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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 March 2008 (06.03.2008)

PCT

(10) International Publication Number
WO 2008/028115 A3

(51) International Patent Classification:
C12N 15/82 (2006.01) *A01H 5/00* (2006.01)

(21) International Application Number:
PCT/US2007/077361

(22) International Filing Date: 31 August 2007 (31.08.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/841,519 31 August 2006 (31.08.2006) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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*

(88) Date of publication of the international search report:
19 June 2008

WO 2008/028115 A3

(54) Title: METHODS FOR PRODUCING TRANSGENIC PLANTS

(57) Abstract: A method of producing a stably transformed corn plant in a single container is demonstrated. This method allows for the automation of the transformation process and reduces labor, material, and ergonomic costs associated with traditional plant tissue culture systems.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/077361

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N15/82 A01H5/00

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 A01H

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 practical, search terms used)
EPO-Internal, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 140 555 A (REICHERT NANCY A [US] ET AL) 31 October 2000 (2000-10-31) the whole document	1-8,15
A	WO 2006/011959 A (MONSANTO TECHNOLOGY LLC [US]; DUNCAN DAVID R [US]; ARMSTRONG CHARLES L) 2 February 2006 (2006-02-02) paragraphs [0088], [0102], [0138]	1-8,15
A	WO 95/06128 A (DEKALB GENETICS CORP [US]) 2 March 1995 (1995-03-02) page 10 - page 15 page 23 - page 26	1-8,15

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[X] Further documents are listed in the continuation of Box C.

[X] 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 document 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 another 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
7 January 2008	07/04/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Bucka, Alexander

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/077361

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZHAO Z ET AL: "HIGH THROUGHPUT GENETIC TRANSFORMATION MEDIATED BY AGROBACTERIUM TUMEFACIENS IN MAIZE" MOLECULAR BREEDING, KLUWER ACADEMIC PUBLISHERS, DORDRECHT, NL, vol. 8, no. 4, 2001, pages 323-333, XP001100034 ISSN: 1380-3743 the whole document	1-8,15
A	LEVY MAGGIE ET AL: "Transient Agrobacterium-mediated gene expression in the Arabidopsis hydroponics root system for subcellular localization studies" PLANT MOLECULAR BIOLOGY REPORTER, vol. 23, no. 2, June 2005 (2005-06), pages 179-184, XP002463445 ISSN: 0735-9640 the whole document	1-8,15
A	ESPINOSA P ET AL: "Production of pineapple transgenic plants assisted by temporary immersion bioreactors" PLANT CELL REPORTS, vol. 21, no. 2, August 2002 (2002-08), pages 136-140, XP002463447 ISSN: 0721-7714 the whole document	1-8,15
A	MTSHALI N P ET AL: "In vitro culture of sugarcane in a liquid temporary immersion system and assessment of potential use in transgenesis" SOUTH AFRICAN JOURNAL OF BOTANY, vol. 70, no. 2, May 2004 (2004-05), pages 362-363, XP008087145 & 30TH ANNUAL CONGRESS OF THE SOUTH AFRICAN ASSOCIATION OF BOTANISTS; DURBAN, SOUTH AFRICA; JANUARY 19-22, 2004 ISSN: 0254-6299 the whole document	1-8,15
A	HANHINEVA KATI ET AL: "Shoot regeneration from leaf explants of five strawberry (Fragaria x ananassa) cultivars in temporary immersion bioreactor system" IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY PLANT, vol. 41, no. 6, November 2005 (2005-11), pages 826-831, XP002463446 ISSN: 1054-5476 the whole document	1-8,15

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/077361

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ETIENNE H ET AL: "Temporary immersion systems in plant micropropagation" PLANT CELL TISSUE AND ORGAN CULTURE, vol. 69, no. 3, June 2002 (2002-06), pages 215-231, XP002463450 ISSN: 0167-6857 the whole document	1-8,15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/077361

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 allsearchable 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 reportcovers 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.:

1-8, 15

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: 1-8,15

A method for producing a transgenic corn plant comprising the steps of:
a) obtaining a transformable corn explant;
b) transforming the transformable corn explant;
c) selecting a transformed corn cell from the transformable corn explant on a selection medium; and
d) regenerating the transformed cell into a plant on a regeneration medium, wherein steps b), c), and d) are done in the same container.

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2. claims: 9,10

A method for obtaining explant for producing a transgenic corn plant comprising dividing a callus into smaller callus pieces.

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3. claim: 11

A method for preparing Agrobacterium cell suspension for inoculating an explant comprising culturing a frozen glycerol stock of Agrobacterium directly into an induction medium.

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4. claim: 12

A corn cell culture comprising transformable and embryogenic cells.

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5. claims: 13,14

A method for producing a corn transformable and embryogenic cell culture comprising:
a) obtaining a callus from corn embryos; and
b) culturing the callus for about 5 days to 30 days in a liquid medium to produce the cell culture.

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6. claims: 16-20

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A method of producing a transgenic plant comprising:
a) co-culturing a regenerable plant explant with recombinant Agrobacteria comprising a selectable marker gene conferring tolerance to a selective agent and media comprising an amount of the selective agent that is selective for cells of the explant that are transformed with the selectable marker gene; and
b) regenerating a transgenic plant comprising the selectable marker from the explant.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/077361

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