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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 May 2011 (26.05.2011)

PCT

(10) International Publication Number
WO 2011/062615 A1

(51) International Patent Classification:
A61K 39/385 (2006.01) *A61K 39/108* (2006.01)
A61K 39/02 (2006.01) *C07K 1/00* (2006.01)

(21) International Application Number:
PCT/US2010/002980

(22) International Filing Date:
16 November 2010 (16.11.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/272,931 19 November 2009 (19.11.2009) US

(71) Applicant *(for all designated States except US)*: **GLYCOVAXYN AG** [CH/CH]; Grabenstrasse 3, CH-8952 Schlieren (CH).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **WACKER, Michael** [CH/CH]; Dahlienstrasse 17, CH-8103 Unterengstringen (CH). **WAECHTER, Charles** [US/US]; 605 Raintree Road, Lexington, KY 40502 (US).

(74) Agent: **PAREZO, Jessica, L.**; Covington & Burling LLP, 1201 Pennsylvania Avenue, N.W., Washington, DC 20004-2401 (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))*

— *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))*

(54) **Title**: BIOSYNTHETIC SYSTEM THAT PRODUCES IMMUNOGENIC POLYSACCHARIDES IN PROKARYOTIC CELLS

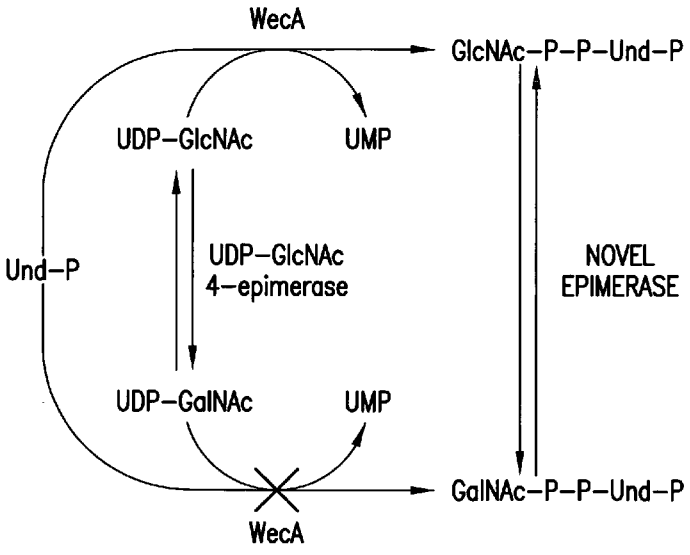


FIG.2

(57) **Abstract**: The invention is directed to bioconjugate vaccines comprising *N*-glycosylated proteins. Further, the present invention is directed to a recombinant prokaryotic biosynthetic system comprising nucleic acids encoding an epimerase that synthesizes an oligo- or polysaccharide having *N*-acetylgalactosamine at the reducing terminus. The invention is further directed to *N*-glycosylated proteins containing an oligo- or polysaccharide having *N*-acetylgalactosamine at the reducing terminus and an expression system and methods for producing such *N*-glycosylated proteins.

WO 2011/062615 A1