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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 September 2013 (06.09.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/130132 A1

(51) **International Patent Classification**:
C07K 14/11 (2006.01) ***A61K 39/145*** (2006.01)
C12N 7/00 (2006.01)

(21) **International Application Number**:
PCT/US2012/058807

(22) **International Filing Date**:
4 October 2012 (04.10.2012)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
61/545,055 7 October 2011 (07.10.2011) US

(71) **Applicant**: **MEDIMMUNE, LLC** [US/US]; One Medimmune Way, Gaithersburg, MD 20878 (US).

(72) **Inventors**: **JIN, Hong**; 22385 Santa Paula Avenue, Cupertino, CA 95014 (US). **CHEN, Zhongying**; 10490 Davison Avenue, Cupertino, CA 95014 (US).

(74) **Agents**: **DICKINSON, Kari, A.** et al.; Grant Anderson LLP, c/o PortfolioIP, P.O. Box 52050, Minneapolis, MN 55402 (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, 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, 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, ML, MR, NE, SN, TD, TG).

Published:

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

WO 2013/130132 A1

(54) **Title**: INFLUENZA HEMAGGLUTININ VARIANTS

(57) **Abstract**: The technology relates in part to modified influenza viruses useful for vaccine development. Polypeptides, polynucleotides, methods, compositions, and vaccines comprising influenza hemagglutinin and neuraminidase variants are provided.