

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
12 January 2012 (12.01.2012)

(10) International Publication Number  
**WO 2012/006421 A3**

- (51) **International Patent Classification:**  
*G01N 33/574* (2006.0 1) *C12Q 1/02* (2006.0 1)  
*G01N 33/15* (2006.01) *C12N 5/09* (2010.01)
- (21) **International Application Number:**  
PCT/US201 1/043 189
- (22) **International Filing Date:**  
7 July 201 1 (07.07.201 1)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
61/362,021 7 July 2010 (07.07.2010) US  
61/469,890 31 March 201 1 (31.03.201 1) 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, 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, RO, RS, RU, 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, 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).

**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:**  
26 April 2012



WO 2012/006421 A3

(54) **Title:** DIAGNOSIS AND TREATMENT OF BREAST CANCER

(57) **Abstract:** The present invention relates to compositions and methods for cancer diagnosis, research and therapy, including but not limited to, cancer markers. In particular, the present invention relates to compositions and methods for the prediction of a subject's response to cancer therapies.

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2011/043189****A. CLASSIFICATION OF SUBJECT MATTER***GOIN 33/574(2006.01)i, GOIN 33/15(2006.01)I, C12Q 1/02(2006.01)I, C12N 5/09(2010.01)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)

GOIN 33/574

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) &amp; Keywords: circulatory tumor cell, breast cancer, metastatic, HER2, estrogen receptor

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CRISTOFANELLI, N. et al, 'Circulating tumor cells: a novel prognostic factor for newly diagnosed metastatic breast cancer.' Journal of Clinical Oncology, 01 March 2005, Vol. 23, No. 7, Pages I420-J430.	1-5,13-14
Y	See the abstract, materials and methods, table I and discussion.	6-7,9-10
X	LIU, M. C. et al, 'Circulating tumor cells: a useful predictor of treatment efficacy in metastatic breast cancer.' Journal of Clinical Oncology, 01 November 2009, Vol. 27, No. 31, Pages 5153-5159.	1-5,13-14
Y	See the abstract table 3 and figure 2.	6-7,9-10
X	PIERGA, J.-Y. et al, 'Circulating tumor cell detection predicts early metastatic relapse after neoadjuvant chemotherapy in large operable and locally advanced breast cancer in a phase II randomized trial.' Clinical Cancer Research, 03 November 2008, Vol. 14, Pages 7004-7010.	1-5,13-14
Y	See the abstract, table 2-3 and figure 2.	6-7,9-10

 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

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"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

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

16 FEBRUARY 2012 (16.02.2012)

Date of mailing of the international search report

**17 FEBRUARY 2012 (17.02.2012)**

Name and mailing address of the ISA/KR

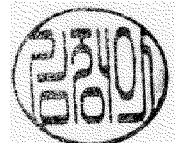
Korean Intellectual Property Office  
Government Complex-Daejeon, 189 Cheongsa-ro,  
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/043189

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WULFING, P. et al, 'HER2-positive circulating tumor cells indicated poor clinical outcome in stage I to III breast cancer patients.' Clinical Cancer Research, 21 March 2006, Vol. 12, Pages 1715-1720.	6-7,9-10
A	See the abstract and figure 1.	1-5,13-14
A	ROSS, J. S. and SLODKOWSKA, E. A. 'Circulating and disseminated tumor cells in the management of breast cancer.' Anatomic Pathology, August 2009, Vol. 132, No. 2, Pages 237-245. See the abstract and pages 242-244.	1-7,9-10,13-14
A	US 2005-0079557 A1 (JEAN-PIERRE VENDRELL et al.) 14 April 2005. See the whole document.	1-7,9-10,13-14
PX	PIERGA, J.-A., et al, 'High independent prognostic and predictive value of circulating tumor cells compared with serum tumor markers in a large prospective trial in first-line chemotherapy for metastatic breast cancer patients.' Annals of Oncology, 03 June 2011, (Epub ahead of print). See the whole document.	1-7,9-10,13-14



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/043189**

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