

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 June 2001 (14.06.2001)

PCT

(10) International Publication Number
WO 01/42436 A3

(51) International Patent Classification⁷: **C12N 15/53**,
15/55, 9/02, 9/18, 9/04, 5/06, C12Q 1/68, C12P 7/44,
7/26, 7/40

302 Maple Avenue, Wilmington, DE 19809 (US). **KOS-
TICHKA, Kristy, N.** [US/US]; 111 Shrewsbury Drive,
Wilmington, DE 19810 (US). **THOMAS, Stuart, M.**
[US/US]; 1508 Woodsdale Road, Wilmington, DE 19809
(US).

(21) International Application Number: PCT/US00/33426

(22) International Filing Date: 8 December 2000 (08.12.2000)

(74) Agent: **FELTHAM, S., Neil**; E.I. Du dont de Nemours
and Company, Legal Patent Records Center, 1007 Market
Street, Wilmington, DE 19898 (US).

(25) Filing Language: English

(81) Designated States (*national*): CA, US.

(26) Publication Language: English

(30) Priority Data:
60/170,214 10 December 1999 (10.12.1999) US

(84) Designated States (*regional*): European patent (AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE, TR).

(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).

Published:
— with international search report

(72) Inventors; and

(88) Date of publication of the international search report:
1 November 2001

(75) Inventors/Applicants (*for US only*): **CHEN, Mario, W.**
[US/US]; 23 Brook Lane, Chadds Ford, PA 19317 (US).
CHENG, Qiong [CN/US]; 4 Collins Drive, Wilmington,
DE 19803 (US). **GIBSON, Katherine, J.** [GB/US];

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*



WO 01/42436 A3

(54) Title: GENES INVOLVED IN CYCLODODECANONE DEGRADATION PATHWAY

(57) Abstract: A 10 kb gene cluster has been isolated from *Rhodococcus ruber* SC1 comprising genes encoding enzymes useful for the synthesis of dodecanoic diacid from cyclododecanone and other cyclic intermediates. The six specific open reading frames have been identified that are associated with dodecanoic diacid biosynthesis. In addition to the expected substrates the enzymes of the instant invention have moderate specificity for C11-C15 compounds.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/33426

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C12N15/53 C12N15/55 C12N9/02 C12N9/18 C12N9/04 C12N5/06 C12Q1/68 C12P7/44 C12P7/26 C12P7/40					
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 7 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) EPO-Internal, WPI Data, PAJ, BIOSIS					
C. DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document, with indication, where appropriate, of the relevant passages				Relevant to claim No.
A	REDENBACH ET AL.: "Streptomyces coelicolor cosmid 5G9" EMBL SEQUENCE DATABASE, 13 September 1999 (1999-09-13), XP002167037 HEIDELBERG DE Ac AL117385 the whole document				1,2,6-10
P,A	-& REDENBACH ET AL.: "Putative monooxygenase" SWISSPROT SEQUENCE DATA BASE, 1 May 2000 (2000-05-01), XP002167038 Ac Q9RL17 the whole document				1,2,6-10
A	-& REDENBACH ET AL.: "Streptomyces coelicolor cosmid I30A" EMBL SEQUENCE DATABASE, 7 July 1999 (1999-07-07), XP002167039 HEIDELBERG DE				1,5-10
-/--					
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.			<input checked="" type="checkbox"/> 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			Date of mailing of the international search report		
22 May 2001			06/06/2001		
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			Ceder, O		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/33426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, A	<p>Ac AL96811 the whole document -& REDENBACH ET AL.: "Streptomyces coelicolor cosmid 8B1" EMBL SEQUENCE DATABASE, 4 August 2000 (2000-08-04), XP002167040 HEIDELBERG DE Ac AL391073 the whole document</p>	1,5-10
A	<p>-& REDENBACH ET AL.: "A set ordered cosmids and a detailed genetic and physical map for the 8Mb Streptomyces coelicolor A3(2) chromosome" MOLECULAR MICROBIOLOGY, vol. 21, no. 1, 1996, pages 77-96, XP000876690</p>	
A	<p>--- BERGER ET AL.: "Streptomyces chrysomallus orfA, estA, cypA genes" EMBL SEQUENCE DATABASE, 22 September 1992 (1992-09-22), XP002167041 HEIDELBERG DE Ac Z15137 the whole document</p>	1,3,6-10
A	<p>-& BERGER ET AL.: "Molecular analysis of a gene encoding a cell-bound esterase from Streptomyces chrysomallus" JOURNAL OF BACTERIOLOGY, vol. 180, no. 23, December 1998 (1998-12), pages 6396-6399, XP002167042 cited in the application</p> <p>--- -/--</p>	

INTERNATIONAL SEARCH REPORT

Internatic Application No

PCT/US 00/33426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	COLE ET AL.: "Mycobacterium tuberculosis H37Rv complete genome; segment 36/162" EMBL SEQUENCE DATABASE, 18 September 1996 (1996-09-18), XP002167043 HEIDELBERG DE Ac Z80226 the whole document	1,4,6-10
A	-& MCLEAN ET AL.: "Hypothetical alcohol dehydrogenase-like protein CY369.06C" SWISSPROT SEQUENCE DATA BASE, 1 November 1998 (1998-11-01), XP002167044 HEIDELBERG DE Ac P71818 the whole document	1,4,6-10
A	-& COLE ET AL.: "Hypothetical 51.2 KDA protein" SWISSPROT SEQUENCE DATA BASE, 1 May 1997 (1997-05-01), XP002167045 Ac P96405 the whole document	1,5-10
A	-& COLE ET AL.: "Deciphering the biology of Mycobacterium tuberculosis from the complete genome sequence" NATURE, vol. 393, 1998, pages 537-544, XP002087941 cited in the application ---	
A	KULAKOVA ET AL.: "Rhodococcus rhodochrous plasmid pRTL1 insertion sequence IS112" EMBL SEQUENCE DATABASE, 6 May 1998 (1998-05-06), XP002167046 HEIDELBERG DE Ac AF060871 the whole document	1,4,6-10
A	-& KULAKOVA ET AL.: "Hypothetical alcohol dehydrogenase" SWISSPROT SEQUENCE DATA BASE, 1 August 1998 (1998-08-01), XP002167047 Ac 069045 the whole document	1,4,6-10
A	-& KULAKOVA ET AL.: "Hypothetical aldehyde dehydrogenase precursor" SWISSPROT SEQUENCE DATA BASE, 1 August 1998 (1998-08-01), XP002167048 Ac 069046 the whole document	1,5-10
A	-& KULAKOVA ET AL.: "The plasmid-located haloalkane dehalogenase gene from Rhodococcus rhodochrous NCIMB 13064" MICROBIOLOGY, vol. 143, 1997, pages 109-115, XP002167049 ---	
	-/--	

INTERNATIONAL SEARCH REPORT

Internatir ' Application No

PCT/US 00/33426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 238 816 A (IMAMURA SHIGEYUKI ET AL) 24 August 1993 (1993-08-24) abstract column 1, line 20 - line 35 ---	4,5,22, 23,27-29
A	US 5 851 810 A (BLANCHARD JOHN S) 22 December 1998 (1998-12-22) abstract -----	1,9, 11-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/33426

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5238816 A	24-08-1993	JP 2786679 B	13-08-1998
		JP 3053878 A	07-03-1991
		EP 0470312 A	12-02-1992
		US 5171681 A	15-12-1992
		US 5206148 A	27-04-1993
US 5851810 A	22-12-1998	NONE	