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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 August 2013 (01.08.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/112942 A1

(51) International Patent Classification:
A61K 38/19 (2006.01) *C12N 15/86* (2006.01)
A61K 31/00 (2006.01) *G01N 33/574* (2006.01)

(21) International Application Number:
PCT/US2013/023304

(22) International Filing Date:
25 January 2013 (25.01.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/590,441 25 January 2012 (25.01.2012) US
61/637,191 23 April 2012 (23.04.2012) US

(71) Applicants: **DNA TRIX, INC.** [US/US]; One Greenway Plaza, Suite 930, Houston, TX 77019 (US). **MD ANDERSON CANCER CENTER** [US/US]; 1515 Holcombe Blvd, Houston TX 77030 (US).

(72) Inventors: **TUFARO, Frank**; 3028 Paseo Cielo, Box 1555, Rancho Santa Fe, CA 92067 (US). **CONRAD, Charles**; 15911 Harwick Drive, Spring, TX 77379 (US). **FUEYO-MARGARETO, Juan**; 5519 Edith Street, Houston, TX 77081 (US). **LANG, Frederick**; 6519 Brompton Road, Houston, TX 77005 (US). **GOMEZ-MANZANO, Candelaria**; 5519 Edith Street, Houston, TX 77081 (US). **YUNG, W.k., Alfred**; 4141 Byron Street, Houston, TX 77005 (US). **HIMBERGER, Amy**; 412 East 7th, Houston, TX 77007 (US).

(74) Agents: **CLOUGH, David, W.** et al.; Morgan, Lewis & Bockius LLP, Attention: Docketing Department, 1111 Pennsylvania Avenue, N.W., Washington, DC 20004 (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).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) Title: BIOMARKERS AND COMBINATION THERAPIES USING ONCOLYTIC VIRUS AND IMMUNOMODULATION

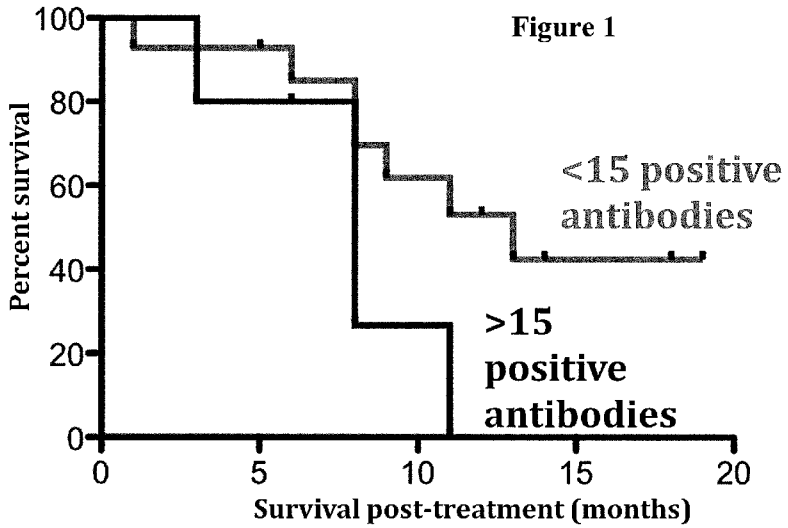


Figure 1

(57) Abstract: The invention disclosed herein describes biomarkers useful for prognosis, selection and monitoring of oncolytic virus therapy for patients with various types of cancer. In particular, the present invention provides identification of proteins whose expression patterns are strongly predictive of the outcome of oncolytic virus therapy in a patient with cancer. The present invention provides a method for identifying and selecting cancer patients who are likely to be non-responsive to onocolytic virus therapy. These patients can be co-administered an agent that stimulates a cell-mediated immune response in the patient with the oncolytic virus or can be administered a therapy other than oncolytic virus therapy.

WO 2013/112942 A1

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))*