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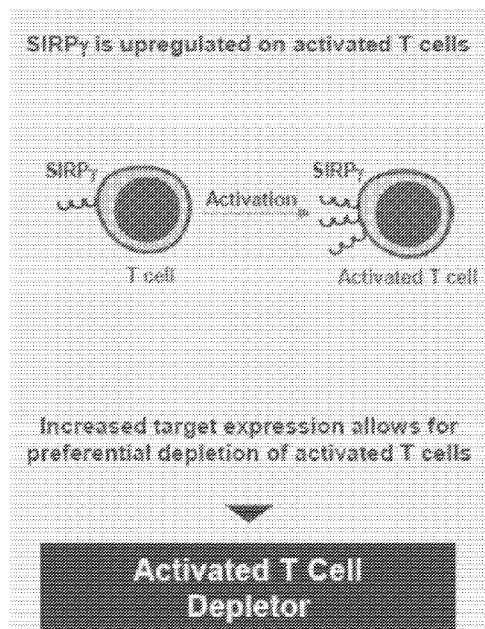
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(81) Designated States (unless otherwise indicated, for every kind of national protection available):

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, 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, ST, SV, SY, TH,

(54) Title: SIRP GAMMA ANTIBODIES AND USES THEREOF

FIG. 4D



(57) Abstract: Provided herein are antibodies that bind signal regulatory protein SIRP $\gamma$  and methods of making and using such antibodies. In some embodiments, the antibodies comprise an Fc, and are useful for selective depletion of certain target SIRP $\gamma$  expressing cells. In some embodiments, the antibodies provided herein are useful for treating a disease or condition associated with the dysregulation of cells (e.g. overactivation or aberrant proliferation of T-cells).



TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,  
ZA, ZM, ZW.

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**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

**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))*

**(88) Date of publication of the international search report:**

22 June 2023 (22.06.2023)

**INTERNATIONAL SEARCH REPORT**

International application No  
**PCT/US2022/079668**

**A. CLASSIFICATION OF SUBJECT MATTER**  
**INV. A61P35/00 C07K16/28 A61K38/17 A61K39/00**  
**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)  
**A61P C07K 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, WPI Data**

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<b>X</b>	<p><b>GARY BROOKE ET AL: "Human Lymphocytes Interact Directly with CD47 Through a Novel Member of the Signal Regulatory Protein (SIRP) Family", THE JOURNAL OF IMMUNOLOGY, WILLIAMS &amp; WILKINS CO, US, vol. 173, no. 4, 1 January 2004 (2004-01-01), pages 2562-2570, XP008138739, ISSN: 0022-1767 see "Material and Methods: Generation of mAb"; figure 4</b></p> <p align="center">-/--</p>	<b>1-138</b>

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>"&amp;" document member of the same patent family</p>
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Date of the actual completion of the international search <b>2 March 2023</b>	Date of mailing of the international search report <b>16/05/2023</b>
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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  <b>Turri, Matteo</b>
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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2022/079668

## 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.
  - b.  furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)).  
 accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
2.  With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this report has been established to the extent that a meaningful search could be carried out without a WIPO Standard ST.26 compliant sequence listing.
3. Additional comments:

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2022/079668

## 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.: **1-37, 40-49, 52-138 (all partially)**  
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.:  
**1-138 (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/US2022/079668

