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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 September 2011 (29.09.2011)

PCT

(10) International Publication Number
WO 2011/120045 A1

(51) International Patent Classification:
A61K 48/00 (2006.01)

(21) International Application Number:
PCT/US2011/030205

(22) International Filing Date:
28 March 2011 (28.03.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/318,232 26 March 2010 (26.03.2010) US

(71) Applicant *(for all designated States except US)*: **EMERGENT PRODUCT DEVELOPMENT GAITHERSBURG INC.** [US/US]; 300 Professional Drive, Gaithersburg, Maryland 20879 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **GUINA, Tina** [US/US]; 10407 Barrie Ave., Silver Spring, Maryland 20902 (US). **LACY, Michael** [US/US]; 26946 Ridge Road, Damascus, Maryland 20872 (US). **SKIADOPOULOS, Mario** [US/US]; 8303 Aqueduct Road, Potomac, Maryland 20854 (US). **MYTLE, Nutan** [IN/US]; 133035 Darnestown Road, Gaithersburg, Maryland 20878 (US).

(74) Agents: **HAANES, Elizabeth J.** et al.; Sterne Kessler Goldstein & Fox, P.L.L.C., 1100 New York Avenue, NW, Washington, District of Columbia 20005 (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, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

Published:

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

— *with sequence listing part of description (Rule 5.2(a))*

WO 2011/120045 A1

(54) **Title**: ECTODOMAINS OF INFLUENZA MATRIX 2 PROTEIN, EXPRESSION SYSTEM, AND USES THEREOF

(57) **Abstract**: The present invention provides a polynucleotide, polypeptide, recombinant modified vaccinia virus Ankara (rMVA) and related vaccine compositions and methods useful in the prevention and treatment of an influenza viral infection. Provided is an isolated polynucleotide encoding multiple copies of M2 infuenza ectodomain peptides or rMVA comprising the polynucleotide. Also provided are methods for inducing an immune response to a subject against an influenza virus or for treating a disease or symptom caused by or resulting from infection with an influenza virus.