



(43) International Publication Date
29 January 2015 (29.01.2015)

(10) International Publication Number
WO 2015/011285 A3

- (51) **International Patent Classification:**
C12N 9/42 (2006.01)
- (21) **International Application Number:**
PCT/EP2014/066106
- (22) **International Filing Date:**
25 July 2014 (25.07.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
13306085.5 26 July 2013 (26.07.2013) EP
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- (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, IR, IS, JP, KE, KG, 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, SA,
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,
KM, 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:**
22 October 2015

(54) **Title:** NOVEL VARIANT TRICHODERMA REESEI ENDOGLUCANASES

(57) **Abstract:** The present invention provides *T. reesei* endoglucanase I variants exhibiting improved cellulase and/or xylanase activity, in particular at 30°C and/or pH 6. These variants are particularly useful in industrial processes comprising simultaneous de-gradation of cellulosic biomass into monomeric sugars and fermentation of said sugars, for example to produce ethanol.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2014/066106

A. CLASSIFICATION OF SUBJECT MATTER
 INV. C12N9/42
 ADD.

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

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2009 201425 A (INST NAT COLLEGES TECH JAPAN; UNIV NAGAOKA TECHNOLOGY) 10 September 2009 (2009-09-10) the whole document	1-15
X	WO 2012/036810 A2 (UNIV CALIFORNIA [US]; CHOKHAWALA HARSHAI AKSHAY [US]; KIM TAE-WAN [US]) 22 March 2012 (2012-03-22) the whole document	1,9-15
X	JP H07 51071 A (ARCO LTD) 28 February 1995 (1995-02-28) the whole document	1,9-15



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

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"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

4 September 2015

Date of mailing of the international search report

10/09/2015

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2014/066106

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15(partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15(partially)

Endoglucanase I variant comprising a sequence having at least 96% identity to SEQ.ID.NO 3 and comprising at least at position E117 a substitution

2. claims: 1-15(partially)

Endoglucanase I variant comprising a sequence having at least 96% identity to SEQ.ID.NO. 3 and comprising at least at position D241 a substitution

3. claims: 1-15(partially)

Endoglucanase I variant comprising a sequence having at least 96% identity to SEQ.ID.NO. 3 and comprising at least at position T7 a substitution

4. claims: 1-15(partially)

Endoglucanase I variant comprising a sequence having at least 96% sequence identity to SEQ.ID.NO. 3 and comprising at least at position M91 a substitution

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2014/066106

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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