



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁷ : C12N 15/55, 9/14, C02F 1/50, C12N 15/80, 1/15</p>	A3	<p>(11) International Publication Number: WO 00/28043</p> <p>(43) International Publication Date: 18 May 2000 (18.05.00)</p>
<p>(21) International Application Number: PCT/US99/26227</p> <p>(22) International Filing Date: 5 November 1999 (05.11.99)</p> <p>(30) Priority Data: 09/189,497 10 November 1998 (10.11.98) US</p> <p>(71) Applicant: NOVO NORDISK BIOTECH, INC. [US/US]; 1445 Drew Avenue, Davis, CA 95616-4880 (US).</p> <p>(72) Inventors: BERKA, Randy, M.; 3609 Modoc, Davis, CA 95616 (US). REY, Michael, W.; 605 Robin Place, Davis, CA 95616 (US).</p> <p>(74) Agents: ZELSON, Steve, T. et al.; Novo Nordisk of North America, Inc., 405 Lexington Avenue, Suite 6400, New York, NY 10174 (US).</p>	<p>(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, 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).</p> <p>Published <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 5 October 2000 (05.10.00)</p>	
<p>(54) Title: POLYPEPTIDES HAVING LACTONOHYDROLASE ACTIVITY AND NUCLEIC ACIDS ENCODING SAME</p>		
<p>(57) Abstract</p> <p>The present invention relates to isolated polypeptides having lactonohydrolase activity and isolated nucleic acid sequences encoding the polypeptides. The invention also relates to nucleic acid constructs, vectors, and host cells comprising the nucleic acid sequences as well as methods for producing and using the polypeptides. The present invention further relates to methods for preventing microbial biofilm development.</p>		

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INTERNATIONAL SEARCH REPORT

Inte 1al Application No PCT/US 99/26227
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A. CLASSIFICATION OF SUBJECT MATTER				
IPC 7	C12N15/55	C12N9/14		
	C02F1/50	C12N15/80		
		C12N1/15		
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)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	KOBAYASHI M ET AL: "Lactone-ring-cleaving enzyme: genetic analysis, novel RNA editing, and evolutionary implications." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1998 OCT 27) 95 (22) 12787-92., XP002134265	1,10, 12-14, 16-18, 22,23, 25-29		
A	page 12787, left-hand column, paragraph 2 -right-hand column, paragraph 2 page 12788, right-hand column, last paragraph -page 12790, right-hand column, paragraph 2 page 12791, left-hand column, paragraph 3 --- -/--	30-33		
<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 : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> *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 </td> <td style="width: 50%; border: none; vertical-align: top;"> *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 </td> </tr> </table>			*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
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Date of the actual completion of the international search	Date of mailing of the international search report			
29 March 2000	05.07.00			
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	MONTERO LOPEZ B.			

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/26227

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 0 794 251 A (FUJI YAKUHIN KOGYO KABUSHIKI KAISHA) 10 September 1997 (1997-09-10)</p> <p>page 2, line 43 -page 3, line 54 page 4, line 10 -page 9, line 26; example 1</p>	<p>1,10, 12-14, 16-18, 22,23, 25-29</p>
X	<p>& WO 97 10341 A cited in the application -----</p>	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/26227

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.:

1-33

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: 1-33

Polypeptide having lactanohydrolase activity of SEQ ID NO:2, fragments and variants thereof, nucleic acid encoding the same; vector and host cell containing it; use thereof for producing the polypeptide; mutant nucleic acid sequence, use thereof for producing a mutant cell and a heterologous polypeptide.

2. Claim : 34

Method for preventing biofilm development on a liquid-solid interface by microorganisms by addition of polypeptides having lactanohydrolase activity.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter: 1st Application No
PCT/US 99/26227

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 794251 A	10-09-1997	AU 1810197 A	01-04-1997
		CA 2204743 A	20-03-1997
		CN 1166182 A	26-11-1997
		HU 9701904 A	02-03-1998
		WO 9710341 A	20-03-1997
