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(71) Applicant (for all designated States except US): **SIGMA-ALDRICH CO.** [US/US]; 3050 Spruce Street, St. Louis, Missouri 63103 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WARD, Brian Walter** [US/US]; 1640 Jonquil Drive, Webster Groves, Missouri 63119 (US). **BUNTAINE, Brian Ward** [US/US]; 3624 Patrice Avenue, St. John, Missouri 63114 (US).

(74) Agents: **DOTY, Kathryn J.** et al.; Polsinelli Shalton Welte Suelthaus PC, 100 S. Fourth Street, Suite 1100, St. Louis, Missouri 63102 (US).

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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.

(54) Title: PURIFICATION OF BIOMOLECULES FROM CONTAMINATING INTACT NUCLEIC ACIDS

(57) Abstract: The present invention provides methods for the removal, destruction or inactivation of intact nucleic acids contaminating desired biomolecules by the use of small molecule nucleic acid cleavage agents.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/33091

A. CLASSIFICATION OF SUBJECT MATTER

IPC: C12Q 1/68(2006.01),C12N 1/08;C07H 21/02(2006.01)

USPC: 435/6,270;536/23.1

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, 270; 536/23.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Webstar Dictionary

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
STN, WEST, Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CARROLL et al. Elimination of bacterial DNA from Taq DNA polymerases by restriction endonuclease digestion, J Clin Microbiol. October 1999, 37:10, 3402-4, whole document.	1-10
Y	SAKATA et al. Selective removal of DNA from protein solution with copolymer particles derived from N,N-dimethylaminopropylacrylamide, J Chromatogr A. March 2004, 19;1030(1-2):117-22, whole document.	1-10
Y	EP 0 496 483 A2 (INTEGRATED DNA TECHNOLOGIES, INC.), 29 July 1992 (29.07.1992), whole document.	8-10



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

"E" earlier application or patent 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

10 October 2006 (10.10.2006)

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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

Ponnathapu Achutamurthy

Telephone No.

571-272-600

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/33091

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.: 1-10

- 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. |

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/33091

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group, I claim(s) 1-8 and 9-10, drawn to a method of removal, destruction or inactivation of intact nucleic acids by small molecule base cleaving agent to purify desired enzyme.

Group, II claim(s) 1-8 and 11-33, drawn to a method of removal, destruction or inactivation of intact nucleic acids by small molecule backbone cleaving agent to purify desired enzyme.

Group, III claim(s) 34 and 35-38, drawn to a kit for use in the isolation of a desired biomolecule by using a small molecule metal chelating agent and oxidant.

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 method of removal, destruction or inactivation of intact nucleic acids by base cleaving agent to purify desired enzyme of Group I, a method of removal, destruction or inactivation of intact nucleic acids by backbone cleaving agent to purify desired enzyme of Group II, and a kit for use in the isolation of a desired enzyme by using metal chelating agent and oxidant of Group III are each methods using unrelated and chemically distinct molecules. The only shared technical feature of these groups is that they all relate to a method of removal, destruction or inactivation of intact nucleic acids by a nucleic acid cleaving agent to purify desired biomolecule. However, this shared technical feature is not a "special technical feature" as defined by PCT Rule 13.2 as it does not define a contribution over the art. Carroll et al. (Elimination of bacterial DNA from Taq DNA polymerases by restriction endonuclease digestion, J Clin Microbiol. 1999 Oct; 37(10): 3402-4) disclose a method of elimination of DNA contamination of DNA polymerase by an agent. Thus, a method of eliminating DNA contamination of DNA polymerase is known in the art, which does not make contribution over the prior art.