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Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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

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29 October 2009

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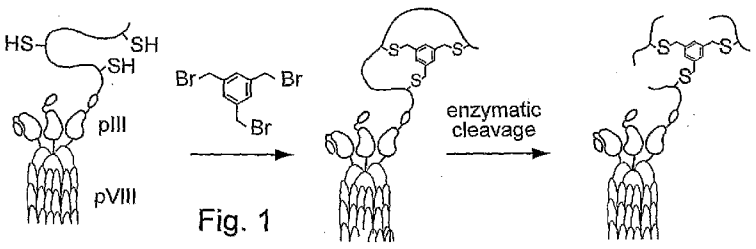


Fig. 1

(57) Abstract: The invention relates to a complex comprising a phage particle, said phage particle comprising (i) a polypeptide; (ii) a nucleic acid encoding the polypeptide of (i); (iii) a connector compound attached to said polypeptide wherein said connector compound is attached to the polypeptide by at least three discrete covalent bonds. The invention also relates to libraries, and to methods for making complexes and to methods of screening using same.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N15/10 C40B40/02 C40B30/04 G01N33/68 A61K47/48

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 C40B G01N A61K

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, CAB Data, Sequence Search, BIOSIS, EMBASE, 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	DWYER M A ET AL: "Biosynthetic Phage Display: A Novel Protein Engineering Tool Combining Chemical and Genetic Diversity" CHEMISTRY AND BIOLOGY, CURRENT BIOLOGY, LONDON, GB, vol 7, no. 4, 1 March 2000 (2000-03-01), pages 263-274, XP002989574 ISSN: 1074-5521 cited in the application the whole document	1-24

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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

"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
1 September 2009	11/09/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Fax: (+31–70) 340–3016	Schleifenbaum, A

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	WOIWODE T F ET AL: "Synthetic compound libraries displayed on the surface of encoded bacteriophage" CHEMISTRY AND BIOLOGY, CURRENT BIOLOGY, LONDON, GB, vol. 10, no. 9, 1 September 2003 (2003-09-01), pages 847-858, XP002287083 ISSN: 1074-5521 cited in the application the whole document	1-24
A	WO 02/077182 A (XENOPORT INC [US]; BARRETT RONALD W [US]; DOWER WILLIAM J [US]; GALLOP) 3 October 2002 (2002-10-03) cited in the application the whole document	1-24
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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.
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X	TROUCHE NATHALIE ET AL: "Small multivalent architectures mimicking homotrimers of the TNF superfamily member CD40L: delineating the relationship between structure and effector function." JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 7 NOV 2007, vol. 129, no. 44, 7 November 2007 (2007-11-07), pages 13480-13492, XP002543650 ISSN: 0002-7863 Compounds of Scheme 1, in particular compound I	25-28

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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.
X	FICHTER KATYE M ET AL: "Peptide-functionalized poly(ethylene glycol) star polymers: DNA delivery vehicles with multivalent molecular architecture." BIOCONJUGATE CHEMISTRY JAN 2008, vol. 19, no. 1, January 2008 (2008-01), pages 76-88, XP002543651 ISSN: 1043-1802 figure 1a	25-28
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X	KLOK H-A ET AL: "STAR-SHAPED FLUORESCENT POLYPEPTIDES" JOURNAL OF POLYMER SCIENCE, INTERSCIENCE PUBLISHERS, XX, vol. 39, no. 10, 1 January 2001 (2001-01-01), pages 1572-1582, XP001061864 Products in schemes 2 and 3	25-28
X	WO 98/36743 A (CYPROS PHARM CORP [US]) 27 August 1998 (1998-08-27) Compounds CYP-PA2, CYP-PA4	25-28
X	GUARISE C ET AL: "Fully symmetrical functionalization of multivalent scaffold molecules on solid support" TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 62, no. 50, 11 December 2006 (2006-12-11), pages 11670-11674, XP025002975 ISSN: 0040-4020 [retrieved on 2006-12-11] Compounds in Table 1	25-28

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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.
X	SCHMUCK CARSTEN ET AL: "Solid phase synthesis of a prototype of a new class of biomimetic receptors for anionic carbohydrates." ORGANIC & BIOMOLECULAR CHEMISTRY 7 MAR 2007, vol. 5, no. 5, 7 March 2007 (2007-03-07), pages 787-791, XP002543652 ISSN: 1477-0520 compound 1	25-28
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X	SUN SHUGUANG ET AL: "Thermodynamic studies on the recognition of flexible peptides by transition-metal complexes" JOURNAL OF ORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY, EASTON.; US, vol. 41, no. 6, 1 January 2002 (2002-01-01), pages 1584-1590, XP002509071 ISSN: 0022-3263 [retrieved on 2002-02-22] Compounds in Table 1	25-28
P,X	GUARISE, CRISTIAN; ZAUPA, GIOVANNI; PRINS, LEONARD J.; SCRIMM, PAOLO: "Functionalization of tripodal scaffold molecules on solid support" EUROPEAN JOURNAL OF ORGANIC CHEMISTRY, no. 20, 30 May 2008 (2008-05-30), pages 3559-3568, XP002543655 Compound 1a	25-28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2009/000301

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. ☐ 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: 1-24

A complex comprising a phage particle, said phage particle comprising (i) a polypeptide; (ii) a nucleic acid encoding the polypeptide of (i) (iii) a connector compound attached to said polypeptide by at least three covalent bonds; a method for making a complex, said method comprising (i) providing a phage particle comprising a polypeptide; (ii) providing a connector compound; (iii) attaching said connector compound to said polypeptide by formation of at least three covalent bonds between said connector compound and polypeptide; a complex obtained by said method; a method for identifying said complex which is capable of binding to a ligand, the method comprising (i) providing said complex; (ii) contacting said complex with a ligand; (iii) selecting those complexes which bind said ligand, further comprising determining the sequence of the nucleic acid of said complex;

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2. claims: 25-28

A conjugate comprising (i) at least two polypeptide molecules, and (ii) at least one connector compound molecule, wherein at least two polypeptide molecules are attached to said connector compound molecule by at least one covalent bond;

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2009/000301

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