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(54) Title: BACTERIAL ARTIFICIAL CHROMOSOME CONTAINING FELINE HERPES VIRUS TYPE 1 GENOME AND USES THEREOF

(57) Abstract: The present invention relates to recombinant feline herpes virus type 1 (FHV-1) nucleic acids and proteins. In particular the present invention provides compositions comprising the full length FHV-1 genome or portions thereof, and infectious FHV-1 virions produced therefrom. The FHV-1 compositions are suitable for use in inducing an immune response in inoculated subjects and for use in identifying agents that attenuate FHV-1 infection.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 08/11914

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - C12N 15/00 (2009.01)
USPC - 435/320.1
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) - C12N 15/00 (2009.01)
USPC - 435/320.1; 435/69.3, 435/462, 435/235.1, 435/239; 536/23.1, 536/23.72; 424/229.1, 424/230.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8) - C12N 15/00 (2009.01) - see keyword below
USPC - 435/320.1; 435/69.3, 435/462, 435/235.1, 435/239; 536/23.1, 536/23.72; 424/229.1, 424/230.1 - see keyword below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); Medline, Google
Search terms: feline herpes virus type I, FHV-1, loxP, bacterial artificial chromosome, BAC, unique long region, UL, short, Us, inverted repeat short, IRs, terminal repeat short, TRs, eukaryotic, selection, host cell, Cre recombinase, cat, immunity, I-Scel, serum

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	COSTES et al. Felid herpesvirus 1 glycoprotein G is a structural protein that mediates the binding of chemokines on the viral envelope. <i>Microbes Infect.</i> 2006, Vol.8(11), p.2657-67.	1, 7-9
Y	Abstract; pg 2658, col1 and col 2; pg 2659, col 1, top para; pg 2660, col 2; pg 2661, col 1, last para, col 2, top para and middle para; pg 2662, col 2; pg 2663, col 2; and pg 2666, col 2	2-5, 10-29
Y	ARII et al. Construction of an infectious clone of canine herpesvirus genome as a bacterial artificial chromosome. <i>Microbes Infect.</i> 2006 Apr;8(4):1054-63. Abstract	2-5, 10-28
Y	US 2005/0089531 A1 (KAWAKAMI et al.) 28 April 2005 (28.04.2005), para [0029] and [0053]	14-15
Y	SUSSMAN et al. A feline herpesvirus-1 recombinant with a deletion in the genes for glycoproteins gI and gE is effective as a vaccine for feline rhinotracheitis. <i>Virology.</i> 1995, Vol. 214(1), p.12-20. Abstract; and Table 3	17, 19, 23-28
Y	US 2006/0099678 A1 (OHTA et al.) 11 May 2006 (11.05.2006), para [0007]	17, 19, 23-28
Y	US 6,010,703 A (MAES et al.) 04 January 2000 (04.01.2000), col 1, ln 39-44; col 17, ln 58-67; col 18, ln 1 and 62-67; col 19, ln 1-2, and 21-28; and col 20, ln 1-2	29

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
25 August 2009 (25.08.2009)

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23 SEP 2009

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/11914

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.:
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:
Group I+: Claims 1-33 are drawn to either a bacterial artificial chromosome, a method for producing feline herpes virus type 1, a kit for producing feline herpes virus type 1, a method for producing a feline herpes virus type 1 (FHV-1) mutant, or a method for differentiating between immunity resulting from vaccinations with BAC-derived gene-deleted FRV-I or field virus, where the first named invention will be searched for free and includes claims 1-33, wherein claims 6 and 30 are limited to SEQ ID NO: 1. Applicant may have additional sequences of claims 6 and 30 for an additional search fee per elected sequence.

The group listed above does not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2, the inventions lack the same or corresponding special technical features for the following reasons:

The inventions of Group I+ are drawn to distinct sequences with different structure and function.

Accordingly, unity of invention is lacking under PCT Rule 13.2 because the inventions do not share a same or corresponding special technical feature.

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.: 1-33, where claims 6 and 30 are limited 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 08/11914

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO/1998/050069 A1 (COCHRAN et al) 12 November 1998 (12.11.1998) pg 60-62, SEQ ID NO: 9 and claim 1	6, 30-33
A	Nimonkar et al. Reconstitution of recombination-dependent DNA synthesis in herpes simplex virus 1. Proc Natl Acad Sci U S A. 2003, Vol.100(18), p.10201-6, especially the abstract	30-33