



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

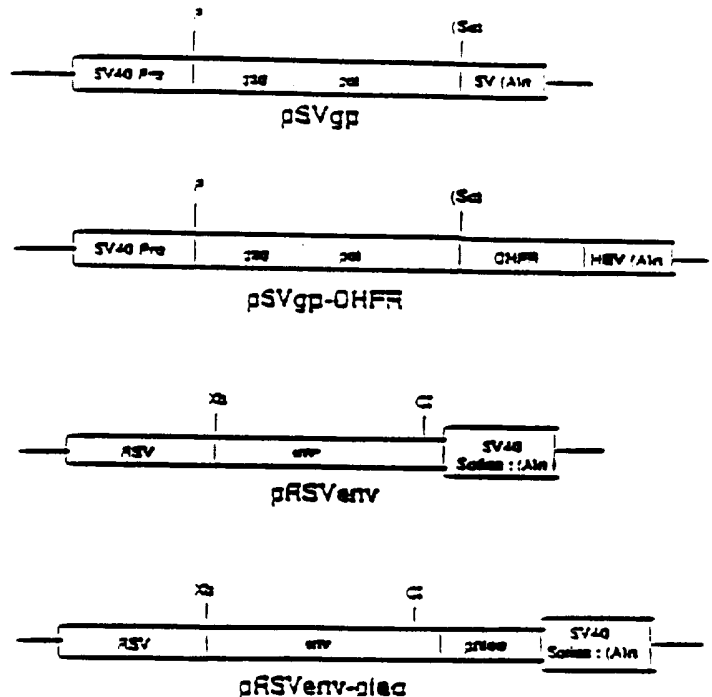
<p>(51) International Patent Classification ⁵ : C12N 15/86, 5/10, 7/04 C12N 15/12, 15/62, 15/00 A01K 67/00</p>	<p>A3</p>	<p>(11) International Publication Number: WO 92/05266 (43) International Publication Date: 2 April 1992 (02.04.92)</p>
<p>(21) International Application Number: PCT/US91/06852 (22) International Filing Date: 20 September 1991 (20.09.91) (30) Priority data: 586,603 21 September 1990 (21.09.90) US (71) Applicant: VIAGENE, INC. [US/US]; 11075 Roselle Street, San Diego, CA 92121 (US). (72) Inventors: JOLLY, Douglas, J. ; 3050 Via Alicante Drive, La Jolla, CA 92037 (US). BARBER, Jack, R. ; 11168 Carlotta Street, San Diego, CA 92129 (US). RESPESS, James, G. ; 4966 Lamont Street, San Diego, CA 92109 (US). CHANG, Stephen, M., W. ; 9838 Via Caceras, San Diego, CA 92129 (US).</p>		<p>(74) Agents: MAKI, David, J. et al. ; Seed and Berry, 6300 Columbia Center, Seattle, WA 98104-7092 (US). (81) Designated States: AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC, MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL (European patent), NO, PL, RO, SD, SE (European patent), SN (OAPI patent), SU⁺, TD (OAPI patent), TG (OAPI patent). Published <i>With international search reports. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 23 July 1992 (23.07.92)</p>

(54) Title: PACKAGING CELLS

(57) Abstract

The invention described herein allows the production of recombinant retroviruses (retroviral vector particles) from producer cells which are safer and of higher titre than normal. In addition, methods are provided for making helper cells which, when a recombinant retrovirus genome is introduced to make a producer line, produce particles that are targeted toward particular cell types. Methods are also provided for making recombinant retrovirus systems adapted to infect a particular cell type, such as a tumor, by binding the retrovirus or recombinant retrovirus in the particular cell type. Methods are also provided for producing recombinant retroviruses which integrate in a specific small number of places in the host genome, and for producing recombinant retroviruses from transgenic animals.

Plasmids Designed to Increase Viral Protein Production



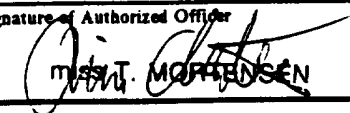
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ES	Spain				

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 91/06852

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl.5	C 12 N 15/86	C 12 N 5/10
C 12 N 15/12	C 12 N 15/62	C 12 N 15/00
		C 12 N 7/04
		A 01 K 67/00
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl.5	C 12 N	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X,P	WO,A,9102805 (VIAGENE, INC.) 7 March 1991, see page 12; page 13, lines 1-4; example 8	1
P,Y	* See page 84, line 26 - page 86, line 7 * ---	13-23
X	WO,A,8808454 (STATE OF OREGON) 3 November 1988, see especially table I	20,22
Y	see the whole document ---	13-23
A	Nucleic Acids Research, vol. 18, no. 12, 25 June 1990, J.P. MORGENSTERN et al.: "Advanced mammalian gene transfer: high titre retroviral vectors with multiple drug selection markers and a complementary helper-free packaging cell line", pages 3587-3596, see the whole document --- -/-	1
<p>⁹ Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document 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</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>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
05-02-1992	16.06.92	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	 MISS T. MORTENSEN	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	EP,A,0386882 (DANA FARBER CANCER INSTITUTE) 12 September 1990, see the whole document <p style="text-align: center;">---</p>	20-21
X	Journal of Virology, vol. 64, no. 3, March 1990, F.-L. COSSET et al.: "A new avian leukosis virus-based packaging cell line that uses two separate transcomplementing helper genomes", pages 1070-1078, see the whole document, specially page 1076, column 2 <p style="text-align: center;">-----</p>	1,20-21

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. OBSERVATION WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹

This International search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claim numbers _____ because they relate to subject matter not required to be searched by this Authority, namely: _____

2. Claim numbers _____ 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. Claim numbers _____ because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

This International Searching Authority found multiple inventions in this international application as follows:

1. Claims 1,13-23; 2. Claims 2,3
3. Claims 4-7,31; 4. Claim 8
5. Claims 9-12; 6. Claims 24-30

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application
2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims: _____
3. 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 claim numbers:
Claims 1, 13-23
4. As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

- The additional search fees were accompanied by applicant's protest.
- No protest accompanied the payment of additional search fees.

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

US 9106852

SA 52929

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 12/06/92. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A- 9102805	07-03-91	AU-A- 6185390	03-04-91
		EP-A- 0487587	03-06-92
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WO-A- 8808454	03-11-88	AU-A- 1782288	02-12-88
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EP-A- 0386882	12-09-90	CA-A- 2009403	06-08-90
		JP-A- 3061492	18-03-91
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