

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 September 2002 (26.09.2002)

PCT

(10) International Publication Number
WO 02/074994 A3

(51) International Patent Classification⁷: C12Q 1/68

(BR). DIAS-NETO, Emmanuel [BR/BR]; Rua Prof. Antonio Prudente, 109, 4° andar, CEP-01509-010 Liberdade, São Paulo, SP (BR). BRENTANI, Ricardo, R. [BR/BR]; Rua Prof. Antonio Prudente, 109, 4° andar, 01509-010 Liberdade, São Paulo SP (BR).

(21) International Application Number: PCT/US01/46665

(22) International Filing Date:
1 November 2001 (01.11.2001)

(74) Agent: HANSON, Norman, D.; Fulbright & Jaworski L.L.P., 666 Fifth Avenue, New York, NY 10103 (US).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/246,313 7 November 2000 (07.11.2000) US

(81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

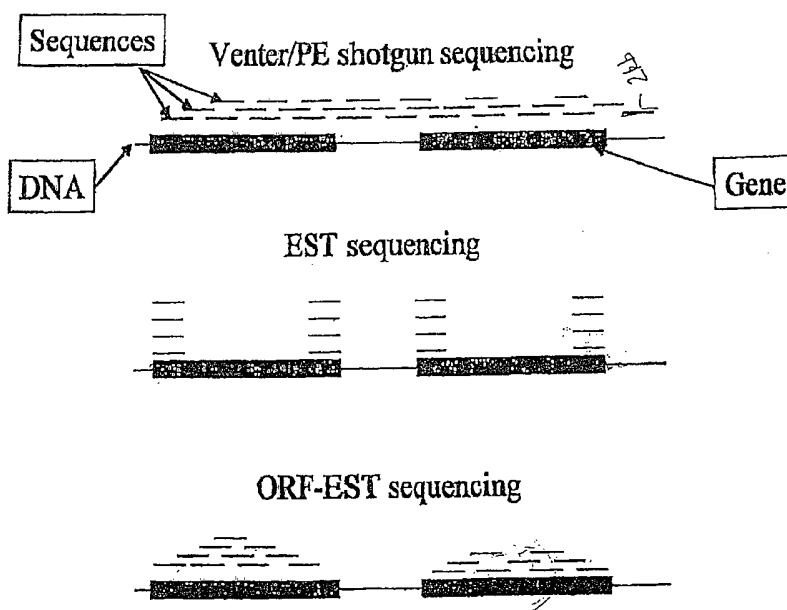
(71) Applicant (for all designated States except US): LUDWIG INSTITUTE FOR CANCER RESEARCH [CH/US]; 605 Third Avenue, New York, NY 10158 (US).

(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, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and
(75) Inventors/Applicants (for US only): SIMPSON, Andrew, John, George [GB/BR]; Rua Prof. Antonio Prudente, 109, 4° andar, CEP-01509-010 São Paulo, SP

[Continued on next page]

(54) Title: IMPROVED ORESTES SEQUENCING METHOD



(57) Abstract: The invention involves a method for obtaining nucleotide sequence information from nucleic acid molecules, such as cDNA. The method involves the use of arbitrary primers, and low stringency conditions. Rather than providing information from the termini of nucleic acid molecules, the method provides information on the more interesting and relevant internal portions of nucleic acid molecules. The method shows how to secure information on ORFs, and how to prepare contig sequences from any source.



WO 02/074994 A3



Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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.

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

14 August 2003

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/46665

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

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 C12Q

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, 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 31299 A (LUDWIG INST CANCER RES) 2 June 2000 (2000-06-02) the whole document ---	1-38
X	EMMANUEL DIAS NETO ET AL: "SHOTGUN SEQUENCING OF THE HUMAN TRANSCRIPTOME WITH ORF EXPRESSED SEQUENCE TAGS" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 97, no. 7, 28 March 2000 (2000-03-28), pages 3491-3496, XP000996193 ISSN: 0027-8424 cited in the application the whole document --- -/--	1-38

Further documents are listed in the continuation of box C.

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

18 June 2003

Date of mailing of the international search report

25/06/2003

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

Hillenbrand, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/46665

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 01 51518 A (CORREA RICARDO ;SOUZO SANDRO DE (BR); SIMPSON ANDREW JOHN GEORGE) () 19 July 2001 (2001-07-19) the whole document	1-38
Y	US 5 487 985 A (MCCLELLAND MICHAEL ET AL) 30 January 1996 (1996-01-30) cited in the application the whole document	1-38
Y	DIAS NETO E ET AL: "Minilibraries constructed from cDNA generated by arbitrarily primed RT-PCR: an alternative to normalized libraries for the generation of ESTs from nanogram quantities of mRNA" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER SCIENCE PUBLISHERS, BARKING, GB, vol. 186, 1997, pages 135-142, XP002138178 ISSN: 0378-1119 cited in the application the whole document	1-38
Y	RADELOFF ET AL: "PRESELECTION OF SHOTGUN CLONES BY OLIGONUCLEOTIDE FINGERPRINTING: AN EFFICIENT AND HIGH THROUGHPUT STRATEGY TO REDUCE REDUNDANCY IN LARGE-SCALE SEQUENCING PROJECTS" NUCLEIC ACIDS RESEARCH, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 26, no. 23, December 1998 (1998-12), pages 5358-5364, XP002103597 ISSN: 0305-1048 the whole document	1-38

INTERNATIONAL SEARCH REPORT

Intel International application No.
PCT/US 01/46665

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.:
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 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:

see additional 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 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-13

A method for determining open reading frames of the genome of an organism.

2. Claims: 14-26

A method for determining that a known nucleotide sequence from a genome of an organism corresponds to a nucleotide sequence of an open reading frame.

3. Claims: 27-35

A method for preparing a contig, nucleic acid molecule from a genome of an organism.

4. Claims: 36-38

A method for sequencing all or part of a genome of an organism.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 01/46665

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0031299	A	02-06-2000	US 2002068277 A1	06-06-2002
			BR 9900267 A	06-06-2000
			EP 1135522 A2	26-09-2001
			JP 2002530119 T	17-09-2002
			WO 0031299 A2	02-06-2000
			US 2002155438 A1	24-10-2002
WO 0151518	A	19-07-2001	AU 3280401 A	24-07-2001
			WO 0151518 A2	19-07-2001
US 5487985	A	30-01-1996	US 6207810 B1	27-03-2001
			WO 9207095 A1	30-04-1992
			US 5861245 A	19-01-1999