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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 January 2014 (30.01.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/018278 A3

(51) International Patent Classification:
G01N 33/58 (2006.01)

(21) International Application Number:
PCT/US2013/050202

(22) International Filing Date:
12 July 2013 (12.07.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/556,304 24 July 2012 (24.07.2012) 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, IS, JP, KE, KG, 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, PA, 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, 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))*

[Continued on next page]

(54) **Title**: MULTISIGNAL REAGENTS FOR LABELING ANALYTES

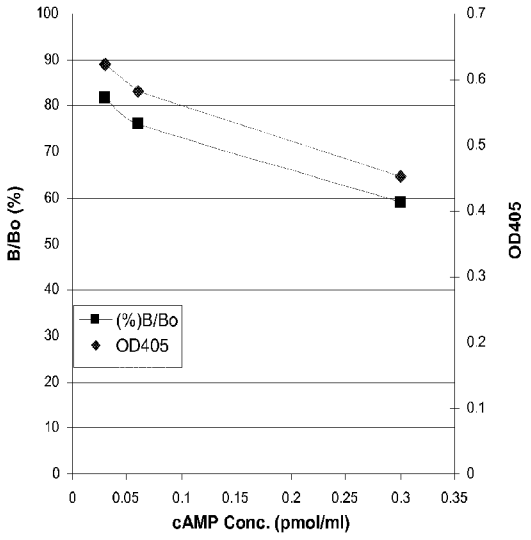


FIG. 1

(57) **Abstract**: Provided is a composition comprising an analyte bound covalently or through a first binding pair to a polymer. In this composition, the analyte is less than about 2000 MW; the polymer further comprises more than one signal or first member of a second binding pair; and the analyte is not a member of the first binding pair or the second binding pair. Also provided is an assay for an analyte. The assay comprises: combining a sample suspected of containing the analyte with the above-described composition and a binding agent that binds to the analyte; and detecting the signal or the first member of the second binding pair that is bound to the binding agent. In this assay, the amount of the signal or the first member of the second binding pair bound to the binding agent is inversely proportional to the analyte in the sample. Additionally provided is a multisignal labeling reagent comprising a first polymer covalently bound to (a) a reactive group or a first member of a first binding pair, and (b) more than one digoxigenin molecule.

WO 2014/018278 A3

— *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))*

(88) Date of publication of the international search report:
3 April 2014

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/050202

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G01N 33/58 (2014.01)
USPC - 530/391.3
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)
IPC(8) - C07K 14/00; C12Q 1/00; G01N 33/53, 33/58, 33/531 (2014.01)
USPC - 435/4; 436/501; 530/391.3; 536/23.1, 24.3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - C07H 21/00; C12Q 1/00, 1/6816, 1/6818; G01N 33/53 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Google Patents, Google Scholar, PubMed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/0273145 A1 (PERGOLIZZI et al) 28 October 2010 (28.10.2010) entire document	1, 4, 5, 14-22, 33, 34
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Y		2, 24, 26-28, 32
Y	WO 2008/024483 A2 (HARRIS et al) 28 February 2008 (28.02.2008) entire document	28, 32
Y	US 2011/0318788 A1 (COLEMAN et al) 29 December 2011 (29.12.2011) entire document	2, 24, 26, 27
A	US 2004/0043512 A1 (SONG et al) 24 March 2004 (24.03.2004) entire document	1, 2, 4, 5, 14-22, 24, 26-28, 32-34

☐ Further documents are listed in the continuation of Box C. ☐

* 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
24 January 2014	06 FEB 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/050202

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

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:

See Extra Sheets.

1. ☐ As all required additional 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 additional fees, this Authority did not invite payment of 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.:

1, 2, 4, 5, 14-22, 24, 26-28, 32-34, limited to an analyte bound covalently to a polymer, wherein the analyte is selected to be a mammalian cellular metabolite and is less than about 2000 MW; wherein the covalent bond is selected to be a linker moiety which is a reactive group; wherein the polymer is selected to be a linear DNA molecule comprising less than 100 nucleotides; and each signal is selected to be a fluorescent dye.

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.