

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 December 2020 (03.12.2020)



(10) International Publication Number
WO 2020/243075 A1

(51) International Patent Classification:
GHIC 13/04 (2006.01)

(21) International Application Number:
PCT/US2020/034515

(22) International Filing Date:
26 May 2020 (26.05.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/855,690 31 May 2019 (31.05.2019) US
62/855,616 31 May 2019 (31.05.2019) US

(71) Applicant: **ILLUMINA, INC.** [US/US]; 5200 Illumina Way, San Diego, CA 92122 (US).

(72) Inventors: **CIESLA, Craig**; 5200 Illumina Way, San Diego, CA 92122 (US). **AGAH, Ali**; 5200 Illumina Way, San Diego, CA 92122 (US). **HONG, Stanley**; 5200 Illumina Way, San Diego, CA 92122 (US). **KHURANA, Tarun**; 5200 Illumina Way, San Diego, CA 92122 (US). **KARUNAKARAN, Aathavan**; 5200 Illumina Way, San Diego, CA 92122 (US). **EMADI, Arvin**; 5200 Illumina Way, San Diego, CA 92122 (US). **SIU, Merek**; 5200 Illumina Way, San Diego, CA 92122 (US).

(74) Agent: **ULMER, Andrew, B.** et al.; Frost Brown Todd LLC, 3300 Great American Tower, 301 East Fourth Street, Cincinnati, OH 45202 (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, 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, 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).

(54) Title: STORAGE DEVICE, SYSTEM, AND METHOD

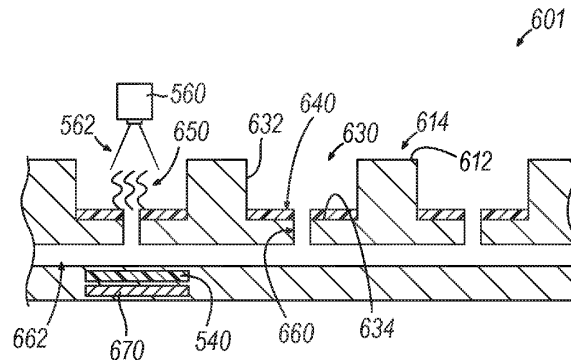


FIG. 10

(57) Abstract: A system writes input data to a storage device as machine-written polynucleotides; and reads machine written polynucleotides from the storage device as output data. The storage device includes a flow cell including a plurality of storage wells in which machine written polynucleotides may be stored. The storage device may include a set of electrodes corresponding to the storage wells that allow for selective interactions with wells across the surface of a flow cell. Operation of the storage device may include receiving a read request associated with a particular location in the storage device, creating a copy of a nucleotide sequence located at the particular location in the storage device, transferring the copy of the nucleotide sequence to a read location, and reading the copy of the nucleotide sequence at the read location.

[Continued on next page]

WO 2020/243075 A1

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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