

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/86, 5/10, A61K 48/00	A3	(11) International Publication Number: WO 00/03030 (43) International Publication Date: 20 January 2000 (20.01.00)
(21) International Application Number: PCT/US99/15565 (22) International Filing Date: 9 July 1999 (09.07.99) (30) Priority Data: 09/113,750 10 July 1998 (10.07.98) US (71) Applicant (for all designated States except US): SCHERING-PLOUGH LTD. [CH/CH]; Toepferstrasse 5, CH-6004 Lucerne (CH). (72) Inventors; and (75) Inventors/Applicants (for US only): COCHRAN, Mark, D. [US/US]; 4506 Horizon Drive, Carlsbad, CA 92008 (US). JUNKER, David, E. [US/US]; 6901 Galewood Street, San Diego, CA 92120 (US). (74) Agent: WHITE, John, P.; Cooper & Dunham LLP, 1185 Avenue of the Americas, New York, NY 10036 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, 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, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, 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). Published <i>With international search report.</i> (88) Date of publication of the international search report: 20 July 2000 (20.07.00)
(54) Title: RECOMBINANT RACCOONPOX VIRUS AND USES THEREOF AS A VACCINE IN MAMMALIAN AND AVIAN SPECIES (57) Abstract The present invention provides a recombinant raccoonpox virus comprising a raccoonpox virus viral genome which contains a foreign DNA sequence inserted into a non-essential region within the HindIII "U" genomic region, the HindIII "M" genomic region, or HindIII "N" genomic region of the raccoonpox virus genome. The present invention provides a recombinant raccoonpox virus comprising a raccoonpox virus viral genome which contains a deletion in a raccoonpox virus host range gene of the viral genome. The present invention provides a homology vector for producing a recombinant raccoonpox virus by inserting a foreign DNA sequence into the raccoonpox virus genome. The present invention provides a recombinant raccoonpox virus which is useful as a vaccine in mammalian and avian species.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/15565

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/86 C12N5/10 A61K48/00

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 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 98 04684 A (SYNTRO CORP ; COCHRAN MARK D (US); JUNKER DAVID E (US)) 5 February 1998 (1998-02-05) the whole document ---	1,2, 4-34, 64-68
Y	US 5 266 313 A (ESPOSITO JOSEPH J ET AL) 30 November 1993 (1993-11-30) the whole document ---	1,2, 4-34, 64-68
A	KNIGHT J. C. ET AL.: "Further analyses of the orthopoxviruses velopox virus and raccoon poxvirus." VIROLOGY, vol. 190, 1992, pages 423-433, XP002129736 cited in the application figure 4 --- -/--	1-34, 64-68

☒ Further documents are listed in the continuation of box C.☒ 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.

Z document member of the same patent family

Date of the actual completion of the international search

4 February 2000

Date of mailing of the international search report

11.05 2000

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

Mandl, B

INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/US 99/15565

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 96 40268 A (AMERICAN HOME PROD) 19 December 1996 (1996-12-19) the whole document -----	1-34, 64-68

INTERNATIONAL SEARCH REPORT

Inte. national application No.

PCT/US 99/ 15565

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:
Remark: Although claims 67 and 68 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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:

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.:

1-34, 64-68

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 99/15565

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-34,64-68

A recombinant raccoonpox virus which contains a foreign DNA sequence inserted into a non-essential region within the HindIII "U" genomic region; a host cell infected with said virus; and a vaccine against an animal pathogen comprising said virus.

2. Claims: 35-38

A recombinant swinepox virus comprising a swinepox virus genome which contains a foreign DNA sequence inserted into a non-essential region of the raccoonpox virus genome.

3. Claims: 39-43

A recombinant raccoonpox virus which contains a foreign DNA sequence inserted into a non-essential region within the HindIII "N" genomic region.

4. Claims: 44-48

A recombinant raccoonpox virus which contains a foreign DNA sequence inserted into a non-essential region within the HindIII "M" genomic region.

5. Claims: 49-63

A homology vector for producing a recombinant raccoonpox virus which comprises a double-stranded DNA molecule consisting of

- a) double-stranded foreign DNA sequence encoding an antigenic polypeptide derived from an animal pathogen;
- b) at one end of the foreign DNA sequence, double-stranded feline virus genomic DNA homologous to the genomic DNA located at one side of a non-essential site of the raccoonpox viral genomic DNA;
- c) at the other end of the foreign DNA sequence, double stranded raccoonpox virus genomic DNA homologous to the genomic DNA located at the other side of the same site.

INTERNATIONAL SEARCH REPORT

In. .nation on patent family members

Internat'l Application No

PCT/US 99/15565

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9804684 A	05-02-1998	AU 3799597 A EP 0956343 A HU 9902710 A	20-02-1998 17-11-1999 29-11-1999
US 5266313 A	30-11-1993	US 5348741 A	20-09-1994
WO 9640268 A	19-12-1996	US 5820869 A AU 699794 B AU 5973196 A BR 9609089 A CA 2224257 A EP 0831921 A JP 11506614 T US 5989562 A	13-10-1998 17-12-1998 30-12-1996 02-02-1999 19-12-1996 01-04-1998 15-06-1999 23-11-1999