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(71) Applicant (*for all designated States except US*): **DSM IP ASSETS B.V.** [NL/NL]; Het Overloon 1, NL-6411 Te Heerlen (NL).

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **SHINJOH, Masako** [JP/JP]; 5-5-30 Dai, Kamakura, 247-0061 Kanagawa (JP).

(74) Agent: **SCHWANDER, Kuno, Josef**; DSM Nutritional Products Ltd., Wurmisweg 576, CH-4303 Kaiseraugst (CH).

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(54) Title: NOVEL GENE VCS 07

(57) Abstract: The present invention relates to newly identified microorganisms capable of direct production of L-ascorbic acid (hereinafter also referred to as Vitamin C). The invention also relates to polynucleotide sequences comprising genes that encode proteins which are involved in the synthesis of Vitamin C. The invention also features polynucleotides comprising the full length polynucleotide sequences of the novel genes and fragments thereof, the novel polypeptides encoded by the polynucleotides and fragments thereof, as well as their functional equivalents. The present invention also relates to the use of said polynucleotides and polypeptides as biotechnological tools in the production of Vitamin C from microorganisms, whereby a modification of said polynucleotides and/or encoded polypeptides has a direct or indirect impact on yield, production, and/or efficiency of production of the fermentation product in said microorganism. Also included are methods/processes of using the polynucleotides and modified polynucleotide sequences to transform host microorganisms. The invention also relates to genetically engineered microorganisms and their use for the direct production of Vitamin C.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. C07K14/195 C12P17/04 C12N15/63 C12N15/31 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)
 C07K C12P

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, BIOSIS, WPI Data, PAJ, FSTA, EMBASE, MEDLINE, EMBL, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 832 974 A (F. HOFFMANN-LA ROCHE AG) 1 April 1998 (1998-04-01) the whole document, in particular the abstract and claims 18 and 19	1-11
X	WO 2004/029268 A (DSM IP ASSETS B.V; HOSHINO, TATSUO; SUGISAWA, TERUHIDE) 8 April 2004 (2004-04-08) the whole document, in particular Examples 1-3 -/--	1-11

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	"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
"E" earlier document but published on or after the international filing date	"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
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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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 Bassias, I
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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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P,X	----- WO 2005/017159 A (DSM IP ASSETS B.V; BERRY, ALAN; LEE, CONNIE; MAYER, ANNE, FRANCOISE; S) 24 February 2005 (2005-02-24) the whole document, in particular Examples 2,3,10-12,14	1-11
A	----- MACAULEY S ET AL: "THE GENUS GLUCONOBACTER AND ITS APPLICATIONS IN BIOTECHNOLOGY" CRC CRITICAL REVIEWS IN BIOTECHNOLOGY, CRC PRESS, BOCA RATON, FL, US, vol. 21, no. 1, 2001, pages 1-25, XP008026977 ISSN: 0738-8551 ----- -/--	

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/001009

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HANCOCK R D ET AL: "Biotechnological approaches for l-ascorbic acid production" TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 20, no. 7, 1 July 2002 (2002-07-01), pages 299-305, XP004361398 ISSN: 0167-7799 -----	
T	BREMUS ET AL: "The use of microorganisms in l-ascorbic acid production" JOURNAL OF BIOTECHNOLOGY, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 124, no. 1, 25 June 2006 (2006-06-25), pages 196-205, XP005480510 ISSN: 0168-1656 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/001009

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