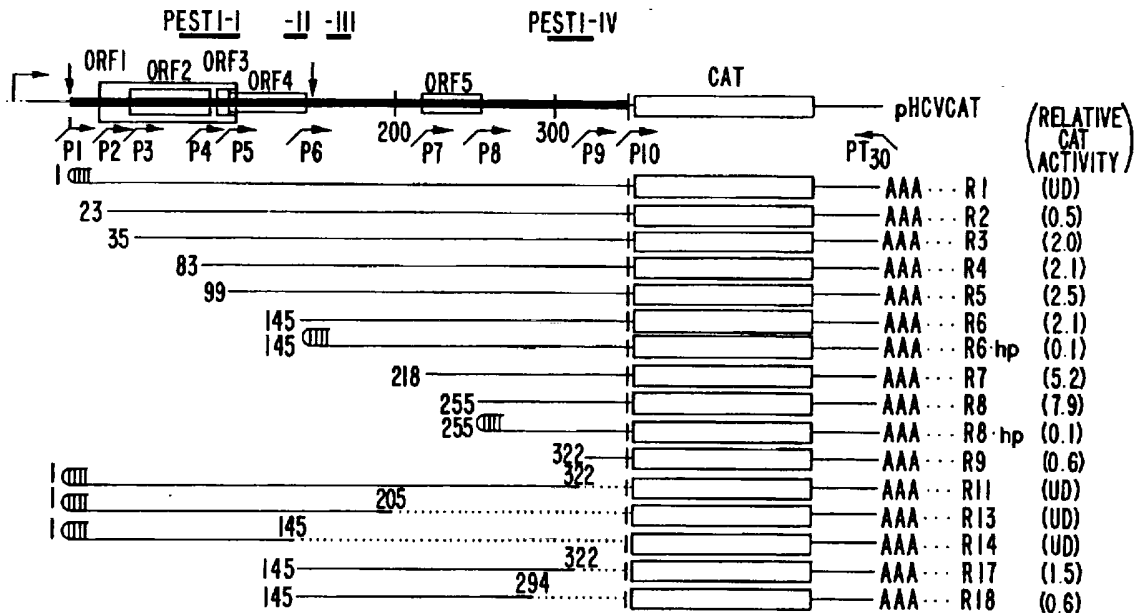




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>5</sup> : C12N 15/11, 15/51, 15/67, 15/86 A61K 31/70, 47/48 // A61K 48/00</p>	<p>A3</p>	<p>(11) International Publication Number: <b>WO 94/08002</b>  (43) International Publication Date: 14 April 1994 (14.04.94)</p>
<p>(21) International Application Number: PCT/US93/09200 (22) International Filing Date: 28 September 1993 (28.09.93)  (30) Priority data: 07/952,799 28 September 1992 (28.09.92) US  (71) Applicant: CHIRON CORPORATION [US/US]; 4560 Horton Street, Emeryville, CA 94608-2916 (US).  (72) Inventors: HANG, Jan, H. ; 3238 Del Mar Drive, Lafayette, CA 94549 (US). SPAETE, Richard, R. ; 2501 Coronet Boulevard, Belmont, CA 94002 (US). YOO, Byoung, J. ; 3520 Brook Street, No. 23, Lafayette, CA 94549 (US). SUH, Byung, S. ; 949 East Street, No. 207, Lafayette, CA 94549 (US). SELBY, Mark, J. ; 136 Galewood Circle, San Francisco, CA 94131 (US). HOUGHTON, Michael ; 53 Rosemead Court, Danville, CA 94529 (US).</p>	<p>(74) Agents: GOLDMAN, Kenneth, M.; Chiron Corporation, Intellectual Property - R440, P.O. Box 8097, Emeryville, CA 94662-8097 (US) et al.  (81) Designated States: AU, BG, CA, CZ, FI, HU, JP, KR, NO, PL, RO, RU, SK, UA, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report. 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: 26 May 1994 (26.05.94)</p>	

(54) Title: METHODS AND COMPOSITIONS FOR CONTROLLING TRANSLATION OF HCV PROTEINS



(57) Abstract

Embodiments of the present invention feature methods and compositions for controlling the translation of viral peptides and proteins from viral nucleic acid, with particular applications to pestivirus and HCV. The methods and compositions feature control elements of the 5'UT region of the viral genome.

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 93/09200

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 5 C12N15/11 C12N15/51 C12N15/67 C12N15/86 A61K31/70  
A61K47/48 //A61K48/00

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 5 C12N C07K 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)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA vol. 88, no. 5, 1 March 1991, WASHINGTON US pages 1711 - 1715 HAN, J. ET AL. 'Characterization of the terminal regions of hepatitis C viral RNA: identification of conserved sequences in the 5' untranslated region and poly(A) tails at the 3' end' cited in the application see figures 2,3	1-5,8-11
Y	EP,A,0 388 232 (CHIRON CORPORATION) 19 September 1990 cited in the application see page 22, line 47 - line 58	1-4,8-10
	-/--	

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Date of the actual completion of the international search

17 March 1994

Date of mailing of the international search report

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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.
Y	<p>PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA vol. 86 , September 1989 , WASHINGTON US pages 6553 - 6556 LETSINGER, R. ET AL. 'Cholesteryl-conjugated oligonucleotides: synthesis, properties, and activity as inhibitors of replication of human immunodeficiency virus in cell culture' cited in the application see the whole document -----</p>	5,11
T	<p>VIROLOGY vol. 191, no. 2 , December 1992 , NEW YORK, US pages 889 - 899 YOO, B. ET AL. '5'end-dependent translation initiation of hepatitis C viral RNA and the presence of putative positive and negative translational control elements within the 5'untranslated region' see the whole document -----</p>	

1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 93/09200

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0388232	19-09-90	AU-B- 4750493	20-01-94
		AU-B- 640920	09-09-93
		AU-A- 5278390	22-10-90
		CA-A- 2012482	17-09-90
		JP-T- 4504715	20-08-92
		WO-A- 9011089	04-10-90

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