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(71) Applicant (for all designated States except US): **UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL** [US/US]; 300 South Street, Suite 400, Shrewsbury, MA 01545-4169 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DEKKER, Job** [NL/US]; 16 Beaman Road, Princeton, MA 01541 (US). **DOSTIE, Josee** [CA/US]; 24 Dustin Street, Worcester, MA 01604 (US).

(74) Agents: **CARROLL, Peter, G.** et al.; Medlen & Carroll, LLP, 101 Howard Street, Suite 350, San Francisco, CA 94105 (US).

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(54) Title: MAPPING OF GENOMIC INTERACTIONS

(57) Abstract: The present invention relates to genomic analysis. In particular, the present invention provides methods and compositions for mapping genomic interactions.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/18745

A. CLASSIFICATION OF SUBJECT MATTER

IPC: C12Q 1/68(2006.01)

USPC: 435/6

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)

U.S. : 435/6

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 practicable, search terms used)
caplus scisearch embase biosis

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	DEKKER et al Capturing Chromosome Conformation Science 2002 Vol. 295, pp 1306-1310, entire document	1,2,8,11-18 ----- 3-7,9,10
Y	US Application 2003/0170689 (STAMATOYANNAPOULOS, J.A., et al) 11 Sep 2003 (11.09.2003), entire document	3-7,9,10



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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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10 September 2008 (10.09.2008)

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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

CHRISTOPHER M. GROSS

Telephone No. (571) 272-1600

INTERNATIONAL SEARCH REPORT

International application No.

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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:
Please See Continuation Sheet

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 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.: 1-18

- 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.

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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-18, drawn to a method comprising contacting a library, a ligation reaction and an amplification reaction.

Group II, claim(s) 19, drawn to a method comprising contacting a cell with a test compound.

Group III, claim(s) 20, drawn to a method comprising contacting a nucleic acid with a cross linker.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

Cells: Animal ; Bacterial ; "Viral"; Plant

The claims are deemed to correspond to the species listed above in the following manner:

15,16

The following claim(s) are generic: 1,15,16 for group I; 18 for group II; 19 for group III.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons.

The technical feature linking groups I-III appears to be that they all relate to a method for analyzing a gene library comprising generating ligation product followed by an amplification of said ligation product.

However, such a method has been described by Barany (1991 PNAS 88:189-193).

Therefore the technical feature linking the inventions of groups I-III does not constitute a special technical feature as defined by PCT rule 13.2, as it does not define a contribution over the prior art.

The special technical feature of Group I is considered to be a method comprising contacting a gene library, performing a ligation and an amplification.

The special technical feature of Group II is considered to be a method comprising contacting a cell with a test compound.

The special technical feature of Group III is considered to be a method comprising contacting a nucleic acid with a crosslinker.

Accordingly, Groups I-III are not so linked by the same or a corresponding special technical feature as to form a single inventive concept.
Form PCT/ISA/210 (extra sheet) (April 2007)

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The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

According to the guidelines in Section (f)(i)(a) of Annex B of the PCT Administrative Instructions, the special technical feature as defined by PCT Rule 13.2 shall be considered to be met when all the alternatives of a Markush-group are of similar nature. For chemical alternatives, such as the claimed sequences, the Markush group shall be regarded as being of similar nature when

- (A) all alternatives have a common property or activity and
- (B)(1) a common structure is preset, i.e., a significant structure is shared by all of the alternatives or
- (B)(2) in cases where the common structure cannot be the unifying criteria, all alternatives belong to an art recognized class of compounds in the art to which the invention pertains.

The species listed above are considered to be each separate inventions for the following reasons:

The genus/genera set forth above as **Cells** include species which do not share a common property or activity. For example, plant cells comprise a cell wall which is not present in an animal cell.