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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 March 2013 (21.03.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/040383 A1

(51) International Patent Classification:
C12N 15/74 (2006.01)

(21) International Application Number:
PCT/US2012/055469

(22) International Filing Date:
14 September 2012 (14.09.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/535,893 16 September 2011 (16.09.2011) US

(71) Applicant *(for all designated States except US)*: **GENOMATICA, INC.** [US/US]; 10520 Wateridge Circle, San Diego, CA 92121 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BURK, Mark, J.** [US/US]; 10520 Wateridge Circle, San Diego, CA 92121 (US). **OSTERHOUT, Robin, E.** [US/US]; 10520 Wateridge Circle, San Diego, CA 92121 (US).

(74) Agents: **GAY, David, A.** et al.; JONES DAY, 222 East 41st Street, New York, NY 10017-6702 (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))*

(54) **Title**: MICROORGANISMS AND METHODS FOR PRODUCING ALKENES

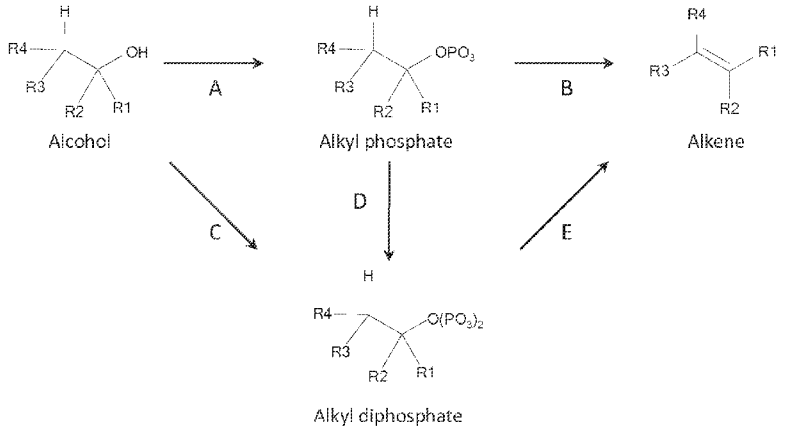


Figure 1

(57) **Abstract**: Non-naturally occurring microbial organisms are disclosed containing an alkene pathway having at least one exogenous nucleic acid encoding an alkene pathway enzyme expressed in a sufficient amount to convert an alcohol to an alkene. The disclosure additionally provides methods of using such microbial organisms to produce an alkene, by culturing a non-naturally occurring microbial organism containing an alkene pathway as described herein under conditions and for a sufficient period of time to produce an alkene.

WO 2013/040383 A1