

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
23 September 2021 (23.09.2021)



(10) International Publication Number
WO 2021/189012 A1

(51) International Patent Classification:

A61N 1/32 (2006.01) A61N 1/20 (2006.01)
A61N 1/04 (2006.01) A61N 1/30 (2006.01)
A61N 1/18 (2006.01)

(21) International Application Number:

PCT/US2021/023344

(22) International Filing Date:

19 March 2021 (19.03.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/992,513 20 March 2020 (20.03.2020) US

(71) Applicant: INOVIO PHARMACEUTICALS, INC.

[US/US]; 660 W. Germantown Pike, Suite 110, Plymouth Meeting, PA 19462 (US).

(72) Inventors: FISHER, Paul; 35769 Asturian Way, Fallbrook, CA 92028 (US). KEMME, Andrea; 17076 Mon-

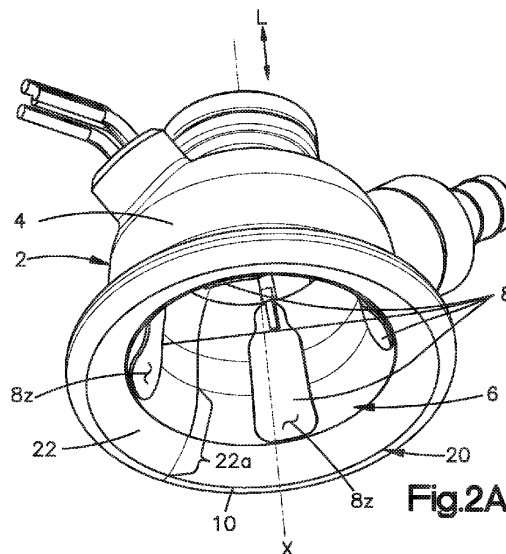
tura Drive, San Diego, CA 92128 (US). SCHADE, Eric; 4277 Karesue Ave., San Diego, CA 92122 (US). MC-COY, Jay; 43845 Calle Balmez, Temecula, CA 92592 (US). BRODERICK, Kate; 5806 Ridgemoor Drive, San Diego, CA 92120 (US). GENEROTTI, Alison A.; 22 Waterway Rd., Ocean City, NJ 08226 (US).

(74) Agent: LUCCHI, Joseph et al.; Baker & Hostetler, LLP, 2929 Arch Street, Cira Centre, 12th Floor, Philadelphia, PA 19104-2891 (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,

(54) Title: VACUUM-ASSISTED ELECTROPORATION DEVICES, AND RELATED SYSTEMS AND METHODS



(57) Abstract: A device for vacuum-assisted in vivo electroporation of tissue includes a housing that defines a chamber and at least one opening into the chamber. A port extends through the housing, is remote from the at least one opening, and is connectable to a vacuum source. The port is configured to communicate vacuum pressure from the vacuum source to the chamber. A plurality of electrodes are positioned within the chamber and are configured to deliver one or more electroporation pulses to a targeted portion of tissue extending through the opening and held in the chamber responsive to the vacuum pressure.

[Continued on next page]

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).

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))*