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For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: NUCLEIC ACIDS AND CORRESPONDING PROTEINS ENTITLED 191P4D12(b) USEFUL IN TREATMENT AND  
DETECTION OF CANCER

**191P4D12(b) SSH sequence of 223 nucleotides. (SEQ ID NO: 1)**

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1  GATCACTAAT TCAAGGCTCT TCTGGATGTT TCTCTGGGTT GGGGCTGGAG TTCAATGAGG
61  TTTATTTTAA GCTGGCCCAC CCAGATACAC TCAGCCAGAA TACCTAGATT TAGTACCCAA
121 ACTCTTCTTA GTCTGAAATC TGCTGGATTT CTGGCCTAAG GGAGAGGCTC CCATCCTTCG
181 TTCCCCAGCC AGCCTAGGAC TTCGAATGTG GAGCCTGAAG ATC
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(57) Abstract: A novel gene 191P4D12(b) and its encoded protein, and variants thereof, are described wherein 191P4D12(b) ex-  
hibits tissue specific expression in normal adult tissue, and is aberrantly expressed in the cancers listed in Table I. Consequently,  
191P4D12(b) provides a diagnostic, prognostic, prophylactic and/or therapeutic target for cancer. The 191P4D12(b) gene or frag-  
ment thereof, or its encoded protein, or variants thereof, or a fragment thereof, can be used to elicit a humoral or cellular immune  
response; antibodies or T cells reactive with 191P4D12(b) can be used in active or passive immunization.



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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/13013

## A. CLASSIFICATION OF SUBJECT MATTER

IPC: C07K 14/00( 2006.01)

USPC: 530/350

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. : 530/350

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)  
MPSRCH SEQ ID NO: 3

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                                                    | Relevant to claim No. |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X          | WO 200118016-A1 (MILLENNIUM PHARM INC.) 15 March 2001. See Sequence 510AA, figure 2, and MPSRCH search report, 2006, pct-us03-13013-3.rag, pages 1-4. | 1-9, 16-20            |

☐ 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

18 August 2006 (18.08.2006)

Date of mailing of the international search report

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/13013

## 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.: 1-9 and 16-20

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**

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) 1-9, 16-20, drawn to SEQ ID NO:3 as shown in figure 2, a peptide fragment thereof, or a variant thereof, and a method for inducing an immune response, using SEQ ID NO:3, a peptide fragment thereof, or a variant thereof.

Group II, claim(s) 1-9, drawn to the protein SEQ ID NO:5, as shown in figure 2, a peptide fragment thereof, or a variant thereof.

Group III, claim(s) 1-9, drawn to the protein SEQ ID NO:7, as shown in figure 2, or a peptide fragment thereof, or a variant thereof.

Group IV, claim(s) 1-9, drawn to the protein SEQ ID NO:9, as shown in figure 2, or a peptide fragment thereof, or a variant thereof.

Group V, claim(s) 1-9, drawn to the protein SEQ ID NO:11, as shown in figure 2, or a peptide fragment thereof, or a variant thereof.

Groups VI-X, claim(s) 10-15, drawn to a nucleic acid encoding SEQ ID NO:3, 5, 7, 9, 11 or a peptide fragment thereof, or a variant thereof. Each of the nucleic acid sequence constitutes a single, distinct invention.

Groups XI-XV, claims 16-20,42, drawn to a method for inducing an immune response, or treating cancer, using SEQ ID NO:5, 7, 9, 11 or a variant thereof. A method using each of the protein constitutes a single, distinct invention.

Groups XVI- XX, claims 16-20, 40, 43-44, drawn to a method for treating cancer, using a polynucleotide encoding SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof. A method using each polynucleotide encoding SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof constitutes a single, distinct invention

Groups XXI-XXV, claims 21-23, 25-27, 36, drawn to a method for detecting a 202P5A5-related protein or cancer, using SEQ ID NO:3, 5, 7, 9, 11 or a peptide fragment thereof, or a variant thereof. A method using each of the protein constitutes a single, distinct invention.

Groups XXVI-XXX, claims 21, 23-24, drawn to a method for detecting a 202P5A5-related polynucleotide or cancer, using a polynucleotide encoding SEQ ID NO:3, 5, 7, 9, 11 or a peptide fragment thereof, or a variant thereof. A method using each of the polynucleotide constitutes a single, distinct invention.

Groups XXXI-XXXV, claims 28-35, 37-39, drawn to a modulator of the status of SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof. Each modulator of the status of SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof constitutes a single, distinct invention.

Groups XXXVI-XXXX, claims 36, 40-41, 46, drawn to a method for treating cancer, using an antibody to SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof. A method using each antibody to SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof constitutes a single, distinct invention.

Groups XXXXI-XXXXXVI, claim 45, drawn to a method for treating cancer, using T cells specific for SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof. A method using T cells specific for each of SEQ ID NO:3, 5, 7, 9, 11 or a variant thereof constitutes a single, distinct invention.

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:

- 1) SEQ ID NO:3 or any peptide thereof, as recited in Tables VIII-XLIX.
- 2) SEQ ID NO:5 or any peptide thereof, as recited in Tables VIII, IX, XI, XII, XIV, XV, XVII, XVIII, XIX, XX, XXI, XXII, XXV, XXXIV,XLVIII, XLIX.

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

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Claims 1-46 correspond to the species SEQ ID NO:3 or any peptide thereof.  
Claims 1-46 correspond to the species SEQ ID NO:5 or any peptide thereof.

The following claim(s) are generic:

Claims 1-46 are generic to the species SEQ ID NO:3 or any peptide thereof.  
Claims 1-46 are generic to the species SEQ ID NO:5 or any peptide thereof.

The inventions listed as Groups I-XXXXVI 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 specially 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 C.F.R. 1.475(b) and (d). Group I 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 I, claims 1-9, 16-20, forms a single general inventive concept.

Groups II-X, XXXI-XXXV do not share the same technical feature of group I, because the composition of groups II-X, XXXI-XXXV do not share a common structure with the polypeptide SEQ ID NO:3 of group I.

Groups XI-XX, XXII-XXX, XXXVI-XXXXVI do not share the same technical feature of group I, because the methods of groups XI-XX, XXII-XXX, XXXVI-XXXXVI do not use the polypeptide SEQ ID NO:3 of group I.

Group XXI is an additional use of SEQ ID NO:3.