

(43) International Publication Date
13 September 2012 (13.09.2012)

(51) International Patent Classification:

G01N 33/68 (2006.01) G01N 33/574 (2006.01)
G01N 33/58 (2006.01) B82Y 15/00 (2011.01)

(21) International Application Number:

PCT/US2012/028123

(22) International Filing Date:

7 March 2012 (07.03.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/449,896 7 March 2011 (07.03.2011) US

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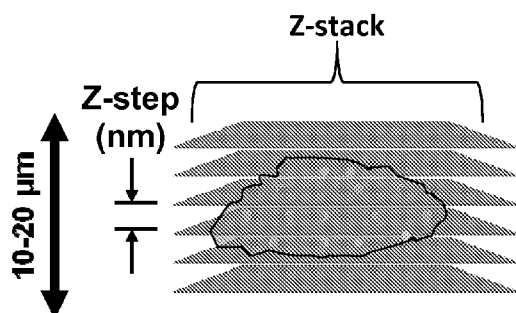
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, 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).

[Continued on next page]

(54) Title: METHODS, APPARATUSES, AND SYSTEMS FOR DETECTING AND QUANTIFYING PHOSPHOPROTEINS



Schematic of Z-stack imaging

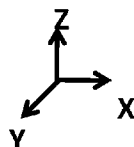


Figure 1B

(57) Abstract: Embodiments herein provide methods, apparatuses, and systems for detecting, monitoring, measuring, and/or characterizing the activity of phosphoproteins, such as tyrosine kinases (TKs) and downstream proteins in TK signal transduction pathways (e.g., TK pathway proteins). In various embodiments, the methods, apparatuses, and systems may use nanoparticles, such as quantum dots (QD), to detect and/or characterize the abnormally overactive TK signaling pathways that underlie tumorigenesis and tumor progression. In various embodiments, the QD-based methods, apparatuses, and systems may have a sufficiently high degree of sensitivity to enable the identification of new TK signaling pathway markers, for example for use in diagnosing, staging, monitoring, and/or prognosing cancers, or in evaluating the efficacy of cancer therapeutics.

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

27 December 2012

- *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))*

A. CLASSIFICATION OF SUBJECT MATTER*G01N 33/68(2006.01)i, G01N 33/58(2006.01)i, G01N 33/574(2006.01)i, B82Y 15/00(2011.01)n*

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)

G01N 33/68; G01N 33/533; C07D 239/88; G01N 33/58; C07K 17/02; G01N 33/50

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: quantify, phosphoprotein

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Juraj Bodo et al. Quantitative in situ detection of phosphoproteins in fixed tissues using quantum dot technology. Journal of histochemistry & cytochemistry. 2009, Vol.57, No.7, pp.701-708 See Summary; pp.702-705	1-36
Y	WO 2010-127114 A2 (OREGON HEALTH & SCIENCE UNIVERSITY et al.) 04 November 20 See Abstract; Summary; p.60,61,72,73; Claim 5.	1-36
A	Eiji Kinoshita, et al. Separation and detection of large phosphoproteins using Phos-tag SDS-PAGE. Nature protocols. 24 Sep 2009, Vol.4, No.10 See the whole document.	1-36
A	US 7052915 B2 (Ruedi Aebersold, et al.) 30 May 2006 See the whole document.	1-36
A	US 7799526 B2 (HOWE ALAN) 21 September 2010 See the whole document.	1-36



Further documents are listed in the continuation of Box C.



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"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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"&" document member of the same patent family

Date of the actual completion of the international search

25 OCTOBER 2012 (25.10.2012)

Date of mailing of the international search report

29 OCTOBER 2012 (29.10.2012)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/028123

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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