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**Published:**

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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: METHODS OF DIAGNOSIS OF OVARIAN CANCER, COMPOSITIONS AND METHODS OF SCREENING FOR MODULATORS OF OVARIAN CANCER

(57) Abstract: Described herein are genes whose expression are up-regulated or down-regulated in ovarian cancer. Related methods and compositions that can be used for diagnosis and treatment of ovarian cancer are disclosed. Also described herein are methods that can be used to identify modulators of ovarian cancer.

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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/19297

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : C12Q 1/68; C07H 21/04
US CL : 435/6, 91.1; 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, 91.1; 536/23.1

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)
Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X<br>---<br>Y | WU, D. et al. Characterization and Molecular Cloning of a Putative Binding Protein for Heparin-binding Growth Factors. The Journal of Biological Chemistry. 05 September 1991, Vol. 266, No. 25, pages 16778-16785, see especially page 16778, col. 1, page 16783, Fig. 7, Fig. 8. | 1-5, 9-12<br>----------<br>6 |
| Y | US 5,700,637 A (SOUTHERN) 23 December 1997 (23.12.1997) see whole document. | 6 |

☐ 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
08 November 2004 (08.11.2004)

Date of mailing of the international search report
01 DEC 2004

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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/19297

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

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

2. ☐ Claim 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. ☐ Claim 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:
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 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.: 1-12, directed to heparin binding growth factor binding protein

**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

## BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Groups 1-12000, claim(s) 1-12, drawn to nucleic acids and methods of detecting nucleic acids. It is noted that each group named above corresponds to each of the genes or nucleic acids set forth in tables 1-26. Therefore, if applicant does not choose to pay additional fees for search, Group I and claims 1-12 will be searched to the extent that they apply to heparin binding growth factor. If applicant wishes to elect and pay for additional groups for search, applicant is requested to indicate which nucleic acid from tables 1-26 are elected.

Groups 12001-24000, claim(s) 13 and 23, drawn to polypeptides and methods of detecting polypeptides. . It is noted that each group named above corresponds to proteins encoded by each of the genes or nucleic acids set forth in tables 1-26. Therefore, if applicant wishes to elect and pay for additional groups for search, applicant is requested to indicate which nucleic acid from tables 1-26 are elected.

Groups 24001-36000, claim(s) 14-22, drawn to antibodies and methods of using antibodies. It is noted that each group named above corresponds to an antibody that binds a protein encoded by each of the genes or nucleic acids set forth in tables 1-26. Therefore, if applicant wishes to elect and pay for additional groups for search, applicant is requested to indicate which nucleic acid from tables 1-26 are elected.

Groups 36001-48000, claim(s) 24, drawn to drug screening assays. It is noted that each groups named above correspond to detection of gene expression of each of the genes or nucleic acids set forth in tables 1-26. If applicant wishes to elect and pay for additional groups for search, applicant is requested to indicate which nucleic acid from tables 1-26 are elected.

The inventions listed as Groups 1-48000 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 products claimed in groups 1-12000 (see e.g., claim 1) include genes or nucleic acid sequences which are both structurally and functionally unrelated to any of the other nucleic acids in the tables. As such the products of groups 1-12000 do not represent a contribution over the prior art, the claims lack a special technical feature that is the same as or that corresponds to a special technical feature of the other claimed inventions. Thus there is no special technical feature linking the recited Groups, as would be necessary to fulfill the requirement for unity of invention.

Groups 1-36000 are additionally drawn to multiple distinct products lacking the same or corresponding special technical features. The nucleic acids of Groups 1-12000 are composed of nucleotides and function in, e.g., methods of nucleic acid hybridization or amplification. The polypeptides of groups 12001-24000, which are composed of amino acids are structurally distinct molecules from polynucleotides or antibodies and can function in, e.g. catalysis of reactions. While the inventions of both groups 12001-24000 and groups 24001-36000 are polypeptides, in this instance the polypeptides of groups 12001-24000 are single chain molecules whereas the polypeptides of groups 24001-36000 encompasses antibodies including IgG which comprises 2 heavy and 2 light chains containing constant and variable regions, and including framework regions which act as a scaffold for the 6 complementarity determining regions (CDRs) that function to bind an epitope, and can function, e.g. in eliciting an immune response. Thus the polypeptides of groups 12001-24000 and the antibodies of groups 24001-36000 are structurally distinct molecules. As the products of the different sets of groups differ from each other in structure, function, and effect, they do not belong to a recognized class of chemical compounds, or have both a "common property or activity" and a common structure, as would be required to show that the inventions are "of a similar nature".

Further, the methods of Groups 36001-48000 do not require either the peptides of groups 12001-24000 or the antibodies of groups 24001-36000. Further, the methods of groups 36001-48000 (involve administering a test compound) have different objectives and require different process steps than the methods or nucleic acids of groups 1-12000. Further, the methods of groups 1-12000 do not require the method steps of groups 36001-48000. In addition to differences in objectives, effects, and method steps, it is again noted that the claims of the present groups are not directed to the detection or identification of molecules having the same or common special technical feature, for the reasons discussed above.

**Continuation of B. FIELDS SEARCHED Item 3:**
medline, caplus, NCBI
search terms: heparin binding growth factor binding protein