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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 June 2012 (07.06.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/075340 A3

(51) **International Patent Classification**:
C07K 16/22 (2006.01) *G01N 33/53* (2006.01)
C12N 15/13 (2006.01) *A61P 35/00* (2006.01)
A61K 39/395 (2006.01)

(21) **International Application Number**:
PCT/US2011/062963

(22) **International Filing Date**:
1 December 2011 (01.12.2011)

(25) **Filing Language**: English

(26) **Publication Language**: English

(30) **Priority Data**:
61/418,832 1 December 2010 (01.12.2010) US

(71) **Applicant** *(for all designated States except US)*: **ALDER-BIO HOLDINGS LLC** [US/US]; 101 Convention Center Dr., Ste. 850, Las Vegas, Nevada 89109 (US).

(72) **Inventors; and**

(75) **Inventors/Applicants** *(for US only)*: **DUTZAR, Benjamin H.** [US/US]; 3124A Franklin Ave. E., Seattle, Washington 98102 (US). **KOVACEVICH, Brian R.** [US/US]; 13916 233rd St., SE, Snohomish, Washington 98296 (US). **MITCHELL, Danielle M.** [US/US]; 6522B 24th Ave., NE, Seattle, Washington 98115 (US). **OJALA, Ethan W.** [US/US]; 14310 Nevers Rd., Snohomish, Washington 98290 (US). **FAN, Pei** [US/US]; 1905 243rd St., SW, Bothell, Washington 98021 (US). **SMITH, Jeffrey T.L.** [GB/US]; 10270 NE 12th Street, Apt. F307, Bellevue, Washington 98004 (US). **MCNEILL, Patricia Dianne** [US/US]; 1333 S. 290th Place, Federal Way, Washington 98003 (US). **BILLGREN, Jens** [SE/US]; 7309 Sand Point Way NE #B948, Seattle, Washington 98115 (US). **STEWART, Erica A.** [US/US]; 103 NE 147th St., Shoreline, Washington 98155 (US). **AKATSUKA, Corinne C.** [US/US]; 203 Noelani Loop, Hilo, Hawaii 96720 (US). **CHANG, Betty Yu-Ching** [US/US]; 10375 Lindsay Ave., Cupertino, California 95014 (US). **LATHAM, John A.** [US/US]; 2409 10th Ave., W., Seattle, Washington 98119 (US). **GARCIA-MARTINEZ, Leon F.** [US/US]; 4926 214th Street, SE, Woodinville, Washington 98072 (US).

(74) **Agent**: **TESKIN, Robin L.**; Hunton & Williams LLP, IP Department, 2200 Pennsylvania Ave, NW, Washington, District of Columbia 20037 (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, 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, IS, JP, KE, KG, KM, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

(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, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*

— *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))*

— *with sequence listing part of description (Rule 5.2(a))*

(88) **Date of publication of the international search report**:
1 November 2012

WO 2012/075340 A3

(54) **Title**: ANTI-NGF COMPOSITIONS AND USE THEREOF

(57) **Abstract**: The present invention is directed to antibodies and fragments thereof having binding specificity for NGF, especially those that inhibit the interaction of NGF with TrkA and/or p75 or p75 and/or TrkA. Another embodiment of this invention relates to the antibodies described herein, and binding fragments thereof, comprising the sequences of the VH, VL and CDR polypeptides described herein, and the polynucleotides encoding them. The invention also contemplates conjugates of anti-NGF antibodies and binding fragments thereof conjugated to one or more functional or detectable moieties. The invention also contemplates methods of making said anti-NGF antibodies and binding fragments thereof. Embodiments of the invention also pertain to the use of anti-NGF antibodies, and binding fragments thereof, for the diagnosis, assessment and treatment of diseases and disorders associated with NGF.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/062963

A. CLASSIFICATION OF SUBJECT MATTER

C07K 16/22(2006.01)i, C12N 15/13(2006.01)i, A61K 39/395(2006.01)i, G01N 33/53(2006.01)i, A61P 35/00(2006.01)i

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 16/22; A61K 39/395; A61K 39/40; C07K 16/18; C12N 15/13

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: NGF, neurve growth factor, antibody, fragment, sequence, CDR, antagonist

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0278839 A1 (POWELL, J. et al.) 04 November 2010 See abstract; claims 1-36.	1-24,27-31,39-50,64-67,69,76,83,84,97-100,114-119,121,123-134,138,249-252,275-282,286-291,293,338-355,365,366,461-477,577-585,590-593,597-598
A		274
X	US 7252822 B2 (SHELTON, D. L. et al.) 07 August 2007 See the whole document.	274

☒ 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 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
30 JULY 2012 (30.07.2012)	**30 JULY 2012 (30.07.2012)**

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
Kim, Hyun Ju
Telephone No. 82-42-481-8734

