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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 April 2016 (28.04.2016)

WIPO | PCT

(10) International Publication Number
WO 2016/065145 A3

(51) International Patent Classification:
C07D 249/14 (2006.01) *A61K 51/04* (2006.01)
A61K 49/10 (2006.01) *A61K 47/48* (2006.01)
A61K 49/06 (2006.01) *A61P 35/00* (2006.01)

(21) International Application Number:
PCT/US2015/056914

(22) International Filing Date:
22 October 2015 (22.10.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/067,185 22 October 2014 (22.10.2014) US

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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, 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, KN, KP, KR, 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.

(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).

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))*

(88) Date of publication of the international search report:
4 August 2016

(54) Title: PSMA TARGETED REVERSED CARBAMATES AND METHODS OF USE THEREOF

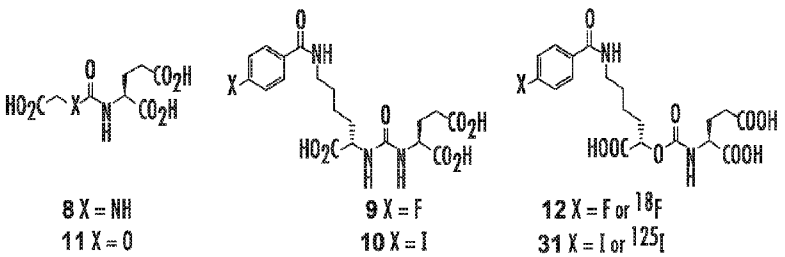

FIG. 2A

(57) Abstract: "Reversed" carbamate based scaffolds that have high binding affinity to PSMA are disclosed. These scaffolds can be radiolabeled and used for imaging cells and tumors that express PSMA or for cancer radiotherapy. These compounds also can comprise a fluorescent dye and be used for imaging cells and tumors that express PSMA or for photodynamic therapy.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/056914

A. CLASSIFICATION OF SUBJECT MATTER

C07D 249/14(2006.01)i, A61K 49/10(2006.01)i, A61K 49/06(2006.01)i, A61K 51/04(2006.01)i, A61K 47/48(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)
C07D 249/14; A61K 51/08; A61K 31/41; C07D 257/00; C07K 5/02; A61K 49/10; A61K 49/06; A61K 51/04; A61K 47/48; A61P 35/00

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) & STN (Registry, CAPlus) & Google & Keywords: PSMA, carbamate, biomarker, photosensitizing dyes, tumor, cancer, cell, imaging

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010-108125 A2 (THE JOHNS HOPKINS UNIVERSITY) 23 September 2010 See abstract; claims 1, 2, 50; paragraphs [0002], [0131]-[0132], [0239]-[0251], [0263].	1-9
A	CHEN, Y. et al., 'Synthesis and Biological Evaluation of Low Molecular Weight Fluorescent Imaging Agents for the Prostate-Specific Membrane Antigen', Bioconjug Chem., 19 Dec. 2012, Vol. 23, No. 12, pp. 2377-2385, NIH-PA Author Manuscript version, internal pages 1-20. See abstract; internal page 14.	1-9
A	CHEN, Y. et al., '2-(3-{1-Carboxy-5-[(6-[18F]Fluoro-Pyridine-3-Carbonyl)-Amino]-Pentyl}-Ureido)-Pentanedioic Acid, [18F]DCFPyL, a PSMA-Based PET Imaging Agent for Prostate Cancer', Clin Cancer Res., 15 Dec. 2011, Vol. 17, No.24, pp. 7645-7653, NIH-PA Author Manuscript version, internal pages 1-17. See abstract; internal page 13.	1-9
A	WO 2013-028664 A1 (SIEMENS MEDICAL SOLUTIONS USA, INC.) 28 February 2013 See abstract; paragraphs [0002], [0170]-[0199], [0276].	1-9

☒ 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	Date of mailing of the international search report
21 June 2016 (21.06.2016)	**21 June 2016 (21.06.2016)**

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/056914

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PAVLICEK, J. et al., 'Structural characterization of P1`-diversified urea-based inhibitors of glutamate carboxypeptidase II', Bioorganic & Medicinal Chemistry Letters, 15 May 2014, Vol, 24, No. 10, pp. 2340-2345. See abstract; page 2342.	1-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/056914

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.: 10-29
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 10-29 pertain to methods for treatment of the human body by surgery or therapy, and thus relate to a subject matter which this International Searching Authority is not required to search (PCT Article 17(2)(a)(i) and PCT Rule 39.1(iv)).

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:

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 fees, this Authority did not invite payment of any 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.:

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

Information on patent family members

International application No.

PCT/US2015/056914

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010-108125 A2	23/09/2010	CA 2755965 A1	23/09/2010
		EP 2408755 A2	25/01/2012
		EP 2408755 A4	12/09/2012
		US 2012-0009121 A1	12/01/2012
		US 2015-0104387 A1	16/04/2015
		US 9056841 B2	16/06/2015
WO 2013-028664 A1	28/02/2013	None	