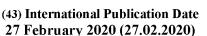
(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau







(10) International Publication Number WO 2020/039321 A3

(51) International Patent Classification:

(21) International Application Number:

PCT/IB2019/056932

(22) International Filing Date:

15 August 2019 (15.08.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

 62/765,289
 20 August 2018 (20.08.2018)
 US

 62/750,393
 25 October 2018 (25.10.2018)
 US

 62/750,479
 25 October 2018 (25.10.2018)
 US

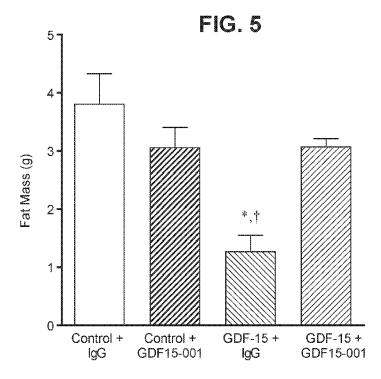
 62/881,064
 31 July 2019 (31.07.2019)
 US

- (71) Applicant: PFIZER INC. [US/US]; 235 East 42nd Street, New York, New York 10017 (US).
- (72) Inventors: BEAUMONT, Kevin Charles; c/o Pfizer Inc., 610 Main Street, Cambridge, Massachusetts 02139 (US). BREEN, Danna M.; c/o Pfizer Inc., 610 Main Street, Cambridge, Massachusetts 02139 (US). CHABOT, Jeffrey Raymond; c/o Pfizer Inc., 610 Main Street, Cam-

bridge, Massachusetts 02139 (US). **HE, Tao**; 51 Canterbury Hill Road, Acton, Massachusetts 01720 (US). **SH-CHORS, Ksenya**; 1306 Ashwood Ct., San Mateo, California 94402 (US). **APGAR, James R.**; c/o Pfizer Inc., 610 Main Street, Cambridge, Massachusetts 02139 (US). **LAM-BERT, Matthew Allister**; c/o Pfizer Ireland Pharmaceuticals, Grange Castle Business Park, Clondalkin, Dublin, 22 (IE).

- (74) Agent: ZIELINSKI, Bryan C.; PFIZER INC., 235 East 42nd Street, MS 235/9/S20, New York, New York 10017 (US).
- (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, JO, 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.

(54) Title: ANTI-GDF15 ANTIBODIES, COMPOSITIONS AND METHODS OF USE



(57) Abstract: The invention provides antibodies, and antigen-binding fragments thereof, that specifically bind to GDF15, as well as methods and uses for the antibodies.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE
- (88) Date of publication of the international search report: 07 May 2020 (07.05.2020)

INTERNATIONAL SEARCH REPORT

International application No PCT/IB2019/056932

A. CLASSIFICATION OF SUBJECT MATTER INV. C07K16/22 A61P35/04 ADD. A61K39/00

C07K16/28

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 A61K A61P

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, Sequence Search, 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 2014/100689 A1 (AVEO PHARMACEUTICALS INC [US]) 26 June 2014 (2014-06-26) cited in the application claim 14	1-36		
Υ	P. ROTH ET AL: "GDF-15 Contributes to Proliferation and Immune Escape of Malignant Gliomas", CLINICAL CANCER RESEARCH, vol. 16, no. 15, 9 June 2010 (2010-06-09), pages 3851-3859, XP055106395, ISSN: 1078-0432, DOI: 10.1158/1078-0432.CCR-10-0705 the whole document	1-36		

Further documents are listed in the continuation of Box C.	X 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 filling 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	Date of mailing of the international search report	
11 March 2020	30/03/2020	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2	Authorized officer	
NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Scheffzyk, Irmgard	

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/056932

		PC1/1B2019/050932	
C(Continua	ntion). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
Υ	WO 2015/144855 A1 (JULIUS MAXIMILIANS UNIVERSITÄT WÜRZBURG [DE]) 1 October 2015 (2015-10-01) the whole document	1-36	
X	HIND RAFEI ET AL: "Immune-based Therapies for Non-small Cell Lung Cancer", ANTICANCER RESEARCH - INTERNATIONAL JOURNAL OF CANCER RESEARCH AND TREATMENT, vol. 37, no. 2, 10 February 2017 (2017-02-10), pages 377-388, XP055619457, GR ISSN: 0250-7005, DOI: 10.21873/anticanres.11330 the whole document	17-36	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2019/056932

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014100689 A1	26-06-2014	AR 094271 A1 AU 2013364133 A1 BR 112015014768 A2 CA 2896076 A1 CN 105073133 A EA 201591198 A1 EP 2934584 A1 HK 1215670 A1 JP 2016508984 A JP 2019056018 A KR 20150100837 A US 2014193427 A1 US 2016083465 A1 US 2018142013 A1 WO 2014100689 A1	22-07-2015 16-07-2015 10-10-2017 26-06-2014 18-11-2015 30-11-2015 28-10-2015 09-09-2016 24-03-2016 11-04-2019 02-09-2015 10-07-2014 24-03-2016 24-05-2018 26-06-2014
WO 2015144855 A1	01-10-2015	AU 2015238264 A1 BR 112016022013 A2 CA 2943694 A1 CN 106536553 A DK 3122775 T3 EP 3122775 A1 JP 2017508475 A KR 20160139005 A LT 3122775 T PT 3122775 T SI 3122775 T SI 3122775 T US 2017204174 A1 US 2018298091 A1 WO 2015144855 A1	20-10-2016 31-10-2017 01-10-2015 22-03-2017 03-02-2020 01-02-2017 30-03-2017 06-12-2016 10-02-2020 26-12-2019 28-02-2020 20-07-2017 18-10-2018 01-10-2015