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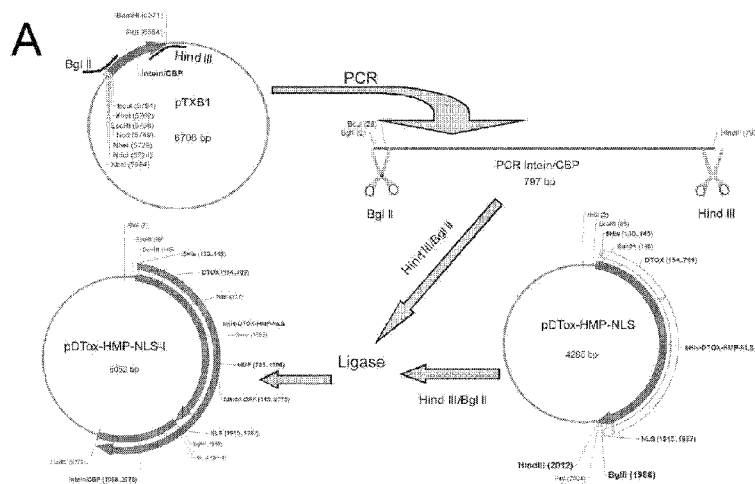
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Published:

- 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))

[Continued on next page]

(54) Title: MODULAR TRANSPORT PLATFORM FOR TARGETED DELIVERY OF THERAPEUTIC AGENTS



(57) Abstract: The invention relates to a modular transport platform (MTP) for delivering active, diagnostic or research substances to predesigned intracellular compartments of target cells. The MTP includes functional modules within one molecule to accomplish one or more of the following: penetration of the modular transport platform into a target cell type, pH-dependent membrane disruption activity within the target cell, directed intracellular transport into preselected intracellular compartment, and delivery of a substance to be transported to the intracellular compartment. The modular transport platform includes the following modules: (1) a ligand module to target a specific receptor on the surface of the target cell; (2) an endosomolytic module that provides pH-dependent membrane disruption activity within the target cell; (3) an intracellular transport module to cause delivery of the MTP to a particular subcellular compartment; (4) a module for intracellular retention to ensure retention of the MTP within the subcellular compartment of the target cell; (5) a module for subcellular recognition; (6) a substance to be transported by the MTP; and (7) a carrier module for unifying the modules and coupling the modules with the transported substance.



(88) Date of publication of the international search report:

17 January 2013

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/050624

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61K47/48 A61K41/00 A61K51/08
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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)

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 practicable, search terms used)

EPO-Internal, BIOSIS, EMBASE, CHEM ABS Data, DISSERTATION ABS, PASCAL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ROSENKRANZ A A ET AL: "TARGETED INTRACELLULAR SITE-SPECIFIC DRUG DELIVERY: PHOTSENSITIZER TARGETING TO MELANOMA CELL NUCLEI", GENETIKA, vol. 39, no. 2, 1 February 2003 (2003-02-01), pages 259-268, XP009060136, ISSN: 0016-6758 the whole document ----- -/--	1-24,26



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 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

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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/050624

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	D. G. GILYZOVA ET AL: "Targeting Cancer Cells by Novel Engineered Modular Transporters", CANCER RESEARCH, vol. 66, no. 21, 1 November 2006 (2006-11-01), pages 10534-10540, XP055044845, ISSN: 0008-5472, DOI: 10.1158/0008-5472.CAN-06-2393 abstract page 10535 - page 10536, left-hand column table 1 page 10538 - page 10540 -----	1-24,26
X	ROSENKRANZ ANDREY A ET AL: "Recombinant modular transporters for cell-specific nuclear delivery of locally acting drugs enhance photosensitizer activity", FASEB JOURNAL, vol. 17, no. 9, 1 June 2003 (2003-06-01), pages 1121-1123, XP002364149, ISSN: 0892-6638 the whole document -----	1-24,26
X	D.G. GILYZOVA ET AL: "Recombinant modular transporters on the basis of epidermal growth factor for targeted intracellular delivery of photosensitizers", PROCEEDINGS OF SPIE--THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, vol. 5973, 8 August 2005 (2005-08-08), pages 59730E-59730E10, XP040215589, ISSN: 0277-786X, DOI: 10.1117/12.640049 the whole document -----	1-24,26
X	ROSENKRANZ A A ET AL: "Engineered Modular Recombinant Transporters: Application of New Platform for Targeted Radiotherapeutic Agents to alpha-Particle Emitting ^{211}At ", INTERNATIONAL JOURNAL OF RADIATION: ONCOLOGY BIOLOGY PHYSICS, vol. 72, no. 1, 1 September 2008 (2008-09-01), pages 193-200, XP025407377, ISSN: 0360-3016, DOI: 10.1016/J.IJROBP.2008.05.055 [retrieved on 2008-08-20] the whole document -----	1-24,26
X	RU 2004 100070 A (V.G. LUNIN ET AL.) 10 June 2005 (2005-06-10) the whole document -----	1-24,26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2012/050624

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.: 25
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:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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.:

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

Continuation of Box II.2

Claims Nos.: 25

Present claim 25 does not define the technology of creation mentioned in technical features which might allow it to be distinguished from the prior art, and can therefore not be searched.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/050624

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
RU 2004100070 A	10-06-2005	-----	