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kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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- with international search report (Art. 21(3))
- with sequence listing part of description (Rule 5.2(a))

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28 May 2015



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/062030

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N7/00 A61K39/145 A61K39/12
ADD.
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)
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 practicable, search terms used)
EPO-Internal, BIOSIS, MEDLINE, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HAI RONG ET AL: "A Reassortment-Incompetent Live Attenuated Influenza Virus Vaccine for Protection against Pandemic Virus Strains", JOURNAL OF VIROLOGY, vol. 85, no. 14, July 2011 (2011-07), pages 6832-6843, XP002719768, page 6832 abstract figures 1, 6a ----- -/--	1-3,6-9, 16-19, 22-47

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 29 October 2014	Date of mailing of the international search report 06/02/2015
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Sitch, David
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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2014/062030

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>WO 2010/148511 A1 (MEDICAGO INC [CA]; COUTURE MANON [CA]; DARGIS MICHELE [CA]; LAVOIE PIE) 29 December 2010 (2010-12-29) page 4, paragraph 14 page 11 - paragraphs 41, 43 page 64, paragraph 214 page 82 - paragraph 250 page 83 - paragraph 252 figures 10, 12</p> <p style="text-align: center;">-----</p>	<p>1-3,6-9, 16-19, 22-47</p>
X,P	<p>GOMILA RAUL C ET AL: "Improving influenza virus backbones by including terminal regions of MDCK-adapted strains on hemagglutinin and neuraminidase gene segments", VACCINE, vol. 31, no. 42, October 2013 (2013-10), pages 4736-4743, XP002731814, the whole document</p> <p style="text-align: center;">-----</p>	<p>1-3,6-9, 16-19, 22-47</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2014/062030

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010148511	A1	29-12-2010	
		AU 2010265766 A1	02-02-2012
		CA 2762042 A1	29-12-2010
		CN 102482328 A	30-05-2012
		EP 2445928 A1	02-05-2012
		JP 2012530499 A	06-12-2012
		JP 2014158483 A	04-09-2014
		KR 20120133371 A	10-12-2012
		NZ 597401 A	27-09-2013
		RU 2012101946 A	27-07-2013
		SG 176820 A1	30-01-2012
		US 2012189658 A1	26-07-2012
		WO 2010148511 A1	29-12-2010

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2014/062030

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:

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 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, 2(completely); 3, 6-9, 16-19, 22-47(partially)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 2(completely); 3, 6-9, 16-19, 22-47(partially)

A chimaeric influenza haemagglutinin segment / protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, further wherein the second strain is not A/Puerto Rico /8/34, A/WSN/33 or B/Lee/40, and further wherein the first and second influenza strains are both influenza A or influenza B strains;
 A chimaeric influenza haemagglutinin segment / protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, further wherein the first virus is an influenza A strain which is other than an H1 or H5 strain, and further wherein the first and second influenza strains are both influenza A or influenza B strains;
 A chimaeric influenza haemagglutinin segment / protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, further wherein the first virus is an influenza B strain, and further wherein the second virus is an influenza B strain; related matter

2. claims: 3, 6-9, 16-19, 22-47(all partially)

A chimaeric influenza haemagglutinin segment / protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, further wherein the first virus is an influenza B strain, and further wherein the second virus is an influenza A strain which is other than an H1 or H3 strain; related matter

3. claims: 4, 5(completely); 3, 6-9, 16-19, 22-47(partially)

A chimaeric influenza haemagglutinin segment / protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, further wherein the haemagglutinin segment has one or more of the nucleotides at the positions in SEQ ID NO: 15 recited

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

in claim 4; related matter

4. claims: 10-15(completely); 16-47(partially)

A chimaeric influenza neuraminidase segment / protein (or reassortant virus comprising the same) having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, and the cytoplasmic domain, from a second virus strain;
related matter

5. claims: 20-47(partially)

A reassortant influenza virus comprising a chimaeric influenza haemagglutinin protein having an ectodomain from a first virus strain, and any of the 5'-non-coding region, the 3'-non-coding region, the transmembrane domain, the cytoplasmic domain, and the signal peptide from a second virus strain, and further wherein any of technical features (i) to (vii) listed in part b) of claim 20 are present;
related matter
