

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 November 2001 (08.11.2001)

PCT

(10) International Publication Number
WO 01/083825 A3

(51) International Patent Classification⁷: **G01N 33/543**,
33/545, 33/548, C12Q 1/68, G01N 33/58, B01J 13/00

(21) International Application Number: PCT/US01/14373

(22) International Filing Date: 4 May 2001 (04.05.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/201,908 4 May 2000 (04.05.2000) US

(71) Applicant: **THE CENTER FOR BLOOD RESEARCH, INC.** [US/US]; 800 Huntington Avenue, Boston, MA 02115 (US).

(72) Inventors: **AUDEH, Zuheir, L.**; 115 Chestnut Street, Brookline, MA 02445 (US). **FICI, Dolores, A.**; 119 Arnold Street, Revere, MA 02151 (US). **MCCORMICK, William**; 29 Academy Lane, Concord, MA 01742 (US).

(74) Agents: **HEINE, Holliday, C.** et al.; Weingarten, Schurgin, Gagnebin & Hayes, LLP, Ten Post Office Square, Boston, MA 02109 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

- with international search report

(88) Date of publication of the international search report:
6 March 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 01/083825 A3

(54) Title: COLLOID COMPOSITIONS FOR SOLID PHASE BIOMOLECULAR ANALYTICAL SYSTEMS

(57) Abstract: A liquid composition comprising a colloidal suspension of a biomolecule-binding matrix material (preferably nitrocellulose) dispersed in a liquid, with particles of the matrix material being of a defined particle size, and replicate copies of a biomolecule, e.g., protein or nucleic acid probes, which are distributed, preferably uniformly, throughout the colloidal suspension and are bound to the matrix material particles, is disclosed. The liquid composition of the invention can be used directly for sample analysis or preparation of biomolecules, or aliquots of the composition can be spotted onto a support to form a microporous matrix system or microarray for analysis or preparation of biomolecules. Compositions and microarrays according to the invention are useful in any type of analytical or preparative procedure relating to biomolecules. They are particularly useful, e.g., in methods for detecting a biomolecule analyte in a liquid sample, methods for determining the presence of a particular nucleic acid sequence within a liquid sample and methods for determining the presence of a drug candidate molecule in a liquid sample. The invention further comprises kits for practicing the various methods of the invention.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/14373

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G01N33/543 G01N33/545 G01N33/548 C12Q1/68 G01N33/58 B01J13/00		
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 7 G01N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, BIOSIS		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 00808 A (BRIGLIN SHAWN ;DOLEMAN BRETT J (US); LEWIS NATHAN S (US); SEVERIN) 6 January 2000 (2000-01-06) the whole document	1-44, 47-49
Y	---	46
X	WO 97 40385 A (SEUL MICHAEL) 30 October 1997 (1997-10-30) the whole document	1-44, 47-49
Y	---	46
Y	US 5 744 305 A (FODOR STEPHEN P A ET AL) 28 April 1998 (1998-04-28) cited in the application abstract; claims	46
<input type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in 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 document 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 7 August 2002	Date of mailing of the international search report 21/08/2002	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Stricker, J-E	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 45

Present claim 45 relates to a drug molecule defined by reference to its interaction with a disease-related biomolecule and the confirmation of that interaction by using the array of claim 33. Thus, present claim 45 relates to an extremely large number of possible drug molecules, for which support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is not provided.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/14373

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 45
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 FURTHER INFORMATION sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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 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.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/14373

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0000808	A	06-01-2000	AU 4821099 A	17-01-2000
			EP 1084390 A2	21-03-2001
			WO 0000808 A2	06-01-2000
WO 9740385	A	30-10-1997	EP 0907889 A1	14-04-1999
			JP 2001500961 T	23-01-2001
			WO 9740385 A1	30-10-1997
			US 6251691 B1	26-06-2001
			US 6387707 B1	14-05-2002
			US 2001007775 A1	12-07-2001
			US 2001016361 A1	23-08-2001
US 5744305	A	28-04-1998	US 5489678 A	06-02-1996
			US 6406844 B1	18-06-2002
			US 5445934 A	29-08-1995
			US 5405783 A	11-04-1995
			US 5143854 A	01-09-1992
			US 6346413 B1	12-02-2002
			US 6310189 B1	30-10-2001
			US 5889165 A	30-03-1999
			US 5753788 A	19-05-1998
			US 2002064796 A1	30-05-2002
			US 6329143 B1	11-12-2001
			US 6261776 B1	17-07-2001
			US 6291183 B1	18-09-2001
			US 6225625 B1	01-05-2001
			US 6403957 B1	11-06-2002
			US 5510270 A	23-04-1996
			AT 110738 T	15-09-1994
			AT 175421 T	15-01-1999
			AU 651795 B2	04-08-1994
			AU 5837190 A	07-01-1991
			AU 672723 B2	10-10-1996
			AU 7765594 A	04-05-1995
			BR 9007425 A	21-07-1992
			CA 2054706 A1	08-12-1990
			DE 69012119 D1	06-10-1994
			DE 69012119 T2	22-12-1994
			DE 69032888 D1	18-02-1999
			DE 69032888 T2	29-07-1999
			DE 953835 T1	13-06-2002
			DK 476014 T3	14-11-1994
			DK 619321 T3	30-08-1999
EP 0476014 A1	25-03-1992			
EP 0619321 A1	12-10-1994			
EP 0902034 A2	17-03-1999			
EP 0953835 A1	03-11-1999			
ES 2058921 T3	01-11-1994			
ES 2129101 T3	01-06-1999			
FI 109130 B1	31-05-2002			
GB 2248840 A ,B	22-04-1992			
HK 61395 A	05-05-1995			
HK 64195 A	05-05-1995			
HU 59938 A2	28-07-1992			
IL 94551 A	30-03-1995			
JP 11315095 A	16-11-1999			
JP 11021293 A	26-01-1999			
JP 4505763 T	08-10-1992			

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/14373

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5744305	A	KR 9701577 B1	11-02-1997
		KR 9701578 B1	11-02-1997
		WO 9015070 A1	13-12-1990
		NL 191992 B	01-08-1996
