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Published:

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WO 2012/137150 A3

(54) **Title:** CELL PENETRATING PEPTIDES FOR INTRACELLULAR DELIVERY OF MOLECULES

(57) **Abstract:** The present invention relates to cell-penetrating peptides characterized in that it comprises an amino acid sequence selected in the group consisting of X1LX2RALWX9LX3X9X4LWX9LX5X6X7X8, X1LX2LARWX9LX3X9X4LWX9LX5X6X7X8 and X1LX2ARLWX9LX3X9X4LWX9LX5X6X7X8, wherein XI is beta-A or S, X2 is F or W, X3 is L, W, C or I, X4 is S, A, N or T, Xs is L or W, X6 is W or R, X7 is K or R, X8 is A or none, and X9 is R or S. These peptides exhibit high efficiency, low toxicity and a natural tropism for lung tissues, and can be used either in simple complex with the cargo to be vectorised, or in nanoparticles comprising two layers of cell-penetrating peptides around the cargo.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/051665

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K7/08 A61K47/48 C12N15/113
ADD.
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)
C07K A61K C12N
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)
EPO-Internal, BIOSIS, CHEM ABS Data, Sequence Search, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/069090 A2 (CENTRE NAT RECH SCIENT [FR]; GENOSPECTRA INC [US]; DIVITA GILLES [FR];) 21 June 2007 (2007-06-21)	1-25
Y	the whole document	1-25
Y	WO 2008/036929 A2 (ALNYLAM PHARMACEUTICALS INC [US]; HADWIGER PHILIPP [DE]; GEICK ANKE [D] 27 March 2008 (2008-03-27) See particularly claims 20,21; Tables 6-8	1-25

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 28 June 2012	Date of mailing of the international search report 07/11/2012
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Fuhr, Christian
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2012/051665

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 all searchable 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.:

2-4, 7(completely); 1, 5, 6, 8-25(partially)

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: 2-4, 7(completely); 1, 5, 6, 8-25(partially)

peptides comprising core sequence
X1LX2RALWX9LX3X9X4LWX9LX5X6X7X8 (SEQ ID No: 36), complexes
and nanoparticles made thereof together with a cargo
molecule, and medical uses of said complexes and
nanoparticles

2. claims: 1, 5, 6, 8-25(all partially)

peptides comprising core sequence
X1LX2LARWX9LX3X9X4LWX9LX5X6X7X8 (SEQ ID No: 37), complexes
and nanoparticles made thereof together with a cargo
molecule, and medical uses of said complexes and
nanoparticles

3. claims: 1, 5, 6, 8-25(all partially)

peptides comprising core sequence
X1LX2ARLWX9LX3X9X4LWX9LX5X6X7X8 (SEQ ID No: 38), complexes
and nanoparticles made thereof together with a cargo
molecule, and medical uses of said complexes and
nanoparticles

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/051665

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007069090	A2	21-06-2007	
		CA 2632451 A1	21-06-2007
		EP 1969000 A2	17-09-2008
		US 2009292003 A1	26-11-2009
		WO 2007069090 A2	21-06-2007

WO 2008036929	A2	27-03-2008	
		US 2009176710 A1	09-07-2009
		WO 2008036929 A2	27-03-2008
