dataset further comprises ATAC counts for each ATAC peak in a plurality of peaks, for each of the cells. Cells are assigned cluster groups in a first plurality of cluster groups based on a first clustering of discrete attribute values for the genes across the cells. Cell are also assigned cluster groups in a second plurality of cluster groups based on a second clustering of ATAC fragment count values for the ATAC peaks across the cells. A projection of the cells uses one of the first or second cluster group assignments. There is indicated, for each cell within the projection, membership in the other of the first or second cluster group assignments.

[Continued on next page]

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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