



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification<sup>4</sup> : C12N 15/00, A61K 39/00, 39/395 A61K 39/385</p>	A3	<p>(11) International Publication Number: <b>WO 89/ 01973</b></p> <p>(43) International Publication Date: 9 March 1989 (09.03.89)</p>
<p>(21) International Application Number: PCT/US88/03032</p> <p>(22) International Filing Date: 1 September 1988 (01.09.88)</p> <p>(31) Priority Application Number: 092,036</p> <p>(32) Priority Date: 2 September 1987 (02.09.87)</p> <p>(33) Priority Country: US</p> <p>(71) Applicants: APPLIED BIOTECHNOLOGY, INC. [US/US]; 80 Rogers Street, Cambridge, MA 02142 (US). WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH [US/US]; Nine Cambridge Center, Cambridge, MA 02142 (US).</p> <p>(72) Inventors: PANICALI, Dennis, L. ; 114 Nonset Path, Acton, MA 01720 (US). BERNARDS, Rene ; 26 Marion Street, Brookline, MA 02146 (US).</p>		<p>(74) Agents: DECONTI, Giulio, A., Jr. et al.; Hamilton, Brook, Smith &amp; Reynolds, Two Militia Drive, Lexington, MA 02173 (US).</p> <p>(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent).</p> <p><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></p> <p>(88) Date of publication of the international search report: 23 March 1989 (23.03.89)</p>
<p>(54) Title: RECOMBINANT POX VIRUS FOR IMMUNIZATION AGAINST TUMOR-ASSOCIATED ANTIGENS</p> <p>(57) Abstract</p> <p>Recombinant pox viruses capable of expressing cell-encoded, tumor-associated antigens are disclosed. The recombinant viruses are useful for evoking an immune response against the antigen.</p>		


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# INTERNATIONAL SEARCH REPORT

International Application No PCT/US 88/03032

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC <sup>4</sup> : C 12 N 15/00; A 61 K 39/00; A 61 K 39/395; A 61 K 39/385		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC <sup>4</sup>	C 12 N	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>9</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
Y	Nature, vol. 326, 30 April 1987, R. Lathe et al.: "Tumour prevention and rejection with recombinant vaccinia" pages 878-880, see the whole document (cited in the application) --	1-14, 23-25, 27-31
Y	Nature, vol. 319, 16 January 1986, C.I. Bargmann et al.: "The neu oncogene encodes an epidermal growth factor receptor-related protein" pages 226-230, see the whole document (cited in the application) --	1-14, 23-25, 27-31
Y	Nature, vol. 319, 16 January 1986, T. Yamamoto et al.: "Similarity of protein encoded by the human c-erb-B-2 gene to epidermal growth factor receptor" pages 230-234 see the whole document --	6, 7, 12, 13, 30
<p><sup>9</sup> Special categories of cited documents: <sup>10</sup></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>"&amp;" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
13th December 1988		16 FEB 1989
International Searching Authority		Signature of Authorized Officer
EUROPEAN PATENT OFFICE		 P.C.G. VAN DER PUTTEN

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
Y	Nature, vol. 319, 27 February 1986, D. Martin-Zanca et al.: "A human oncogene formed by the fusion of truncated tropomyosin and protein tyrosine kinase sequences" pages 743-748 see the whole document --	5,10,30
Y	Proc. Natl. Acad. Sci, USA, vol. 83, September 1986 (US) L. Nagarajan et al.: "The human c-ros gene (ROS) is located at chromosome region 6q16 →6q22" pages 6568-6572 see the whole document --	5,10,30
A	J. Gen. Virol. vol. 67, no. 10 (GB) M. Mackett et al.: "Review Article - Vaccinia virus expression vectors" pages 2067-2082 --	
P,X	GB, A, 2188637 (ONCOGEN) 7 October 1987, see the whole document --	1,2,8,23-25, 27-29
Y	--	3-7,9-14, 30,31
P,Y	The EMBO Journal, vol. 6, no. 11, (GB) Y. Yarden et al.: "Human proto-oncogene c-kit: a new cell surface receptor tyrosine kinase for an unidentified ligand" pages 3341-3351 see the whole document --	5,10,30
P,X	Proc. Natl. Acad. Sci, USA, vol. 84, October 1987 (US) R. Bernards et al.: "Effective tumor immunotherapy directed against an oncogene-encoded product using a vaccinia virus vector" pages 6854-6858 see the whole document --	

## FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V.  OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE <sup>1</sup>

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 \*1) because they relate to subject matter not required to be searched by this Authority, namely:

\*1) 15-22, 26

See PCT-Rule 39.1 (iv): methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods

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 <sup>2</sup>

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 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:
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 8803032

SA 24514

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 03/02/89. 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
GB-A- 2188637	07-10-87	SE-A- 8700466 NL-A- 8700285 DE-A- 3703702 BE-A- 1000175 AU-A- 6862087 LU-A- 86765 FR-A- 2601370 JP-A- 62294698	08-08-87 01-09-87 18-02-88 12-07-88 13-08-87 15-09-87 15-01-88 22-12-87
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