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/062963

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A		1-24,27-31,39-50,64-67,69,76,83,84,97-100,114-119,121,123-134,138,249-252,275-282,286-291,293,338-355,365,366,461-477,577-585,590-593,597-598
A	US 7655232 B2 (PONS, J. et al.) 02 February 2010 See the whole document.	1-24,27-31,39-50,64-67,69,76,83,84,97-100,114-119,121,123-134,138,249-252,274-282,286-291,293,338-355,365,366,461-477,577-585,590-593,597-598
A	US 7727527 B2 (SHELTON, D. L.) 01 June 2010 See the whole document.	1-24,27-31,39-50,64-67,69,76,83,84,97-100,114-119,121,123-134,138,249-252,274-282,286-291,293,338-355,365,366,461-477,577-585,590-593,597-598
A	US 2008-0107658 A1 (FRANKS, R. et al.) 08 May 2008 See the whole document.	1-24,27-31,39-50,64-67,69,76,83,84,97-100,114-119,121,123-134,138,249-252,274-282,286-291,293,338-355,365,366,461-477,577-585,590-593,597-598

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/062963

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.: See extra sheet.
because they relate to subject matter not required to be searched by this Authority, namely:
See extra sheet.

2. ☒ Claims Nos.: See extra sheet.
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 extra sheet.

3. ☒ Claims Nos.: See extra sheet.
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:

1. ☐ As all required addtional 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 fee, this Authority did not invite payment of any additional fee.

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.:

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.

Extra sheet of Box No. II

1. Claims Nos: 32-38, 56, 57, 91, 92, 106-112, 140-142, 144-230, 234-248, 298-333, 335-337, 363, 364, 367-460, 482-576, 599
because they relate to subject matter not required to be searched by this Authority, namely:
Said claims pertain to methods for treatment of the human body, thus relate to a subject-matter which International Searching Authority is not required to search under PCT Art. 17(2)(a)(i) and Rule 39.1(iv).

2. Claims Nos: 26, 53-55, 59-63, 68, 70-75, 79, 81, 88-90, 92, 94-96, 101, 103-105, 107, 108, 110, 111, 113, 120, 136, 137, 143, 195-198, 210, 214-223, 227, 229-233, 241-243, 246, 247, 253, 264-268, 271-273, 283, 292, 295-297, 300, 324-328, 332, 334, 336, 337, 357, 358, 360, 361, 362, 382, 386, 388-395, 399, 402-404, 423-425, 427, 429-435, 437, 439-450, 454, 456-458, 473(1), 480, 481, 527, 528, 539-541, 557, 559-566, 570, 572-574, 587-589, 595, 596
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:
Claims 26, 53-55, 59-63, 68, 70-75, 79, 81, 88-90, 92, 94-96, 101, 103-105, 107, 108, 110, 111, 113, 120, 136, 137, 143, 195-198, 210, 214-223, 227, 229-233, 241-243, 246, 247, 264-268, 271-273, 295-297, 300, 324-328, 332, 336, 337, 357, 358, 360, 361, 362, 382, 386, 388-395, 399, 402-404, 423-425, 427, 429-435, 437, 439-450, 454, 456-458, 480, 481, 473(1), 528, 539-541, 557, 559-566, 570, 572-574, 587-589, 595, 596 are unclear since they are referring to the multiple dependent claims which do not comply with PCT Rule 6.4(a).
The matters for which protection are sought of claims 231, 253, 292, 334, 361, and the second 473(1) are not clearly defined because the subject matters of said claims are not correspond with those of referred claims. Thus, their dependent claims are also unclear.
Claim 283 is not clear because it is worded in reference to claim 283, itself.
Claim 527 refers to claim 4824 which is not claimed in this application.
* Note: For the claim 473(1), the claim was renumbered by this Authority because the claim 473 was found twice.

3. Claims Nos: 25, 51, 52, 58, 77, 78, 80, 82, 85-87, 91, 93, 102, 106, 109, 112, 122, 135, 139, 185, 194, 200, 207-209, 211-213, 224-226, 228, 234-240, 244, 245, 248, 260-263, 269, 270, 283-285, 294, 298, 299, 322, 323, 329-331, 335, 356, 359, 381, 383-385, 387, 396-398, 400, 401, 405-413, 422, 428, 436, 438, 451-453, 455, 459-460, 478, 479, 525-527, 538, 556, 558, 567-569, 571, 575, 576, 586, 594, 599

