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**WO 2003/044161 A3**

(54) Title: GENE AMPLIFICATION AND OVEREXPRESSION IN CANCER

(57) Abstract: There are disclosed methods and compositions for the diagnosis, prevention, and treatment of tumors and cancers in mammals, for example, humans, utilizing the MKPX gene, which are amplified colon and/or ovarian and/or prostate cancer genes. The MKPX gene, its expressed protein products and antibodies are used diagnostically or as targets for cancer therapy or vaccine; they are also used to identify compounds and reagents useful in cancer diagnosis, prevention, and therapy.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/35312

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/00, 1/68; C07H 21/04

US CL : 435/4, 6; 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. : 435/4, 6; 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.	WO 01/12819 A2 (SUGEN, INC) 22 February 2001 (22.02.2001), see especially Sequence 11 with 99.59% identity to Sequence 3 and Sequence 12 with 100% identity to Sequence and oral to allow hey Babe, page 9-10, claims 21 and 22.	1, 2,3-in-part, 12-15

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	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search 05 October 2004 (05.10.2004)	Date of mailing of the international search report <b>18 OCT 2004</b>
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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. (703) 305-3230	Authorized officer Susan Ungar <i>J. Roberts for</i> Telephone No. 571-272-1600
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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/35312

## 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, 2, 3-in-part, 12-15-in-part
- Remark on Protest**  The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

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

The inventions listed as Groups 1-20 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 inventions listed as Groups 1-44 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:

An international stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept. When claims to different categories are present in the application, the claims will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories (1) A product and a process specifically adapted for the manufacture of said product; or (2) A product and a process of use of said product; or (3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or (4) A process and an apparatus or means specifically designed for carrying out the said process; or (5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application will be considered as the main invention in the claims, see PCT article 17(3)(a) and 1.476(c), 37 CFR 1.475(b) and (d). Group 1 will be the main invention. After that, all other products and methods will be broken out as separate groups (see 37 CFR 1.475(d)).

Group 1, is drawn to a method for diagnosing colon cancer by assaying DNA in a mammal and an isolated MKPX gene amplicon.

Groups 2-3, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods of diagnosing prostate and ovarian cancer and the objectives and the means of these methods are distinct from those of group 1.

Groups 4-9, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods inhibiting various cancers with different types of polynucleotide inhibitors and the objectives and the means of these methods are distinct from those of group 1.

Groups 10-12, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods inhibiting various cancers with different types of protein inhibitors and the objectives and the means of these methods are distinct from those of group 1.

Group 13, is a method other than the method of the first category first mentioned in the claims, it is drawn to a method for administering siRNA to a patient/blocking in vivo expression of a gene and the objectives and the means of these methods are distinct from those of group 1.

Groups 14-16 are methods other than the method of the first category first mentioned in the claims, they are drawn to methods of screening a test molecule for MKPX antagonist activity in a cell assay.

Group 17 is a method other than the method of the first category first mentioned in the claims, it is drawn to methods of screening a test molecule for MKPX antagonist activity in a cell free assay.

Groups 18-20 are methods other than the method of the first category first mentioned in the claims, it is drawn to methods of determining the efficacy of cancer therapeutics in various cancer treatments.

The inventions listed as Groups 1-20 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 inventions listed as Groups 1-44 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:

An international stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept. When claims to different categories are present in the application, the claims will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories (1) A product and a process specifically adapted for the manufacture of said product; or (2) A product and a process of use of said product; or (3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or (4) A process and an apparatus or means specifically designed for carrying out the said process; or (5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application will be considered as the main invention in the claims, see PCT article 17(3)(a) and 1.476(c), 37 CFR 1.475(b) and (d). Group 1 will be the main invention. After that, all other products and methods will be broken out as separate groups (see 37 CFR 1.475(d)).

Group 1, is drawn to a method for diagnosing colon cancer by assaying DNA in a mammal and an isolated MKPX gene amplicon.

Groups 2-3, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods of diagnosing prostate and ovarian cancer and the objectives and the means of these methods are distinct from those of group 1.

Groups 4-9, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods inhibiting various cancers with different types of polynucleotide inhibitors and the objectives and the means of these methods are distinct from those of group 1.

Groups 10-12, are methods other than the method of the first category first mentioned in the claims, they are drawn to methods inhibiting various cancers with different types of protein inhibitors and the objectives and the means of these methods are distinct from those of group 1.

Group 13, is a method other than the method of the first category first mentioned in the claims, it is drawn to a method for administering siRNA to a patient/blocking in vivo expression of a gene and the objectives and the means of these methods are distinct from those of group 1.

Groups 14-16 are methods other than the method of the first category first mentioned in the claims, they are drawn to methods of screening a test molecule for MKPX antagonist activity in a cell assay.

Group 17 is a method other than the method of the first category first mentioned in the claims, it is drawn to methods of screening a test molecule for MKPX antagonist activity in a cell free assay.

Groups 18-20 are methods other than the method of the first category first mentioned in the claims, it is drawn to methods of determining the efficacy of cancer therapeutics in various cancer treatments.

**Continuation of B. FIELDS SEARCHED Item 3:**  
GENESEQ, GENEMBL, SWISSPROT\_41,  
Sequence 1, Sequence 2