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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 May 2012 (10.05.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/061331 A3

(51) International Patent Classification:
C12N 1/15 (2006.01) *C12R 1/77* (2006.01)
C12P 23/00 (2006.01)

(21) International Application Number:
PCT/US2011/058700

(22) International Filing Date:
1 November 2011 (01.11.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/408,679 1 November 2010 (01.11.2010) US

(71) Applicant *(for all designated States except US)*: **NOVOZYMES A/S** [DK/DK]; Krogshoejvej 36, DK-2880 Bagsvaerd (DK).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **HOHN, Thomas, M.** [US/US]; 102 Blakely Drive, Chapel Hill, NC 27517 (US).

(74) Agent: **STARNES, Robert, L.**; Novozymes Biotech, Inc., 1445 Drew Avenue, Davis, CA 95618 (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, 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, 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))*

— *with sequence listing part of description (Rule 5.2(a))*

(88) Date of publication of the international search report:
26 July 2012

(54) Title: FILAMENTOUS FUNGI AND METHODS FOR PRODUCING ISOPRENOIDS

(57) Abstract: The present invention relates to the production of a isoprenoid products from a lignocellulosic feedstock. Specifically at least triple mutant of filamentous fungi having the isoprenoid pathway results in production of isoprenoid products in commercial quantities. One embodiment of the invention relates to producing the isoprenoid products at the site of the lignocellulosic feedstock to reduce costs of shipping the feedstock.

WO 2012/061331 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/058700

A. CLASSIFICATION OF SUBJECT MATTER

C12N 1/15(2006.01)i, C12P 23/00(2006.01)i, C12R 1/77(2006.01)n

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C12N 1/15; C07H 21/04; C12N 15/31

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: trichothecene, isoprenoid, trichodiene synthease, Tri5 gene, Tri6, Tri10, terpene synthase, filamentous fungi, Fusarium.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KYE-YONG SEONG et al. "Global gene regulation by Fusarium transcription factors Tri6 and Tri10 reveals adaptations for toxin biosynthesis." In: Molecular Microbiology. Published online 17 March 2009, Vol.72(2), pp.354-367, ISSN 0950-382X(p), ISSN 1365-2958(e). See the whole document.	1-29
A	ANDREW W. PEPLOW et al. "Identification of new genes positively regulated by Tri10 and a regulatory network for trichothecene Mycotoxin production." In : Applied and Environmental Microbiology. May 2003, Vol.69(5), pp.2731-2736, ISSN 0099-2240(p), ISSN 1098-5336(e). See the whole document.	1-29
A	ROBERT H. PROCTOR et al. "Tri6 encodes an unusual zinc finger protein involved in regulation of trichothecene biosynthesis in Fusarium sporotrichioides." In: Applied and Environmental Microbiology. May 1995, Vol.61(5), pp.1923-1930, ISSN 0099-2240(p), ISSN 1098-5336(e). See the whole document.	1-29
A	US 6696282 B2 (JAMES D. JONES et al.) 24 February 2004 See the whole document.	1-29

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 MAY 2012 (30.05.2012)	**30 MAY 2012 (30.05.2012)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Heo, Joo-Hyung Telephone No. 82-42-481-8150

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/058700

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JAYANAND BODDU et al. "Transcriptome analysis of trichothecene-induced gene expression in barley." In: Molecular Plant-Microbe Interactions. November 2007, Vol.20(11), pp.1364-1375, ISSN 0894-0282. See the whole document.	1-29
PA	WO 2011-017549 A2 (DORSAN BIOFUELS, INC.) 10 February 2011 See the whole document.	1-29

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/058700

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6696282 B2	24.02.2004	AU 2000-61147 A1	13.02.2001
		US 2003-0022373 A1	30.01.2003
		US 6184000 B1	06.02.2001
		US 6372479 B1	16.04.2002
		WO 01-07633 A1	01.02.2001
WO 2011-017549 A2	10.02.2011	WO 2011-017549 A3	07.07.2011