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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 January 2009 (15.01.2009)

PCT

(10) International Publication Number
WO 2009/009054 A1

(51) International Patent Classification:
A61K 9/127 (2006.01) *A61K 39/12* (2006.01)

(21) International Application Number:
PCT/US2008/008394

(22) International Filing Date: 9 July 2008 (09.07.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/929,685 9 July 2007 (09.07.2007) US

(71) Applicant *(for all designated States except US)*: **GEORGETOWN UNIVERSITY** [US/US]; 37th and O Streets NW, Washington, DC 20057 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **CHANG, Esther, H.** [US/US]; 10244 Democracy Boulevard, Potomac, MD 20854 (US). **PIROLLO, Kathleen, F.** [US/US]; 547 Anderson Avenue, Rockville, MD 20850 (US).

(74) Agents: **DEL BUONO, Brian, J.** et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., 1100 New York Avenue N.W., Washington, DC 20005-3934 (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, 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, 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, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

WO 2009/009054 A1

(54) **Title:** METHODS FOR GENERATING IMMUNE RESPONSE USING CATIONIC-LIPOSOME-MEDIATED NUCLEIC ACID DELIVERY

(57) **Abstract:** The present invention is in the fields of drug delivery, and specifically, cationic liposome-based vaccines. In embodiments, this invention provides methods of making ligand-targeted (e.g., antibody-or antibody fragment-targeted) liposomes useful for the delivery of molecules to induce immune responses against viral antigens or to treat or prevent viral diseases. The specificity of the delivery system is derived from the targeting ligands.