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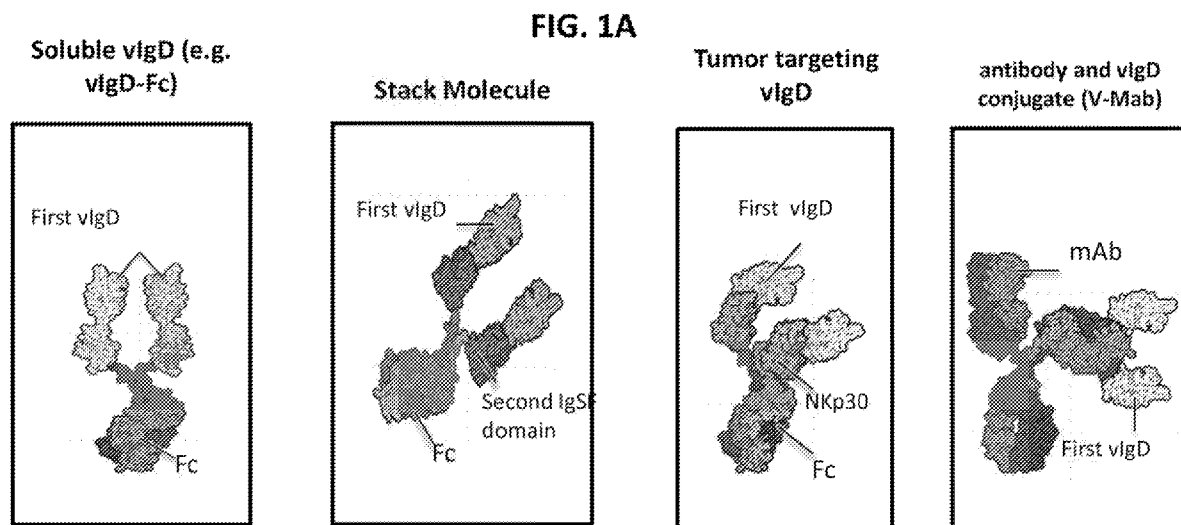
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- with sequence listing part of description (Rule 5.2(a))

(54) Title: CD80 VARIANT IMMUNOMODULATORY PROTEINS AND USES THEREOF



(57) Abstract: Provided herein are variant CD80 polypeptides, immunomodulatory proteins comprising variant CD80 polypeptides, and nucleic acids encoding such proteins. The immunomodulatory proteins provide therapeutic utility for a variety of immunological and oncological conditions. Compositions and methods for making and using such proteins are provided.

(88) Date of publication of the international search report:
15 February 2018 (15.02.2018)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/027817

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K14/705
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)
C07K
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, EMBL, 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	<p>WO 2004/029197 A2 (MAXYGEN INC [US]; PUNNONEN JUHA [US]; LAZETIC ALEXANDRA L L [US]; LEON) 8 April 2004 (2004-04-08)</p> <p>page 13, line 13 - page 14, line 29 page 15, line 4 - page 16, line 15 page 17, line 14 - page 18, line 4 page 23, lines 27-30 page 25, paragraph 2 page 27, lines 12-16 page 187, lines 12-18 page 219, lines 6-9; table 4 claim 241</p> <p style="text-align: center;">-/--</p>	<p>1-17, 19-26, 30-34, 38, 42-50, 54,58, 62,66, 70,74, 77-195</p>

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 18 October 2017	Date of mailing of the international search report 11/01/2018
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 Barnas, Christoph

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2017/027817

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, the international search was carried out on the basis of a sequence listing:

a. forming part of the international application as filed:

in the form of an Annex C/ST.25 text file.

on paper or in the form of an image file.

b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

c. furnished subsequent to the international filing date for the purposes of international search only:

in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).

on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).

2. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of 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/US2017/027817

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.:

1-17, 19-26, 30-34, 38, 42-50, 54, 58, 62, 66, 70, 74
77-195(all 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.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/027817

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>-& DATABASE Geneseq [Online]</p> <p>1 July 2004 (2004-07-01), XP002774557, Database accession no. ADM18706 abstract</p> <p>-& DATABASE Geneseq [Online]</p> <p>1 July 2004 (2004-07-01), XP002774558, Database accession no. ADM18913 abstract</p> <p>-----</p> <p>US 2015/232532 A1 (OSTRAND-ROSENBERG SUZANNE [US]) 20 August 2015 (2015-08-20)</p> <p>paragraph [0021]</p> <p>-& DATABASE Geneseq [Online]</p> <p>24 September 2015 (2015-09-24), XP002774559, Database accession no. BCD07227 abstract</p> <p>-& DATABASE Geneseq [Online]</p> <p>24 September 2015 (2015-09-24), XP002774560, Database accession no. BCD07228 abstract</p> <p>-----</p>	<p>1-17, 19-26, 30-34, 38, 42-50, 54,58, 62,66, 70,74, 77-195</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2017/027817

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 2004029197	A2	08-04-2004	AU 2002368044 A1	19-04-2004
			EP 1497426 A2	19-01-2005
			WO 2004029197 A2	08-04-2004

US 2015232532	A1	20-08-2015	US 2013149305 A1	13-06-2013
			US 2015232532 A1	20-08-2015
			US 2017226181 A1	10-08-2017

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-17, 19-26, 30-34, 38, 42-50, 54, 58, 62, 66, 70, 74, 77-195(all partially)

A a variant CD80 polypeptide, comprising an IgV domain or a specific binding fragment thereof, an IgC domain or a specific binding fragment thereof, or both, wherein the variant CD80 polypeptide comprises one or more amino acid modifications in an unmodified CD80 or specific binding fragment thereof, corresponding to position(s) 4, 9 and 10 with reference to numbering of SEQ ID NO: 28.

- 2-38. claims: 1-195(partially)

A variant CD80 polypeptide, comprising an IgV domain or a specific binding fragment thereof, an IgC domain or a specific binding fragment thereof, or both, wherein the variant CD80 polypeptide comprises one or more amino acid modifications in an unmodified CD80 or specific binding fragment thereof, corresponding to positions as described in claim 1 wherein the positions for each invention are selected from three subsequent positions according to the list of positions in claim 1; i.e. in invention 2 the positions are selected from positions 11, 12 and 13; in invention 3 the positions are selected from positions 14, 15 and 16, etc. ... in invention 37 the positions are selected from positions 178, 185 and 188; in invention 38 the positions are selected from positions 190, 192, 193 and 199.
