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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/23414 A3

(54) Title: IMMUNOLOGICALLY SIGNIFICANT HERPES SIMPLEX VIRUS ANTIGENS

(57) Abstract: The invention provides HSV antigens that are useful for the prevention and treatment of HSV infection. Disclosed herein are epitopes confirmed to be recognised by T-cells derived from herpetic lesions. T-cells having specificity for antigens of the invention have demonstrated cytotoxic activity against cells loaded with virally-encoded peptide epitopes, and in many cases, against cells infected with HSV. The identification of immunogenic antigens responsible for T-cell specificity provides improved anti-viral therapeutic and prophylactic strategies. Compositions containing antigens or polynucleotides encoding antigens of the invention provide effectively targeted vaccines for prevention and treatment of HSV infection.

INTERNATIONAL SEARCH REPORT

In. ational Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/38 C12N15/86 C12N5/10 C07K14/035 A61K39/245

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 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)
EPO-Internal, WPI Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MANICKAN E. ET AL.: "Vaccination vith recombinant vaccinia viruses expressing ICP27 induces protective immunity against Herpes simplex virus through CD4+ Th1+ T-cells." J. VIROL., vol. 69, no. 8, August 1995 (1995-08), pages 4711-4716, XP002161836 abstract	1,4-6, 12,13, 17,18, 20-29,31

A	WO 98 55145 A (CHIRON CORP) 10 December 1998 (1998-12-10) page 49 -page 57 table 7	1-31

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[X] Further documents are listed in the continuation of box C.

[X] 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

"E" earlier document but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 March 2001	29. 05. 2001

Name and mailing address of the ISA	Authorized officer
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	Galli, I

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Form PCT/ISA/210 (second sheet) (July 1992)

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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.
A	KOELLE D.M. ET AL.: "Recognition of herpes simplex virus type 2 tegument proteins by CD4 T-cells infiltrating human genital herpes lesions." J. VIROL., vol. 72, no. 9, September 1998 (1998-09), pages 7476-7483, XP002161837 the whole document ---	1-31
A	MCGEOCH D J ET AL: "COMPARATIVE SEQUENCE ANALYSIS OF THE LONG REPEAT REGIONS AND ADJOINING PARTS OF THE LONG UNIQUE REGIONS IN THE GENOMES OF HERPESSIMPLEX VIRUSES TYPES 1 AND 2" JOURNAL OF GENERAL VIROLOGY,GB,SOCIETY FOR GENERAL MICROBIOLOGY, READING, vol. 72, no. PART 12, 1 December 1991 (1991-12-01), pages 3057-3075, XP000406755 ISSN: 0022-1317 the whole document -& DATABASE EMBL SEQUENCES [Online] Accession No. P28284, 1 December 1992 (1992-12-01) MCGEOCH D.J.: "HSV2 ICP0 protein." XP002161838 -----	1-31

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INTERNATIONAL SEARCH REPORT

international application No.
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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.:

see further information sheet inevntion 1.

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: 2 and partly 1,4-31

A pharmaceutical composition comprising a herpes simplex virus (HSV) polypeptide, wherein the polypeptide comprises an ICP0 protein or fragment thereof, and a pharmaceutical acceptable carrier.

A polynucleotide that encodes amino acids 92-101 of ICP0; corresponding vectors, host cells, polypeptides, recombinant viruses, methods to produce immune cells and resulting specific immune cells, therapeutic applications.

2. Claims: 3 and partly 1,4-31

Idem as subject-matter 1 but limited to UL47, and in particular to the fragments comprising amino acids 289-298, 548-557, 550-559, 551-559, 551-561.

3. Claims: 32-40

A method for identifying HSV epitopes immunogenic for CD8+ T cells comprising obtaining CD8+ cells from an HSV lesion, assaying the obtained T cells to identify T cells having ability to recognize HSV-infected cells, obtaining and fragmenting a nucleic acid preparation from HSV, expressing one or more fragments of the obtained nucleic acid and assaying the expressed fragments for antigenic reactivity with said HSV-specific T cells.

INTERNATIONAL SEARCH REPORT

Information on patent family members

In. ational Application No
PCT/US 00/26663

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9855145 A	10-12-1998	AU 7597998 A	21-12-1998
		EP 0984790 A	15-03-2000