

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 May 2010 (20.05.2010)

PCT

(10) International Publication Number
WO 2010/057063 A3

(51) International Patent Classification:

A61N 1/36 (2006.01) A61N 1/02 (2006.01)
A61N 1/04 (2006.01)

(21) International Application Number:

PCT/US2009/064487

(22) International Filing Date:

13 November 2009 (13.11.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/114,441 13 November 2008 (13.11.2008) US

(71) Applicant (for all designated States except US): **PROTEUS BIOMEDICAL, INC.** [US/US]; 2600 Bridge Parkway, Suite 101, Redwood City, California 94065 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **ZDEBLICK, Mark** [US/US]; 300 La Mesa Drive, Portola Valley, California 94028 (US).

(74) Agent: **OPPEDAHL, Carl**; Bozicevic, Field & Francis LLP, 1900 University Avenue, Suite 200, East Palo Alto, CA 94303 (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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

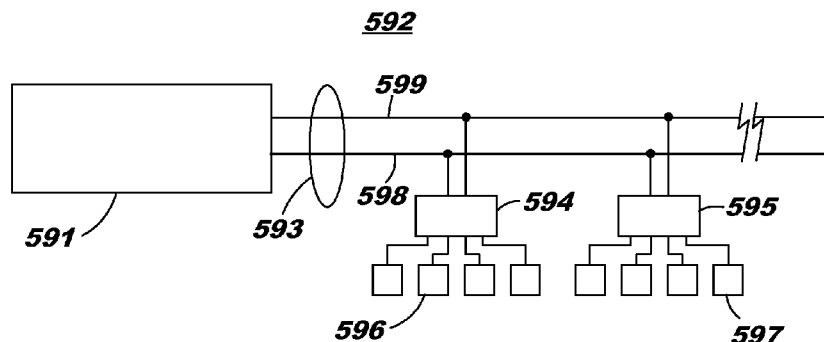
Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
19 August 2010

(54) Title: PACING AND STIMULATION SYSTEM, DEVICE AND METHOD

FIG. 9



(57) Abstract: System, device and method of variable pacing and stimulation are provided. In one example device, one or more lead integrated circuits may programmably control one or more variability parameters. One or more electrodes may provide electrical stimulation. Each electrode may be individually addressable by at least one of the lead integrated circuits and controlled by at least one variability parameter. Electrodes may be intentionally shorted together during time intervals that fall between times of stimulus, so as to dissipate potentials that might otherwise persist and cause electrode degradation.

WO 2010/057063 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/064487**A. CLASSIFICATION OF SUBJECT MATTER***A61N 1/36(2006.01)i, A61N 1/04(2006.01)i, A61N 1/02(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61N 1/36; A61B 5/00; A61N 1/00; A61N 1/04; A61N 1/05

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: multiplex, integrated circuit(IC), electrode array, lead

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006-0058588 A1 (MARK J. ZDEBLICK) 16 March 2006 See whole document	1-3, 6-9, 13-16 , 19-22, 26
A	US 2008-0039916 A1 (OLIVIER COLLIU et al.) 14 February 2008 See Fig.1, paragraphs 27-32	1-47
A	US 2008-0077186 A1 (TODD THOMSON et al.) 27 March 2008 See paragraphs 49-51, 56, 61, 81, 82, claims, figs. 1-10	1-47
A	US 2008-0046059 A1 (PAUL E. ZAREMBO et al.) 21 February 2008 See paragraphs 37-39, figs. 2A, 2B	1-47
A	US 2005-0070982 A1 (KENNETH, T. HERUTH et al.) 31 March 2005 See paragraphs 21, 24, 26, figs. 2, 3	1-47

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 JUNE 2010 (23.06.2010)

Date of mailing of the international search report

24 JUNE 2010 (24.06.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

OH Seung Jae

Telephone No. 82-42-481-8469



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/064487

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006-0058588 A1	16.03.2006	EP 1799101 A2	27.06.2007
		EP 1799101 A4	19.11.2008
		US 2007-0173896 A1	26.07.2007
		US 2007-0173897 A1	26.07.2007
		US 2007-0179569 A1	02.08.2007
		US 2007-0185537 A1	09.08.2007
		US 2007-0185548 A1	09.08.2007
		US 2007-0185549 A1	09.08.2007
		US 2008-0027289 A1	31.01.2008
		US 7214189 B2	08.05.2007
		US 7637867 B2	29.12.2009
		US 7640060 B2	29.12.2009
		US 7713194 B2	11.05.2010
		US 7713195 B2	11.05.2010
		WO 2006-029090 A2	16.03.2006
		WO 2006-029090 A3	21.12.2006
US 2008-0039916 A1	14.02.2008	None	
US 2008-0077186 A1	27.03.2008	None	
US 2008-0046059 A1	21.02.2008	None	
US 2005-0070982 A1	31.03.2005	WO 2005-032654 A1	14.04.2005