

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

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
14 November 2024 (14.11.2024)



(10) International Publication Number
WO 2024/231217 A1

(51) International Patent Classification:

C12N 9/10 (2006.01) *C12R 1/40* (2006.01)
C12N 15/52 (2006.01) *C12P 7/62* (2022.01)
C12N 1/20 (2006.01) *C12P 19/44* (2006.01)

MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(21) International Application Number:

PCT/EP2024/062077

(22) International Filing Date:

02 May 2024 (02.05.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

23172836.1 11 May 2023 (11.05.2023) EP

(71) Applicant: **EVONIK OPERATIONS GMBH** [DE/DE];
Rellinghauser Strasse 1-11, 45128 Essen (DE).

(72) Inventors: **SCHAFFER, Steffen**; Antoniusstr. 19, 45699 Herten (DE). **WESSEL, Mirja**; Knappenstrasse 17, 44799 Bochum (DE). **WENK, Hans Henning**; Westminsterstraße 47, 45470 Mülheim an der Ruhr (DE). **OLFERT, Maik**; Konrad-Adenauer-Str. 26, 45711 Datteln (DE).

(74) Agent: **EVONIK PATENT ASSOCIATION**; c/o Evonik Industries AG, Function Legal - IP Management, Bau 1042A, PB15, Paul-Baumann-Strasse 1, 45772 Marl (DE).

(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, 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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

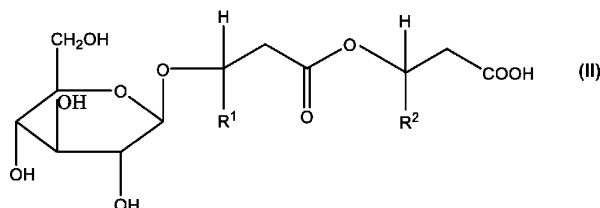
Declarations under Rule 4.17:

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

Published:

— with international search report (Art. 21(3))
— with sequence listing part of description (Rule 5.2(a))

(54) Title: GLUCOLIPID PRODUCTION



(57) Abstract: The present invention relates to a microbial cell for producing at least one lipid with general formula (II) from at least one carbon substrate, wherein R^1 and R^2 independently of one another comprises identical or different organic radicals each with 5 to 13 carbon atoms, wherein the cell is a non-pathogenic cell that is genetically modified to increase the heterologous expression relative to the wild-type cell of: - Enzyme E_1 a 3-(3-hydroxyalkanoyloxy)alkanoic acid (HAA) synthase comprising SEQ ID NO: 1, SEQ ID NO: 7, SEQ ID NO: 11, SEQ ID NO: 15 or a variant thereof, wherein the variant comprises 60% sequence identity to SEQ ID NO: 1, 7, 11 or 15; and - Enzyme E_2 a glycosyltransferase (EC 2.4) comprising SEQ ID NO: 2, SEQ ID NO: 8, or SEQ ID NO: 12, or a variant thereof, wherein the variant comprises 60% sequence identity to SEQ ID NO: 2, 8 or 12.



WO 2024/231217 A1