



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶ : C12N 15/54, 9/10, 1/21, 5/10	A3	(11) International Publication Number: WO 99/57285 (43) International Publication Date: 11 November 1999 (11.11.99)		
<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> (21) International Application Number: PCT/US99/09865 (22) International Filing Date: 6 May 1999 (06.05.99) (30) Priority Data: 60/084,529 7 May 1998 (07.05.98) US (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): OROZCO, Emil, M., Jr. [US/US]; 2 Dutton Farm Lane, West Grove, PA 19390 (US). CAIMI, Perry, G. [US/US]; 7 Holly Drive, Kennett Square, PA 19348 (US). WENG, Zude [CN/US]; 909C Cloister Road, Wilmington, DE 19809 (US). TARCZYNSKI, Mitchell, C. [US/US]; 2115 South 4th Street, West Des Moines, IA 50265 (US). (74) Agent: MAJARIAN, William, R.; E.I. du Pont de Nemours and Company, Legal Patent Center, 1007 Market Street, Wilmington, DE 19898 (US). </td> <td style="width: 50%; vertical-align: top;"> (81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 30 March 2000 (30.03.00) </td> </tr> </table>			(21) International Application Number: PCT/US99/09865 (22) International Filing Date: 6 May 1999 (06.05.99) (30) Priority Data: 60/084,529 7 May 1998 (07.05.98) US (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): OROZCO, Emil, M., Jr. [US/US]; 2 Dutton Farm Lane, West Grove, PA 19390 (US). CAIMI, Perry, G. [US/US]; 7 Holly Drive, Kennett Square, PA 19348 (US). WENG, Zude [CN/US]; 909C Cloister Road, Wilmington, DE 19809 (US). TARCZYNSKI, Mitchell, C. [US/US]; 2115 South 4th Street, West Des Moines, IA 50265 (US). (74) Agent: MAJARIAN, William, R.; E.I. du Pont de Nemours and Company, Legal Patent Center, 1007 Market Street, Wilmington, DE 19898 (US).	(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 30 March 2000 (30.03.00)
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(54) Title: SUCROSE PHOSPHATE SYNTHASE SEQ ID NO: 23 SEQ ID NO: 02 SEQ ID NO: 16 SEQ ID NO: 23 SEQ ID NO: 02 SEQ ID NO: 16 SEQ ID NO: 23 SEQ ID NO: 02 SEQ ID NO: 16 SEQ ID NO: 23 SEQ ID NO: 02 SEQ ID NO: 16 SEQ ID NO: 23 SEQ ID NO: 02 SEQ ID NO: 16 <pre> ***** MAGNDWINSYLEAILDVGPGLDDAKSSLLLRERGRFSPTRYFVEEVITGFDETDLHRSWV ----- MAGNDWLSYLEAILDVGPGLDDAKSSLLLRERGRFSPTRYFVQVEVI-GFDETDLYRSWV 1 60 * KAQATRSPQERNTRLENMCWRIWNLARQKKQLEGEAAQRMARRLERERGRREATADMSE ----- RASSTRSPQERNTRLENMCWRIWNLARQKKQLESETALRVNKRRLERERGRREATADMSE 61 120 ***** DLSEGEKGDIIVSDVSAHG---DSTRSRLPRISSVDAMETWISQKGKKLYIVLISHGLI ----- DLSEGEKGDPDLSLHAGGVDFNRSRLPRISSADAMETWANSQKGKKLYIVLISHGLI 121 180 ***** RGENMELGRSDTGGQVKYVVELARALGSMGPVYRVDLLTRQVSAPDWDWSYGEPTMLT ----- RGENMELGRSDTGGQVKYVVELARALGSMGPVYRVDLLTRQVSAPDWDWSYGEPTMLS 181 240 ** PRNSDDFMDMGESSGAYIIRIPFGPKDKYIAKELLWPHIPEFVDGALNHIIRMSNVLGE ----- PRDTDGDDTGESGSIYIRIPFGPRDKYIPKELLWPIYIPEFVDGALNHIIQMSKSLGE 241 300 </pre>				
(57) Abstract This invention relates to an isolated nucleic acid fragment encoding a sucrose phosphate synthase. The invention also relates to the construction of a chimeric gene encoding all or a portion of the sucrose phosphate synthase, in sense or antisense orientation, wherein expression of the chimeric gene results in production of altered levels of the sucrose phosphate synthase in a transformed host cell.				