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/062963

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0278839 A1	04.11.2010	AR 076650 A	29.06.2011
		AU 2010-244133 A1	11.11.2010
		CA 2761203 A1	11.11.2010
		EP 2448970 A1	09.05.2012
		TW 201043246 A	16.12.2010
		UY 32608 A	31.12.2010
		WO 2010-128398 A1	11.11.2010
US 7252822 B2	07.08.2007	US 2004-228862 A1	18.11.2004
US 7655232 B2	02.02.2010	AU 2003-299898 A1	22.07.2004
		AU 2003-299898 B2	16.12.2010
		AU 2004-213044 A1	02.09.2004
		AU 2006-235559 A1	19.10.2006
		AU 2006-235559 B2	09.07.2009
		CA 2511598 A1	15.07.2004
		CA 2516454 A1	02.09.2004
		CA 2604443 A1	19.10.2006
		CN 101014364 A	08.08.2007
		CN 101014364 C0	08.08.2007
		CN 101217978 A0	09.07.2008
		CN 1871028 A	29.11.2006
		CN 1871028 C0	29.11.2006
		EP 1575517 A2	21.09.2005
		EP 1575517 B1	11.04.2012
		EP 1594441 A2	16.11.2005
		EP 1594441 B1	15.12.2010
		EP 1871416 A2	02.01.2008
		EP 2191846 A1	02.06.2010
		EP 2263692 A1	22.12.2010
		EP 2270048 A2	05.01.2011
		EP 2270048 A3	02.03.2011
		EP 2305711 A2	06.04.2011
		EP 2305711 A3	25.05.2011
		JP 04-134170 B2	13.08.2008
		JP 04-336728 B2	03.07.2009
		JP 2006-525955 A	16.11.2006
		JP 2006-525960 A	16.11.2006
		JP 2008-148710 A	03.07.2008
		JP 2008-535929 A	04.09.2008
		JP 2009-159977 A	23.07.2009
		JP 4336728 B2	30.09.2009
		KR 10-2005-0096101 A	05.10.2005
		KR 10-2005-0111598 A	25.11.2005
		KR 10-2007-0119748 A	20.12.2007
		KR 10-2010-0135336 A	24.12.2010
		US 2004-0237124 A1	25.11.2004
		US 2004-0253244 A1	16.12.2004
		US 2007-0212357 A1	13.09.2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 2008-0182978 A1	31.07.2008
		US 2010-0111970 A1	06.05.2010
		US 2010-0143355 A1	10.06.2010
		US 2011-0033447 A1	10.02.2011
		US 7449616 B2	11.11.2008
		US 7569364 B2	04.08.2009
		US 7655231 B2	02.02.2010
		US 8034346 B2	11.10.2011
		US 8088384 B2	03.01.2012
		WO 2004-058184 A2	15.07.2004
		WO 2004-058184 A3	15.07.2004
		WO 2004-073653 A2	02.09.2004
		WO 2004-073653 A3	02.09.2004
		WO 2006-110883 A2	19.10.2006
		WO 2006-110883 A3	19.10.2006
		WO 2006-127709 A2	30.11.2006
		WO 2006-127709 A3	30.11.2006
US 7727527 B2	01.06.2010	AT 522229 T	15.09.2011
		AU 2002-308722 B2	17.05.2007
		AU 2007-207881 A1	06.09.2007
		AU 2007-207881 B2	22.10.2009
		AU 2010-200170 A1	04.02.2010
		BR 0210231 A	14.09.2004
		CA 2448956 A1	05.12.2002
		CN 101653604 A	24.02.2010
		CN 1684708 A	19.10.2005
		CN 1684708 C0	19.10.2005
		DK 1401498T3	21.11.2011
		EP 1401498 A1	31.03.2004
		EP 1401498 A4	16.11.2005
		EP 1401498 B1	31.08.2011
		EP 2340849 A1	06.07.2011
		ES 2371748 T3	09.01.2012
		IL 158921 A	29.12.2008
		IL 158921 D0	12.05.2004
		JP 2004-536072 A	02.12.2004
		JP 2004-536072 T	02.12.2004
		JP 2010-043089 A	25.02.2010
		JP 4567944 B2	27.10.2010
		KR 10-1004353 B1	28.12.2010
		KR 10-2004-0049829 A	12.06.2004
		KR 20080103610 A	27.11.2008
		KR 20100132559 A	17.12.2010
		MX PA03010911 A	17.02.2004
		NZ 529612 A	31.03.2006
		NZ 544410 A	30.04.2008
		PT 1401498 E	24.11.2011
		US 2004-0219144 A1	04.11.2004
		US 2010-0254990 A1	07.10.2010

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/062963

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 2011-268725 A1	03.11.2011
		WO 02-096458 A1	05.12.2002
		ZA 200308999 A	19.11.2004
US 2008-0107658 A1	08.05.2008	AU 2006-207338 A1	27.07.2006
		AU 2006-207338 B2	08.12.2011
		BR PI0606933 A2	01.12.2009
		CA 2595800 A1	27.07.2006
		CN 101107268 A	16.01.2008
		CN 101107268 C0	16.01.2008
		EP 1846451 A1	24.10.2007
		EP 2298345 A2	23.03.2011
		EP 2298345 A3	21.03.2012
		IL 183752 D0	20.09.2007
		JP 2008-527989 A	31.07.2008
		JP 2008-527989 T	31.07.2008
		KR 20070100330 A	10.10.2007
		MX 2007008722 A	15.02.2008
		NO 20074266 A	23.10.2007
		NZ 556157 A	25.09.2009
		RU 2007132020 A	27.02.2009
		RU 2406728 C2	20.12.2010
		WO 2006-077441 A1	27.07.2006
		WO 2006-077441 A8	10.04.2008
		ZA 200705754 A	25.06.2008