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(54) Title: ASSEMBLY OF WILD-TYPE AND CHIMERIC INFLUENZA VIRUS-LIKE PARTICLES (VLPs)

(57) Abstract: Influenza virus-like particles (VLPs) comprising the structural proteins HA, NA, M1 and M2 are described. VLPs are also generated containing M1 alone, as are VLPs with M1 and any one or two of HA, Na and M2. VLPs with HA from one influenza subtype and NA from a different influenza subtype are also described, as are VLPs in which a portion or all of HA or NA is replaced by a heterologous moiety not produced by influenza virus, so as to comprise chimeric VLPs.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/19890**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C12N15/44 C12N15/62 C12N7/04 C07K14/11 A61K39/145

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

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)

BIOSIS, MEDLINE, WPI Data, PAJ, EPO-Internal, CHEM ABS Data, SCISEARCH

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GOMEZ-PUERTAS PAULINO ET AL: "Efficient formation of influenza virus-like particles: Dependence on the expression levels of viral proteins." JOURNAL OF GENERAL VIROLOGY, vol. 80, no. 7, July 1999 (1999-07), pages 1635-1645, XP002196046 ISSN: 0022-1317 page 1638, left-hand column, paragraph 2 -page 1640, right-hand column, paragraph 1 page 1642, left-hand column, paragraph 3 -right-hand column, paragraph 1 --- -/--	1,2, 7-11, 17-23, 28-31, 40-46

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/19890

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>NEUMANN GABRIELE ET AL: "Plasmid-driven formation of influenza virus-like particles." JOURNAL OF VIROLOGY, vol. 74, no. 1, January 2000 (2000-01), pages 547-551, XP002196047 ISSN: 0022-538X page 547, left-hand column, paragraph 2 -page 550, right-hand column, paragraph 2</p> <p style="text-align: center;">---</p>	1-46
P,X	<p>WO 00 60050 A (KAWAOKA YOSHIHIRO ;NEUMANN GABRIELE (US); WISCONSIN ALUMNI RES FOU) 12 October 2000 (2000-10-12) page 29, line 9 -page 35, line 8</p> <p style="text-align: center;">---</p>	1-46
P,X	<p>GOMEZ-PUERTAS ET AL: "INFLUENZA VIRUS MATRIX PROTEIN IS THE MAJOR DRIVING FORCE IN VIRUS BUDDING" JOURNAL OF VIROLOGY, vol. 74, December 2000 (2000-12), pages 11538-11547, XP002196048 the whole document</p> <p style="text-align: center;">---</p>	1-46
A	<p>ZHAO HONGXING ET AL: "The M1 and NP proteins of influenza A virus form homo-but not heterooligomeric complexes when coexpressed in BHK-21 cells." JOURNAL OF GENERAL VIROLOGY, vol. 79, no. 10, October 1998 (1998-10), pages 2435-2446, XP002196049 ISSN: 0022-1317 page 2435 abstract</p> <p style="text-align: center;">---</p>	
A	<p>DATABASE SCISEARCH 'Online! CADD T L ET AL: "Budding of enveloped viruses from the plasma membrane" retrieved from STN Database accession no. 97:863180 XP002196052 abstract & BIOESSAYS, (NOV 1997) VOL. 19, NO. 11, PP. 993-1000. PUBLISHER: COMPANY OF BIOLOGISTS LTD, BIDDER BUILDING CAMBRIDGE COMMERCIAL PARK COWLEY RD, CAMBRIDGE, CAMBS, ENGLAND CB4 4DL. ISSN: 0265-9247.,</p> <p>KAROLINSKA INST, MICROBIOL & TUMORBIOL CTR, BOX 280, S-17177 STOCKHOLM, SWEDEN (Reprint);KAROLINSKA INST, MICROBIOL & TUMORBIOL CTR, S-17177 STOCKHOLM, SWEDEN; SWEDISH INST INFECT DIS CONTROL, DEPT VACCINE RES, STOCKHOLM, SWEDEN</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	

INTERNATIONAL SEARCH REPORT

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.
A	<p>BUI MATTHEW ET AL: "Role of the influenza virus M1 protein in nuclear export of viral ribonucleoproteins." JOURNAL OF VIROLOGY, vol. 74, no. 4, February 2000 (2000-02), pages 1781-1786, XP002196050 ISSN: 0022-538X</p> <p style="text-align: center;">---</p>	
A	<p>MARTIN K ET AL: "NUCLEAR TRANSPORT OF INFLUENZA VIRUS RIBONUCLEOPROTEINS THE VIRAL MATRIX PROTEIN M1 PROMOTES EXPORT AND INHIBITS IMPORT" CELL, vol. 67, no. 1, 1991, pages 117-130, XP002196051 ISSN: 0092-8674 cited in the application</p> <p style="text-align: center;">-----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/19890

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0060050	A	AU 4073300 A	23-10-2000
		BR 0009580 A	02-01-2002
		EP 1185615 A2	13-03-2002
		WO 0060050 A2	12-10-2000
