



- (51) International Patent Classification:
A61K 31/728 (2006.01)
- (21) International Application Number:
PCT/US2013/049114
- (22) International Filing Date:
2 July 2013 (02.07.2013)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/667,170 2 July 2012 (02.07.2012) US
- (71) Applicant: NORTHEASTERN UNIVERSITY [US/US];
360 Huntington Avenue, 960 Renaissance Park, Boston,
MA 02115-5000 (US).
- (72) Inventors: AMIJI, Mansoor, M.; 195 Richie Road, Attle-
boro, Massachusetts 02703 (US). IYER, Arun, K.; 165
Hemenway Street, Apt. #11, Boston, Massachusetts 02115
(US).
- (74) Agents: SCOZZAFAVA, Mary, Rose et al.; Wilmer Cut-
ler Pickering Hale and Dorr LLP, 7 World Trade Center,
250 Greenwich Street, New York, NY 10007 (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, 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, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, 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).

Published:
— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: BIODEGRADABLE POLYMERIC BUFFERS

HA-1,8 diamino octane (C₈N₂) pKa~5.0

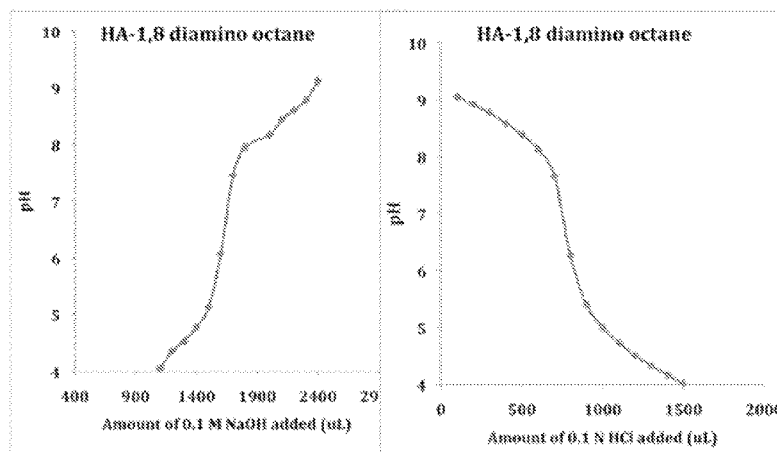


Fig. 17. pKa of hyaluronic acid polymer modified with 1,8 diamino octane (HA-ODA).

(57) Abstract: Biodegradable pH altering polymers are disclosed. Its accordance with certain aspects, the biodegradable pH altering polymers may be used to alter the pH of a microenvironment in accordance with other aspects, the biodegradable pH altering polymers are utilized for targeted drug and gene delivery and their spontaneous release its intracellular sites of interest.

WO 2014/008283 A3



— *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:
27 February 2014

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2013/049114

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A61K 31/728 (2013.01) USPC - 424/490 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) IPC(8) - A61K 9/00, 9/51, 31/00, 31/713, 31/728, 31/74, 48/00; C08G 63/685 (2013.01) USPC - 424/400, 423, 426, 489, 490, 493; 514/1.1; 528/341 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - A61K 9/00, 9/51, 31/00, 31/713, 31/728, 31/74, 48/00; C08G 63/685 (2013.01) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Orbit, Google Patents, Google Scholar		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0065358 A1 (LANGER et al) 15 March 2012 (15.03.2012) entire document	1-4, 7, 10, 11, 14
---		-----
Y		5, 6, 8, 9, 12, 13, 15-26
Y	US 2010/0144035 A1 (OH et al) 10 June 2010 (10.06.2010) entire document	5, 6, 8, 9, 15, 23, 24
Y	US 2011/0244048 A1 (AMIJI et al) 06 October 2011 (06.10.2011) entire document	12, 13, 16-18
Y	US 2006/0171989 A1 (PRESCOTT et al) 03 August 2006 (03.08.2006) entire document	19-26
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 another 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 17 December 2013		Date of mailing of the international search report 30 DEC 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774