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[Continued on next page]

(54) Title: RECOMBINASE POLYMERASE AMPLIFICATION

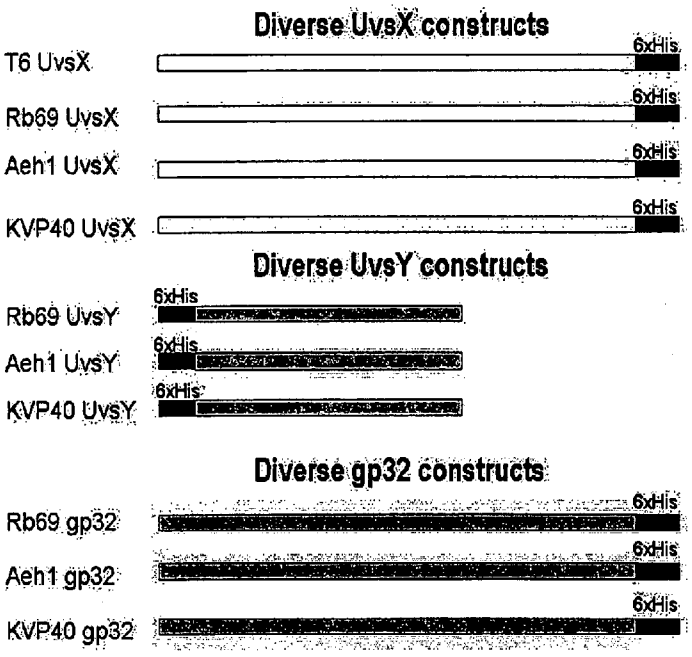

Fig. 1

(57) Abstract: The present invention features novel, diverse, hybrid and engineered recombinase enzymes, and the utility of such proteins with associated recombination factors for carrying out DNA amplification assays. The present invention also features different recombinase 'systems' having distinct biochemical activities in DNA amplification assays, and differing requirements for loading factors, single-stranded DNA binding proteins (SSBs), and the quantity of crowding agent employed.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/68

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)
C12Q

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, EMBASE, BIOSIS, WPI Data, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/118853 A (ASM SCIENT INC [GB]; PIEPENBURG OLAF [GB]; WILLIAMS COLIN H [GB]; ARME) 15 December 2005 (2005-12-15) pages 9,14,50; figure 21	1-3,5, 12-19,21
A		4
A	BORJAC-NATOUR J M ET AL: "Divergence of the mRNA targets for the Ssb proteins of bacteriophages T4 and RB69" VIROLOGY JOURNAL 20040917 GB, vol. 1, 17 September 2004 (2004-09-17), XP002490321 ISSN: 1743-422X 1743-422X the whole document	1-5, 12-19,21

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[X] Further documents are listed in the continuation of Box C.

[X] 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

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"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
14 August 2008	25/11/2008

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2007/003088

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SUN SIYANG ET AL: "Biochemical characterization of interactions between DNA polymerase and single-stranded DNA-binding protein in bacteriophage RB69." THE JOURNAL OF BIOLOGICAL CHEMISTRY 7 FEB 2003, vol. 278, no. 6, 7 February 2003 (2003-02-07), pages 3876-3881, XP002490322 ISSN: 0021-9258 the whole document	1-5, 12-19,21
A	WO 03/072805 A (ASM SCIENT INC [US]; ARMES NIALL A [GB]; STEMPLE DEREK L [GB]) 4 September 2003 (2003-09-04) the whole document	1-5, 12-19,21
A	US 5 273 881 A (SENA ELISSA P [US] ET AL) 28 December 1993 (1993-12-28) the whole document	1-5, 12-19,21
A	US 2003/143525 A1 (BENKOVIC STEPHEN J [US] ET AL) 31 July 2003 (2003-07-31) the whole document	1-5, 12-19,21
A	WO 03/038053 A (GENE CHECK INC [US]; WAGNER JR ROBERT E [US]) 8 May 2003 (2003-05-08) the whole document	1-5, 12-19,21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2007/003088

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 reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. [X] 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.:

see annex

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: (claims 1-5, 12-19, 21 all partially)

A recombinase polymerase amplification process where UvsX, UsvY, gp32 are selected from Rb69 UsvX, Rb69 UsvY and Rb69 gp32

Inventions 2-4: (claims 1-5, 12-19, 21 all partially)

Same as for invention 1 for the remaining three combinations as defined in claim 4.

Invention 5: (claims 1-7, 10-21 all partially; claims 8, 22-23 all completely)

A recombinase polymerase amplification process based on the use of Rb69 UsvX mutants (SEQ ID Nos: 114-122); and respective mutant proteins.

Invention 6: (claims 1-7, 10-21 all partially; claims 9, 24-25 all completely)

same as for invention 6 for the T6 Rb69 UsvX mutants (SEQ ID Nos: 104-105); and respective mutant proteins

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Invention 7: (claims 1-7, 9-21 all partially)

A recombinase polymerase amplification process based on the use of a UsvY hybrid (SEQ ID Nos: 123 or 124)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2007/003088

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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