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EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

Inte: onal Application No
PCT/US 99/09865

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 C12N15/54 C12N9/10 C12N1/21 C12N5/10		
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 6 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 practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 466 995 A (ROUSSEL-UCLAF) 9 September 1997 (1997-09-09) the whole document ---	1-16
X	INGRAM J ET AL.: "ANALYSIS OF cDNA CLONES ENCODING SUCROSE-PHOSPHATE SYNTHASE IN RELATION TO SUGAR INTERCONVERSIONS ASSOCIATED WITH DEHYDRATION IN THE RESURRECTION PLANT CRATEROSTIGMA PLANTAGINEUM" PLANT PHYSIOLOGY, vol. 115, no. 1, September 1997 (1997-09), pages 113-121, XP002115399 the whole document -& "C. plantagineum mRNA FOR SUCROSE PHOSPHATE SYNTHASE" EMBL DATABASE ACCESSION NUMBRE Y11821, 10 July 1997 (1997-07-10), XP002115400 --- -/--	1-16
☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in 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 15 September 1999		Date of mailing of the international search report 21.01.00
Name and mailing address of the ISA 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		Authorized officer Bilang, J

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/09865

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DO NASCIMENTO J ET AL: "Banana sucrose-phosphate synthase gene expression during fruit ripening" PLANTA, vol. 203, 1 January 1997 (1997-01-01), pages 283-288, XP002097147 ISSN: 0032-0935 the whole document ---	1-16
X	HESSE H ET AL: "CLONING AND EXPRESSION ANALYSIS OF SUCROSE-PHOSPHATE SYNTHASE FROM SUGAR BEET (BETA VULGARIS L.)" MOLECULAR AND GENERAL GENETICS, vol. 247, no. 4, 1 January 1995 (1995-01-01), pages 515-520, XP002031950 ISSN: 0026-8925 the whole document ---	1-16
A	KERR P S ET AL: "RESOLUTION OF TWO MOLECULAR FORMS OF SUCROSE-PHOSPHATE SYNTHASE FROM MAIZE, SOYBEAN AND SPINACH LEAVES" PLANTA, vol. 170, 1 January 1987 (1987-01-01), pages 515-519, XP002063133 ISSN: 0032-0935 the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/ 09865

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 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.:

1 - 16 (all partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-16 (all partially)

Nucleic acid fragment encoding at least a fragment of a sucrose-phosphate synthase (SPS) from Catalpa, chimeric genes comprising said sequence and host cells transformed with said chimeric genes; SPS polypeptides from Catalpa; Methods comprising the step of using said nucleic acid.
(SEQ ID NO:1 and 2)

2. Claims: 1-16 (all partially)

As in 1, but SPS from barley (SEQ ID NO:3 and 4).

3. Claims: 1-16 (all partially)

As in 1, but SPS from corn (SEQ ID NO:5-8).

4. Claims: 1-16 (all partially)

As in 1, but SPS from rice (SEQ ID NO:9-14).

5. Claims: 1-16 (all partially)

As in 1, but SPS from soybean (SEQ ID NO:15-18).

6. Claims: 1-16 (all partially)

As in 1, but SPS from wheat (SEQ ID NO:19-22).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/09865

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0466995 A	22-01-1992	AU 653165 B	22-09-1994
		AU 8394591 A	18-02-1992
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		WO 9201782 A	06-02-1992
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