

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 October 2005 (27.10.2005)

PCT

(10) International Publication Number
WO 2005/100395 A3

(51) International Patent Classification:
C07K 14/54 (2006.01) C12N 15/62 (2006.01)

(21) International Application Number:
PCT/EP2005/003888

(22) International Filing Date: 13 April 2005 (13.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
04008881.7 14 April 2004 (14.04.2004) EP

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
1 June 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: EXPRESSION SYSTEM FOR PREPARING IL-15/Fc FUSION PROTEINS AND ITS USE

(57) Abstract: The invention relates to an expression system containing one or more nucleic acid(s) comprising at least one nucleic acid for an interleukin 15/Fc (IL-15/Fc) fusion protein, at least one promoter, at least one nucleic acid for a CD5 leader and, where appropriate, at least one nucleic acid for a selectable marker gene; to a nucleic acid comprising the components of the said expression system and to a host cell containing the expression system or the nucleic acid. Furthermore, the invention relates to a process for preparing an IL-15/Fc fusion protein, using the expression system, and to the use of the expression system, the nucleic acid, the host cell or the CD5 leader for expression in host cells.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2005/003888

A. CLASSIFICATION OF SUBJECT MATTER C07K14/54 C12N15/11				
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) C12N C07K				
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, MEDLINE, EMBASE, BIOSIS, EMBL				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	YON SU KIM ET AL: "Targeting the IL-15 receptor with an antagonist IL-15 mutant/Fcγ2a protein blocks delayed-type hypersensitivity" JOURNAL OF IMMUNOLOGY, THE WILLIAMS AND WILKINS CO. BALTIMORE, US, vol. 160, no. 12, 15 June 1998 (1998-06-15), pages 5742-5748, XP002185136 ISSN: 0022-1767 the whole document	1,2,4-7, 12,13, 15,16		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.			
* Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> "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;"> "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
"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 <p style="text-align: center; font-size: 1.2em;">24 January 2006</p>		Date of mailing of the international search report <p style="text-align: center; font-size: 1.2em;">28. 02. 2006</p>		
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 <p style="text-align: center; font-size: 1.2em;">Strobel, A</p>		

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2005/003888

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>SUTHERLAND ROBYN M ET AL: "Protective effect of CTLA4Ig secreted by transgenic fetal pancreas allografts" TRANSPLANTATION (BALTIMORE), vol. 69, no. 9, 15 May 2000 (2000-05-15), pages 1806-1812, XP009041013 ISSN: 0041-1337 abstract page 1807, left-hand column, paragraphs 1,4,6 - right-hand column, paragraph 3</p>	1-18
A	<p>KIM Y S ET AL: "IMMUNOGLOBULIN-CYTOKINE FUSION MOLECULES: THE NEW GENERATION OF IMMUNOMODULATING AGENTS" TRANSPLANTATION PROCEEDINGS, ORLANDO, FL, US, vol. 30, no. 8, 1998, pages 4031-4036, XP001031432 ISSN: 0041-1345 page 4035, left-hand column, paragraph 3 - right-hand column, paragraph 2; tables 2,3</p>	1-18
A	<p>WO 01/57242 A (AURORA BIOSCIENCES CORP ; CUBITT ANDREW B (US); POLLOK BRIAN A (US); S) 9 August 2001 (2001-08-09) page 148 - page 149; example 10; sequence 53</p>	9,11-18
A	<p>WO 02/38766 A (ZYMOGENETICS INC) 16 May 2002 (2002-05-16) sequence 17</p>	9,11-18
A	<p>WO 03/087320 A (MOLL THOMAS ; STROM TERRY B (US); ZHENG XIN XIAO (US); BETH ISRAEL HOS) 23 October 2003 (2003-10-23) page 33, line 25 - page 34, line 10; sequence 13</p>	1-18
E	<p>EP 1 554 307 A (F. HOFFMANN-LA ROCHE AG) 20 July 2005 (2005-07-20) the whole document</p>	1-18
P,X	<p>FERRARI-LACRAZ SYLVIE ET AL: "Targeting IL-15 receptor-bearing cells with an antagonist mutant IL-15/Fc protein prevents disease development and progression in murine collagen-induced arthritis" JOURNAL OF IMMUNOLOGY, vol. 173, no. 9, 1 November 2004 (2004-11-01), pages 5818-5826, XP002345721 ISSN: 0022-1767 the whole document</p>	1-18

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2005/003888

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 977 318 A (LINSLEY ET AL) 2 November 1999 (1999-11-02) column 7, line 18 - line 35 column 10, line 44 - line 55 -----	19,20
X	US 5 977 307 A (FRIDEN ET AL) 2 November 1999 (1999-11-02) column 20, line 64 - column 21, line 22; figure 8 -----	19,20

INTERNATIONAL SEARCH REPORT

International application No.
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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.:

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:

1. claims: 1-18

Expression system comprising one or several nucleic acids that comprise

a) at least one nucleic acid for a IL-15/Fc fusion protein

b) at least one promoter

and

c) at least one nucleic acid for a CD5 leader

2. claims: 19, 20

Use of a CD5 leader for the expression of a protein in CHO cells and their derivatives, in particular CHO-K1 cells.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No
PCT/EP2005/003888

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			US 5885796 A	23-03-1999
			US 5885579 A	23-03-1999
US 5977307	A	02-11-1999	NONE	