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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,
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SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
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- with international search report (Art. 21(3))
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- with sequence listing part of description (Rule 5.2(a))

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18 December 2014

(54) Title: USE OF IMMUNE SUPPRESSIVE PEPTIDES AS ADJUVANTS

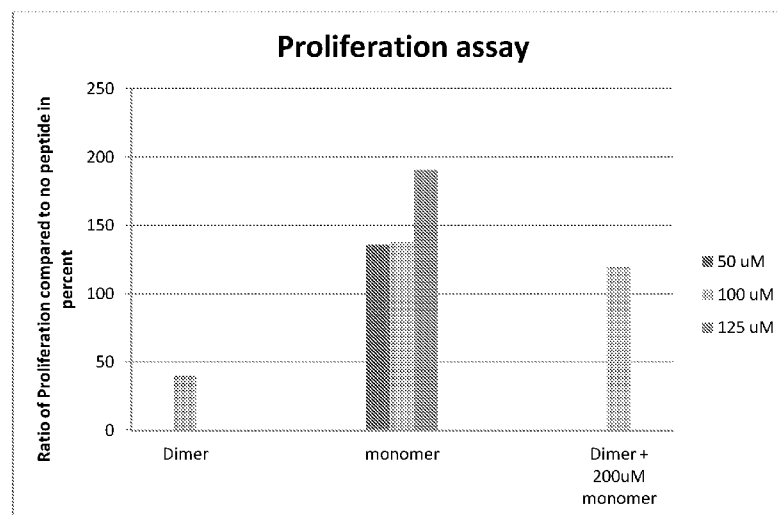


Fig. 1

(57) Abstract: The present invention relates to an adjuvant comprising at least one immunosuppressive domain for use in a vaccine.

INTERNATIONAL SEARCH REPORT

International application No

PCT/DK2014/050090

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K39/12 C12N15/09 A61K39/39
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)

A61K 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 practicable, search terms used)

EPO-Internal, BIOSIS, 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	WO 97/38695 A1 (PRENDERGAST PATRICK T [IE]) 23 October 1997 (1997-10-23) claims 4, 13 -----	1,2, 5-31, 35-41
A	JESSICA C. DONG ET AL: "Hypothesis driven development of new adjuvants: Short peptides as immunomodulators", HUMAN VACCINES & IMMUNOTHERAPEUTICS, vol. 9, no. 4, 1 April 2013 (2013-04-01), pages 808-811, XP055129428, ISSN: 2164-5515, DOI: 10.4161/hv.22972 the whole document -----	1,2, 5-31, 35-41
A	WO 2009/033786 A2 (MONDOBIOTECH LAB AG [LI]; BEVEC DORIAN [DE]; CAVALLI FABIO [CH]; CAVAL) 19 March 2009 (2009-03-19) pages 1, 6 ----- -/-	1,2, 5-31, 35-41

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

☒ See patent family 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 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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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/DK2014/050090

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	WO 2013/050048 A2 (SKAU APS [DK]; RYTTERGAARD DUCH MOGENS [DK]; BAHRAMI SHERVIN [DK]) 11 April 2013 (2013-04-11) claims 10, 65, 66 -----	1,2, 5-31, 35-41

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK2014/050090

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. (means)

☐

on paper

☒

in electronic form

b. (time)

☒

in the international application as filed

☐

together with the international application in electronic form

☐

subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK2014/050090

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.: 3, 4, 32, 33, 43, 44, 47-57
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:
see FURTHER INFORMATION sheet PCT/ISA/210
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.:
1-33, 35-41(completely); 43, 44, 47-57(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: 1-33, 35-41(completely); 43, 44, 47-57(partially)

An adjuvant comprising a peptide, said peptide comprising an immune suppressive domain or a mutated immune suppressive domain and the use of an immunosuppressive domain as an adjuvant.

2. claims: 34, 58, 59(completely); 43, 44, 47-57(partially)

An immunosuppressive domain selected among the immunosuppressive domains of Table 1 and the sequences and a vaccine comprising an immune suppressive domain according to the preceding claims or Table 1.

3. claims: 42(completely); 43, 44, 47-57(partially)

A monomeric peptide, having a dimer, which shows immune suppressive activity.

4. claims: 45, 46(completely); 47, 48(partially)

A vaccine composition for influenza, comprising an influenza antigen and a peptide which forms part of an immunosuppressive domain of an influenza.

5. claim: 60

Any peptide deriveable from an immunosuppressive domain selected among seqid 209 to seqid 281, and the sequences of Table 1; by performing 1, 2, 3, 4, or more mutations, insertions or deletions.

6. claim: 61

Any vaccine comprising a mutated immunosuppressive domain according to seqid 209 to seqid 281 and the peptides of claim 61, wherein the immunosuppressive properties of said domain have been reduced or abrogated.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 3, 4, 32, 33, 43, 44, 47-57

Compounds as such are not sufficiently defined by their mode of action. Therefore, claim 33 has not been searched because an antagonist is neither disclosed nor supported within the terms of Art. 5 and 6 PCT, respectively (Art. 17(2)(a)(ii) PCT).

Claims 3, 4, 32, 43, 44, 47-57 fail to comply with the requirements of Art. 6 PCT (clarity) to such an extent that a meaningful search could not be carried out (Art. 17(2)(a)(ii) PCT).

1 It is unclear whether claims 3 and 4 are directed to a monomer, a dimer, trimer or a multimer? It is also unclear whether the claimed adjuvant is to exhibit immune suppressive activity.

2 What is a functional homologue of an undefined peptide (claim 32)?

3 Claim 34 refers to a Table and "the sequences". However, the sequences are undefined.

4 What are claims 43 and 44 directed to ("biological entity")? For instance, is the adjuvant of claim 43 different from the adjuvant of claim 1? Claims 47-57 are consequently also unclear.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/DK2014/050090

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