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	<p><b>&amp; Anonymous: "Anti-SIRP g [OX-119] ; Absolute Antibody",</b>  <b>'</b>  <b>1 January 2023 (2023-01-01), XP093026537,</b>  <b>Retrieved from the Internet:</b>  <b>URL:https://absoluteantibody.com/product/a</b>  <b>nti-sirp-g-ox-119/</b>  <b>[retrieved on 2023-02-23]</b></p> <p>-----</p>	
A	<p>WO 2018/118887 A1 (UNIV WAKE FOREST HEALTH SCIENCES [US]) 28 June 2018 (2018-06-28) paragraph [0241]; example 9</p> <p>-----</p>	1-138
A	<p>WO 2020/263793 A1 (AMGEN INC [US]) 30 December 2020 (2020-12-30) paragraph [0152]; example 5</p> <p>-----</p>	102-134
A	<p>WO 2018/149938 A1 (OSE IMMUNOTHERAPEUTICS [FR]) 23 August 2018 (2018-08-23) figure 4</p> <p>-----</p>	70-101
A	<p>PICCIO LAURA ET AL: "Adhesion of human T cells to antigen-presenting cells through SIRPbeta2-CD47 interaction costimulates T-cell proliferation",  BLOOD, AMERICAN SOCIETY OF HEMATOLOGY, US, vol. 105, no. 6,  15 March 2005 (2005-03-15), pages 2421-2427, XP002525575,  ISSN: 0006-4971, DOI:  10.1182/BLOOD-2004-07-2823  see "SIRPb2-CD47 interaction enhances superantigen-dependent T cell-mediated proliferation and costimulates T-cell activation"</p> <p>-----</p>	1-138

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

**PCT/US2022/079668**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
<b>WO 2018118887 A1</b>	<b>28-06-2018</b>	<b>EP 3559037 A1</b>	<b>30-10-2019</b>
		<b>MA 47111 A</b>	<b>30-10-2019</b>
		<b>US 2023139592 A1</b>	<b>04-05-2023</b>
		<b>WO 2018118887 A1</b>	<b>28-06-2018</b>
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<b>WO 2020263793 A1</b>	<b>30-12-2020</b>	<b>AU 2020303986 A1</b>	<b>09-12-2021</b>
		<b>CA 3140904 A1</b>	<b>30-12-2020</b>
		<b>EP 3986441 A1</b>	<b>27-04-2022</b>
		<b>JP 2022538829 A</b>	<b>06-09-2022</b>
		<b>US 2022305081 A1</b>	<b>29-09-2022</b>
		<b>WO 2020263793 A1</b>	<b>30-12-2020</b>
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<b>WO 2018149938 A1</b>	<b>23-08-2018</b>	<b>AU 2018221774 A1</b>	<b>08-08-2019</b>
		<b>BR 112019016356 A2</b>	<b>07-04-2020</b>
		<b>CA 3051318 A1</b>	<b>23-08-2018</b>
		<b>CN 110300764 A</b>	<b>01-10-2019</b>
		<b>EP 3583128 A1</b>	<b>25-12-2019</b>
		<b>IL 268731 A</b>	<b>31-10-2019</b>
		<b>JP 7179743 B2</b>	<b>29-11-2022</b>
		<b>JP 2020510643 A</b>	<b>09-04-2020</b>
		<b>JP 2023010810 A</b>	<b>20-01-2023</b>
		<b>KR 20190117670 A</b>	<b>16-10-2019</b>
		<b>MA 47494 A</b>	<b>25-12-2019</b>
		<b>US 2019382483 A1</b>	<b>19-12-2019</b>
		<b>US 2022242951 A1</b>	<b>04-08-2022</b>
		<b>WO 2018149938 A1</b>	<b>23-08-2018</b>
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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-138 (partially)

All subject-matter referring to the antibodies of  
Combination No. 1 in Table 1

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2-48. claims: 1-138 (partially)

All subject-matter referring to the antibodies of  
Combinations No. 2-47 in Table 1

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## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1-37, 40-49, 52-138(all partially)

Present claims 1-37, 40-49, and 52-138 relate to antibodies which have a number of given desired properties or effects, namely binding to SIRPgamma and not to SIRPalpha and SIRPbeta1 (claim 1), or having preferential binding for different types of T-cells (claims 40-49). However, the description only provides support and disclosure in the sense of Article 6 and 5 PCT for a limited numbers of such antibodies, namely the ones referred to in claims 38, 39, 50, and 51 and in Table 1. This non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of the claim (PCT Guidelines 9.19 and 9.20).

The search of claim 1-138 was consequently restricted to the specifically disclosed antibodies having the desired property or effect, see description Tables 5-8, and to the broad concept of an antibody having the desired property or effect.

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) PCT declaration be overcome.