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Published:

— *with international search report (Art. 21(3))*

— *with sequence listing part of description (Rule 5.2(a))*

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30 December 2009

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(54) Title: A HUMAN NON-ANTIBODY PEPTIDE OR PROTEIN PHAGE LIBRARY

(57) Abstract: The invention relates to a compositions and methods for generating and using pIX phage display libraries for producing non-antibody peptide or protein proteins or peptides using engineered hybrid phage vectors derived from pIX of M 13 phage.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/84317

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - C12Q 1/68, C12N 15/09 (2009.01)
USPC - 435/6, 435/320.1
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(8): C12Q 1/68, C12N 15/09 (2009.01)
USPC: 435/6, 435/320.1

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 practicable, search terms used)
PubWest, Google Scholar, Google Patent: recombinant, phage vector, pIII, pVIII, pIX, peptide, linker, restriction site, operably linked, vector, nucleic acid, ligand, phage vector, exogenous

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7,175,983 B2 (WANG et al.) 13 Feb 2007 (13.02.2007); col 4, ln 46-60; col 5 ln 44-48; col 6, ln 14-41; col 14, ln 24-27; col 18, ln 25-34; col 34, ln 26-39;	1-3, 7-15
Y		4, 6
A		5
Y	US 5,447,860 A (ZIEGLER) 05 Sep 1995 (05.09.1995) SEQ ID NO: 4, col 14, ln 6-11	4
Y	US 2004/0214766 A1 (ALITALO et al.) 28 Oct 2004 (29.10.2004); para [0022], [0295]	6
A	US 2007/0077512 A1 (WATANABE et al.) 05 Apr 2007 (05.04.2007); SEQ ID NO:11	5
A	US 7,214,786 B2 (KOVALIC et al.) 08 May 2007 (08.05.2007); SEQ ID NO: 157585	5

☐ Further documents are listed in the continuation of Box C. ☐

* 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 application or patent 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	Date of mailing of the international search report
04 May 2009 (04.05.2009)	13 MAY 2009
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/84317

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:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

---continued on extra 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 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.:
Groups I and II, claims 1-15, restricted to SEQ ID NOS: 3, 6 and 7

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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/84317

Groups I-VI Claims 1-15 are directed to an engineered recombinant nucleic acid phage vector for expressing phage display fusion peptides or proteins that bind to selected biologically active ligands. The first named invention is Group I comprising claims 1-15 restricted to SEQ ID NO: 3 and SEQ ID NO:6. In order for more than one group to be searched, an additional fee must be paid for each sequence searched apart from SEQ ID NO:3 and SEQ ID NO:6.

Groups I-VI do not have a shared technical feature with any of the other groups nor with each other based on the nucleic acid sequences of the claimed inventions. The nucleotides represented by the unique sequences designated SEQ ID NOs: 3, 4, 6, 7, and 8 do not relate to a single general inventive concept because, under PCT Rule 13.2, the different nucleotides represented by the sequences are not common to one another but are different because they are composed of unique nucleic acid sequences. Further, Groups I-VI represent the different combinations of the unique nucleotide sequences are as follows:

Group I SEQ ID NOs: 3 and 6
Group II SEQ ID NOs: 3 and 7
Group III SEQ ID NOs: 3 and 8
Group IV SEQ ID NOs: 4 and 6
Group V SEQ ID NOs: 4 and 7
Group VI SEQ ID NOs: 4