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60/699,936 15 July 2005 (15.07.2005) US(71) Applicant (for all designated States except US): **MEDICAL RESEARCH COUNCIL** [GB/GB]; 20 Park Crescent, London W1B 1AL (GB).

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Declaration under Rule 4.17:

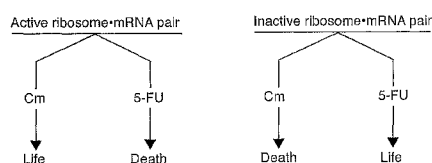
— of inventorship (Rule 4.17(iv))

Published:

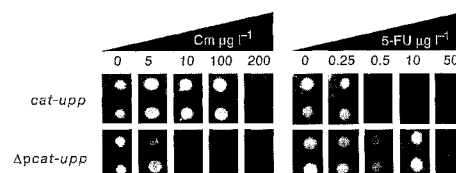
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments(88) Date of publication of the international search report:
7 June 2007

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: COMPOSITIONS AND METHODS RELATING TO ORTHOGONAL RIBOSOME mRNA PAIRS



A



B

(57) Abstract: Orthogonal ribosome orthogonal mRNA pairs are provided, as are methods for their selection involving a novel positive-negative selection approach, and methods for their use. Also provided are cellular logic circuits involving orthogonal ribosomes.



WO 2007/010221 A3

A. CLASSIFICATION OF SUBJECT MATTER

INV. C12N15/11 C12N15/62

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, WPI Data, FSTA, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LEE K ET AL: "GENETIC ANALYSIS OF THE SHINE-DALGARNO INTERACTION: SELECTION OF ALTERNATIVE FUNCTIONAL MRNA-RRNA COMBINATIONS" RNA, COLD SPRING HARBOR LABORATORY PRESS, WOODBURY, NY, US, vol. 2, no. 12, December 1996 (1996-12), pages 1270-1285, XP009055997 ISSN: 1355-8382 cited in the application Page 1271 lines 30-42, Table 1 ----- -/--	1-13



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

22 December 2006

Date of mailing of the international search report

26/03/2007

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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.
A	HUI A ET AL: "Specialized ribosome system: preferential translation of a single mRNA species by a subpopulation of mutated ribosomes in Escherichia coli." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA. JUL 1987, vol. 84, no. 14, July 1987 (1987-07), pages 4762-4766, XP002412396 ISSN: 0027-8424 cited in the application Page 4762 col. 2 lines 24-30 -----	1-13
A	WO 94/28143 A (TARGETED GENETICS CORP [US]) 8 December 1994 (1994-12-08) Claim 1 -----	1-13
A	US 2003/108885 A1 (SCHULTZ PETER [US] ET AL SCHULTZ PETER [US] ET AL) 12 June 2003 (2003-06-12) -----	1-13

Box 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 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 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.:

1-13

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

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13

A method for identification of orthogonal mRNA, rRNA pairs

2. claims: 15-20 (partially)

Orthogonal mRNA, rRNA pairs with the mRNA element
5'-(-13)CACCACX(-7)-3'

3. claims: 15-20 (partially)

Orthogonal mRNA, rRNA pairs with the mRNA element
5'-(-13)CAACUGC(-7)-3'

4. claims: 15-20 (partially)

Orthogonal mRNA, rRNA pairs with the mRNA element
5'-(-13)CAUCCCU(-7)-3'

5. claims: 15-20 (partially)

Orthogonal mRNA, rRNA pairs with the mRNA element
5'-(-13)UCCCUXX(-7)-3'

6. claims: 21-32,38 and 39

A fusion polypeptide with a positive and negative selection
marker

7. claims: 33-37

Cellular logic circuits

8. claims: 40, 41

Method of expressing proteins using orthogonal mRNA, rRNA
pairs

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2006/002637

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9428143	A	08-12-1994	AU 6953394 A	20-12-1994
			CA 2163427 A1	08-12-1994
			EP 0804590 A1	05-11-1997
			JP 9500783 T	28-01-1997
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			US 2005208536 A1	22-09-2005
			US 2006234367 A1	19-10-2006