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(88) Date of publication of the international search report:
12 March 2009

(54) Title: CHIMERIC HIV ANTIGENS

(57) Abstract: The invention provides polynucleotides and polypeptides encoded therefrom that are capable of inducing immune responses to a human immunodeficiency virus. Compositions and methods for utilizing polynucleotides and polypeptides of the invention are also provided.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/70947

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61K 39/21; C07K 14/16 (2008.04)

USPC - 424/208.1, 424/188.1, 530/350

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(8): A61K 39/21; C07K 14/16 (2008.04)

USPC: 424/208.1, 424/188.1, 530/350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 424/208.1, 207.1, 204.1, 184.1, 188.1, 187.1, 186.1, 185.1 (text search: see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO, DialogPRO (Classic), EPO, Google Scholar

Search terms: chimeric, antigen, HIV, polypeptide, sequence, neutralizing, antibody, isolated, and recombinant

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7,179,468 B1 (Lu et al.) 20 February 2007 (20.02.2007): entire document, esp: col 3, lines 1-22; col 12, lines 9-17; col 13, lines 7-19; col 14, lines 11-20; col 15, lines 1-11; col 16, lines 28-44; col 18, lines 37-48, lines 55-67; col 20, lines 22-39, lines 61-67; col 21, lines 13-26; Figs. 1, 4B.	1-23, 25-31, 33, 35, 36, 45-52, 61-66, and 69
A	US 6,846,905 B2 (Hackett, Jr. et al.) 25 January 2005 (25.01.2005) entire document, esp: col 2, lines 51-67; col 4, lines 4-15; col 7, lines 7-61; col 14, lines 56-67; col 15, lines 13-29; col 45, lines 7-18; Figs 1, 5, 6, 12.	61-66
A	US 20050137387 A1 (Mullins et al.) 23 June 2005 (23.06.2005) entire document, esp: SEQ ID NO:51	1-23, 25-31, 33, 35, 36, 45-52, 61-66, and 69

☐ Further documents are listed in the continuation of Box C.

* 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 application or patent 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

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Date of mailing of the international search report

06 JAN 2009

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/70947

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 24, 32, 34, 37-44, 53-60, 67, 68, 70-74, 77-101, 109-111, 115, 117-128
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I claims 1-23, 25-31, 33, 35, 36, 45-52, 61-66, and 69 directed to an isolated or recombinant polypeptide comprising SEQ ID NOS:1-21 and 56-63.

Group II claims 75 and 76 directed to an isolated or recombinant nucleic acid comprising SEQ ID NOS:23-50 and 64-79.

Group III claims 102-108 directed to a method of inducing an immune response against an HIV-1 virus or HIV-1 pseudovirus in a subject wherein the nucleic acid is selected from the group consisting of SEQ ID NOS:23-50 and 64-79 and the polypeptide is selected from the group consisting of SEQ ID NOS:1-21 and 56-63.

Group IV claim 112-114 and 116 directed to an isolated antibody which specifically binds a polypeptide and an isolated antiserum which specifically binds a polypeptide comprising a polypeptide sequence selected from the group consisting of SEQ ID NOS:1-21 and 56-63.

---see extra 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 additional fees, this Authority did not invite payment of additional fees.
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.:
1-23, 25-31, 33, 35, 36, 45-52, 61-66, and 69 restricted to SEQ ID NO:1.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/70947

Continuation of Box III:

There is not special technical feature shared by any of the groups based on the unique structures of the subspecies as described herein below. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1. The species do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The different polypeptides represented by SEQ ID NOS:1-21 and 56-63 are different species because these structures are not common to one another but are different because they are composed of unique amino acid sequences. Thus, the generic claims identified as Group I and Group IV each comprise 29 separate inventions. The different nucleotide sequences by SEQ ID NOS:23-50 and 64-79 are different species because these structures are not common to one another but are different because they are composed of unique nucleic acid sequences. Thus, the generic claims identified as Group II comprise 39 separate inventions. The generic claims identified by Group III comprise 68 separate inventions.