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29 May 2008

(54) Title: A METHOD FOR PRODUCING AN L-AMINO ACID USING BACTERIUM OF THE ENTEROBACTERIACEAE FAMILY WITH ATTENUATED EXPRESSION OF A GENE CODING FOR SMALL RNA

(57) Abstract: The present invention provides a method for producing an L-amino acid using a bacterium of the Enterobacteriaceae family, particularly a bacterium belonging to genus *Escherichia* or *Pantoea*, which has been modified to attenuate expression of a gene coding for sRNA.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2007/056752

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N1/20 C12P13/04

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)
C12P 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, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FAUBLADIER M ET AL: "ESCHERICHIA COLI CELL DIVISION INHIBITOR DICF-RNA OF THE DICB OPERON" JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 212, no. 3, 1990, pages 461-471, XP008066900 ISSN: 0022-2836 table 1 page 466, right-hand column - page 468, left-hand column	1-12
X	US 6 228 638 B1 (ROMEO TONY [US]) 8 May 2001 (2001-05-08) column 11, paragraph 6	1-12

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
- *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 30 November 2007	Date of mailing of the international search report 09/04/2008
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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 Offermann, Stefanie
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INTERNATIONAL SEARCH REPORT

International application No

PCT/JP2007/056752

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MAJDALANI NADIM ET AL: "Bacterial small RNA regulators." CRITICAL REVIEWS IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 2005 MAR-APR, vol. 40, no. 2, March 2005 (2005-03), pages 93-113, XP002460439 ISSN: 1040-9238 page 104 - page 105 -----	1-12
A	HERSHBERG RUTH ET AL: "A survey of small RNA-encoding genes in Escherichia coli." NUCLEIC ACIDS RESEARCH 1 APR 2003, vol. 31, no. 7, 1 April 2003 (2003-04-01), pages 1813-1820, XP002460256 ISSN: 1362-4962 cited in the application table 1 -----	1-12
A	STORZ GISELA ET AL: "An abundance of RNA regulators." ANNUAL REVIEW OF BIOCHEMISTRY 2005, vol. 74, 2005, pages 199-217, XP002460440 ISSN: 0066-4154 the whole document -----	1-12
T	URBAN JOHANNES H ET AL: "Translational control and target recognition by Escherichia coli small RNAs in vivo." NUCLEIC ACIDS RESEARCH 2007, vol. 35, no. 3, 2007, pages 1018-1037, XP002460257 ISSN: 1362-4962 the whole document -----	1-12
P,X	WO 2006/123763 A (AJINOMOTO KK [JP]; FILIPPOV DMITRIY VLADIMIROVICH [RU]; VOROSHILOVA EL) 23 November 2006 (2006-11-23) the whole document -----	1-12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/056752

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 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.:

1-12 (all partially)

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:

Invention 1: 1-12 (all partially)

L-amino acid producing bacterium of the Enterobacteriaceae family in which expression of the small RNA (sRNA) c0067 is attenuated. Provided is in addition a method for producing an L-amino acid using said bacterium.

Invention 2-62: 1-12 (all partially)

cf. Invention 1, however, the sRNA whose expression is attenuated is one of the further sRNAs listed in claim 2, i.e. c0293, c0299, ... tpke70.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2007/056752

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6228638	B1 08-05-2001	US 2002015983 A1	07-02-2002
WO 2006123763	A 23-11-2006	NONE	