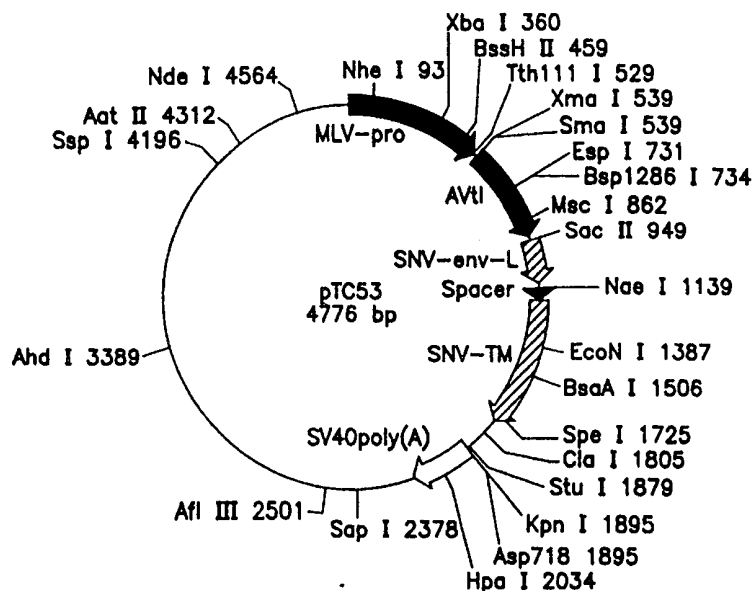




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁷ : C12N 15/867, 15/62</p>	<p>A3</p>	<p>(11) International Publication Number: WO 00/09730 (43) International Publication Date: 24 February 2000 (24.02.00)</p>
<p>(21) International Application Number: PCT/US99/18141 (22) International Filing Date: 10 August 1999 (10.08.99) (30) Priority Data: 09/135,121 17 August 1998 (17.08.98) US (71) Applicant: THOMAS JEFFERSON UNIVERSITY [US/US]; Department of Technology Transfer, Suite M-60, 1020 Locust Street, Philadelphia, PA 19107-6799 (US). (72) Inventor: DORNBURG, Ralph, C.; Apartment D510, 7901 Henry Avenue, Philadelphia, PA 19128 (US). (74) Agents: BARRETT, Joseph, B.; Baxter Healthcare Corpora- tion, Route 120 & Wilson Road, Round Lake, IL 60073 (US) et al.</p>	<p>(81) Designated States: AU, CA, JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> (88) Date of publication of the international search report: 18 May 2000 (18.05.00)</p>	

(54) Title: CELL TYPE SPECIFIC GENE TRANSFER USING RETROVIRAL VECTORS CONTAINING ANTIBODY-ENVELOPE FUSION PROTEINS AND WILD-TYPE ENVELOPE FUSION PROTEINS



(57) Abstract

A method of infecting target cells with retroviral vector particles having target cell specificity. The retroviral vector particles have a chimeric envelope protein consisting of an antigen binding site of an antibody or another peptide, fused to the envelope protein the retroviral vector. The antigen binding site or other peptide disrupts the natural viral receptor binding site. The method includes producing the retroviral vector and contacting the vector with the target cell such that the vector is internalized by the cell.

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INTERNATIONAL SEARCH REPORT

International Application No

PC JS 99/18141

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C12N15/867 C12N15/62

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 7 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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 23846 A (UNIV MEDICINE & DENTISTRY OF N) 8 September 1995 (1995-09-08) page 6-23; claims 1-21; figures 1-6 ---	1-20
X	CHU T -H T ET AL: "RETROVIRAL VECTOR PARTICLES DISPLAYING THE ANTIGEN-BINDING SITE OF AN ANTIBODY ENABLE CELL-TYPE-SPECIFIC GENE TRANSFER" JOURNAL OF VIROLOGY, US, THE AMERICAN SOCIETY FOR MICROBIOLOGY, vol. 69, no. 4, 1 April 1995 (1995-04-01), pages 2659-2663, XP000615436 ISSN: 0022-538X --- -/--	1-3,5-7, 13-15, 19,20

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *&* document member of the same patent family

Date of the actual completion of the international search

14 February 2000

Date of mailing of the international search report

22.02.00

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

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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.	<p>CHU T-H T & DORNBURG R: "Towards highly efficient cell-type-specific gene transfer with retroviral vectors displaying single-chain antibodies" JOURNAL OF VIROLOGY, US, THE AMERICAN SOCIETY FOR MICROBIOLOGY, vol. 71, no. 1, January 1997 (1997-01), pages 720-725-725, XP002104908 ISSN: 0022-538X abstract; figure 1; table 1 -----</p>	<p>1-3,5-7, 13-15, 19,20</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/18141

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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:

Although claims 1-20 , as far as it concerns an in-vivo method , are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC JS 99/18141

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9523846 A	08-09-1995	CA 2184354 A	08-09-1995
		EP 0786010 A	30-07-1997
		JP 10501403 T	10-02-1998
		US 5869331 A	09-02-1999
