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Declarations under Rule 4.17:

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

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))*

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

[Continued on next page]

(54) Title: MODULATING LIGNIN IN PLANTS

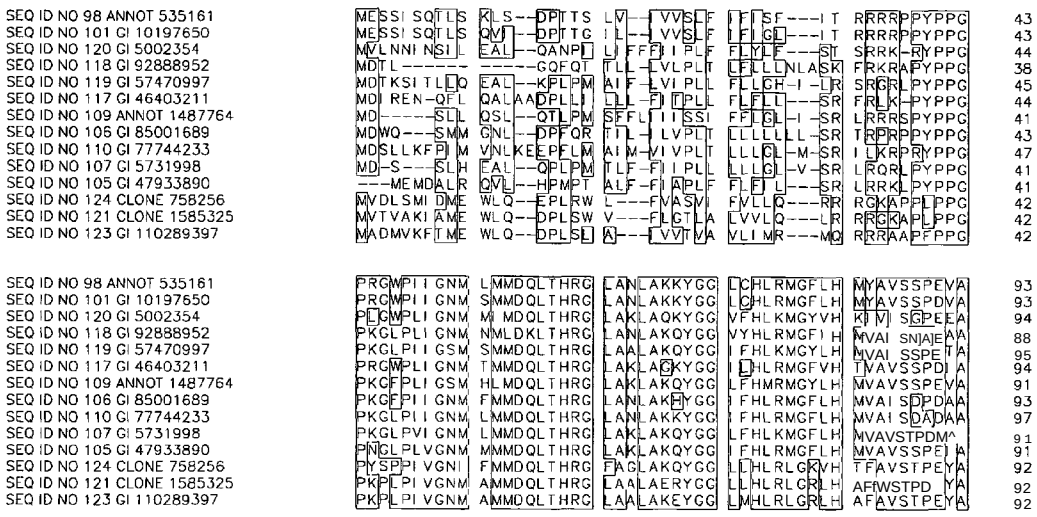

Figure IA

(57) Abstract: Materials and methods for modulating (e.g., increasing or decreasing) lignin content in plants are disclosed. For example, nucleic acids encoding lignin-modulatin polypeptides are disclosed as well as methods for using such nucleic acids to generate transgenic plants having a modulated lignin content.

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— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

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14 August 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/022737

A. CLASSIFICATION OF SUBJECT MATTER

*C12N **15/29(2006.01)1***

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)

IPC 8 AOlH 1/00, C12N 5/04, C12N 15/82, C12N 5/10, C12N 15/10

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 since 1975
Japanese Utility Models and Applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS, WPI, USPTO, PAJ, CAPLUS(STN), INSPECT "exogenous nucleic acid, regulatory region, ligmn-modulating polypeptide, plant cell, ligmn, plant, interfering RNA, promoter, cellulose biosynthesis promoter, preferential promoter, xylem, et al "

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category'ᵏ	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 6610908 Bl (Clinton, C S and West L, IN, US) 26 Aug 2003 - Columns 1-9, 14-16, 21-22, Figs 8, 10, Table 3-5, Example 5, 7	1-1 1, 13, 14, 16-23, 26, 27, 33-44, 46-50
Y		15, 45
A		60, 6 1
Y	US 6831208 Bl (Vincent, L C C , et al , US) 14 Dec 2004 - see the sequence	15,45
A		1-1 1, 13, 14, 16-23, 26, 27, 33-44, 46-50, 60, 6 1
X	NCBI sequence database accession no AJ010324, GI 6688936, 7 Jan 2000 - see the sequence	60
A		1-1 1, 13-23, 26, 27, 33-50, 6 1

☒ 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
10 JUNE 2008 (10 06 2008)	10 JUNE 2008 (10.06.2008)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No 82-42-472-7140

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KIM Kee-Yeun
Telephone No 82-42-481-8387

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/022737

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 12, 24, 25, 28, 29-32, 51-59, 62-65
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

- see the extra sheet

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. Ill 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

1 ☐ As all required addtional 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 fee, this Authority did not invite payment of any additional fee

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

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

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/022737

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	NCBI sequence database accession no CAB65335, GI 6688937, 7 Jan 2000 - see the sequence	61
A		1-11, 13-23, 26, 27, 33-50, 60

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/022737

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6610908 B1	26.08.2003	AU 1997-37332 B2	10.02.1998
		BR 9710871 A	17.08.1999
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US 6831208 B1	14.12.2004	AU 1999-14024 A1	31.05, 1999
		BR 9814154 A	13.11. 2001
		CA 2309337 AA	20.05, 1999
		EP 1034283 A2	13.09, 2000
		NZ 504395 A	31.01, 2003
		US 6455762	24.09, 2002
		US 6831208	14.12, 2004
		US 2003-172395A 1	11.09, 2003
		US 6969784 BB	29.11, 2005
		WO 99-24561 A2	20.05, 1999
		ZA 9810305 A	20.10, 2000

continuation of box II

- Claims 12, 24, 25, 28, 29-32, 51-59 and 62-65 are directed at or refer to an exogenous nucleic acid (a second lignin-modulating polypeptide, second regulatory region, complementary to nucleic acid encoding a lignm-modulating polypeptide, HMM bit score, interfering RNA) without limiting the nucleic acid and are considered too broad and so inadequately supported by the description that no meaningful search could be made