



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

<p>(51) International Patent Classification <sup>6</sup> : C12N 15/63, A61K 38/17, 39/00, 48/00, C12N 5/10</p>	A3	<p>(11) International Publication Number: <b>WO 99/04810</b></p> <p>(43) International Publication Date: 4 February 1999 (04.02.99)</p>
<p>(21) International Application Number: PCT/EP98/04621</p> <p>(22) International Filing Date: 23 July 1998 (23.07.98)</p> <p>(30) Priority Data: 97401800.4 25 July 1997 (25.07.97) EP</p> <p>(71) Applicants (for all designated States except US): INSTITUT GUSTAVE ROUSSY [FR/FR]; 39, rue Camille Desmoulins, F-94805 Villejuif Cedex (FR). APPLIED RESEARCH SYSTEMS ARS HOLDING N.V. [NL/NL]; John R. Gorsiraweg 6, P.O. Box 3889, Curaçao (AN).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): TRIEBEL, Frédérique [FR/FR]; 10, rue Saint-Louis, F-78000 Versailles (FR).</p> <p>(74) Agent: HIRSCH, Denise; Cabinet Lavoix, 2, place d'Estienne d'Orves, F-75441 Paris Cedex 09 (FR).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</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: 8 July 1999 (08.07.99)</p>	
<p>(54) Title: USE OF MHC CLASS II LIGANDS AS ADJUVANT FOR VACCINATION AND OF LAG-3 IN CANCER TREATMENT</p>		
<p>(57) Abstract</p> <p>The present invention concerns a use of a MHC class II ligand, such as CD4 and LAG-3, for the manufacture of a medicament for preventing or treating pathological conditions involving an antigen specific immune response, as well as the use of LAG-3 in cancer-immunotherapy. The invention also concerns a pharmaceutical composition comprising an effective amount of an antigen able to induce an antigen-specific immune response together with an effective amount of a MHC class II ligand wherein said MHC class II ligand is present as an adjuvant-like agent.</p>		

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 98/04621

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 6 C12N15/63 A61K38/17 A61K39/00 A61K48/00 C12N5/10		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 6 C07K A61K 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)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 385 909 A (MICROGENESYS INC) 5 September 1990 see the whole document ---	1-21
X	WO 96 20215 A (OM LAB SA ;DEUTSCHE OM ARZNEIMITTEL GMBH (DE); LAUENER ROGER PASCA) 4 July 1996 see the whole document ---	1-21
X	WO 96 17874 A (HOFFMANN LA ROCHE ;NAGY ZOLTAN (US); VIDOVIC DAMIR (US)) 13 June 1996 see the whole document ---	1-21
X	WO 89 02922 A (GENENTECH INC) 6 April 1989 see the whole document ---	1-21
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
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Date of the actual completion of the international search  <p style="text-align: center; font-size: 1.2em;">10 December 1998</p>	Date of mailing of the international search report  <p style="text-align: center; font-size: 1.5em; font-weight: bold;">26. 05. 99</p>	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <p style="text-align: center; font-weight: bold;">MULLER-THOMALLA, K</p>	

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 98/04621

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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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>DRANOFF ET AL.: "Prospects for the immunotherapy of cancer using genetically modified tumour cells"            KLINISCHE PHARMAKOLOGIE,            vol. 9, September 1992, pages 22-29,            XP002058638            see the whole document            ---</p>	22-25
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 98/04621

## 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:
  
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:

see additional sheet

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.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-21

Use of a MHC class II ligand, e.g. CD4 or LAG-3, for the manufacture of a medicament as well as the ligands per se in combination with an undefined antigen.

2. Claims: 22-25

Cells (tumour cells) transfected with a DNA coding for at least one MHC class II ligand, as well as the use of said cells and their preparation.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 98/04621

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