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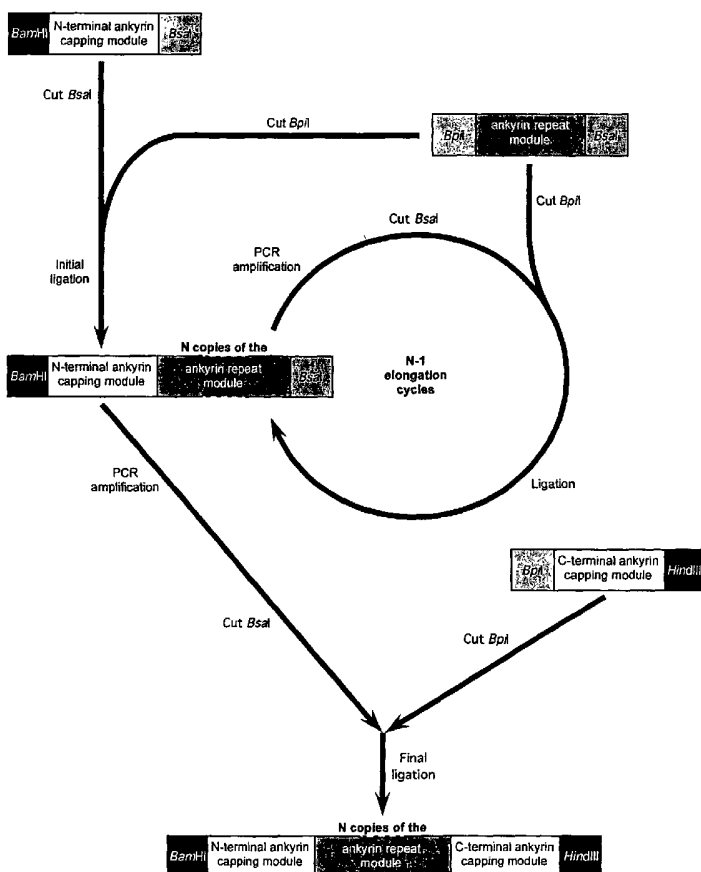
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[Continued on next page]

(54) Title: COLLECTIONS OF REPEAT PROTEINS COMPRISING REPEAT MODULES



(57) Abstract: The present invention relates to collections of repeat proteins comprising repeat modules which are derived from one or more repeat units of a family of naturally occurring repeat proteins, to collections of nucleic acid molecules encoding said repeat proteins, to methods for the construction and application of such collections and to individual members of such collections.



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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/10 C07K14/435 C12N15/63 A61K38/16 C07K14/47

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 C07K

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, WPI Data, PAJ, SEQUENCE SEARCH, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------------------|
| E | WO 01 85909 A (MAXYGEN INC (US)) 15 November 2001 (2001-11-15) page 11, line 30 -page 12, line 19 page 30, line 10 - line 31 | 1 |
| P,X | WO 01 61005 A (MILLENNIUM PHARM INC (US)) 23 August 2001 (2001-08-23) page 35, line 17 -page 36, line 29 -/-- | 1-3, 13-19, 35-38, 41-43 |



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

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29/07/2002

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/10454

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|---|---|
| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | <p>WO 98 06845 A (LIFE TECHNOLOGIES INC) 19 February 1998 (1998-02-19)</p> <p>page 3, line 1 -page 6, line 15 page 20, line 1 -page 21, line 10 page 26, line 30 -page 27, line 4 page 28, line 16 - line 20</p> <p>---</p> | <p>1-6, 14-16, 23, 35-38, 44-47</p> |
| X | <p>WO 00 34784 A (PHYLOS INC) 15 June 2000 (2000-06-15)</p> <p>the whole document</p> <p>---</p> | <p>1-6, 20, 24-30, 35-47</p> |
| X | <p>WO 96 06166 A (MEDICAL RES COUNCIL) 29 February 1996 (1996-02-29)</p> <p>page 5 -page 17</p> <p>---</p> | <p>1-5, 20-22, 26-30, 35-47</p> |
| X | <p>KOBE ET AL: "A structural basis of the interactions between leucine-rich repeats and protein ligands" NATURE, MACMILLAN JOURNALS LTD. LONDON, GB, vol. 374, 9 March 1995 (1995-03-09), pages 183-186, XP002091866 ISSN: 0028-0836 cited in the application the whole document</p> <p>---</p> | <p>38, 44-47</p> |
| X | <p>KAJAVA A V: "STRUCTURAL DIVERSITY OF LEUCINE-RICH REPEAT PROTEINS" JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 277, no. 277, 1998, pages 519-527, XP000907339 ISSN: 0022-2836 cited in the application the whole document</p> <p>---</p> | <p>38, 44</p> |
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/10454

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
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| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | <p>SEDGWICK S G ET AL: "The ankyrin repeat: a diversity of interactions on a common structural framework"</p> <p>TIBS TRENDS IN BIOCHEMICAL SCIENCES, ELSEVIER PUBLICATION, CAMBRIDGE, EN, vol. 24, no. 8, 1 August 1999 (1999-08-01), pages 311-316, XP004174251</p> <p>ISSN: 0968-0004</p> <p>cited in the application</p> | 38,44 |
| A | <p>the whole document, especially pages 315-316, summary</p> | 7-12 |
| X | <p>---</p> <p>ZHANG BIN ET AL: "A minimum folding unit in the ankyrin repeat protein p16INK4."</p> <p>JOURNAL OF MOLECULAR BIOLOGY, vol. 299, no. 4, 2000, pages 1121-1132, XP002204980</p> <p>ISSN: 0022-2836</p> <p>cited in the application</p> | 38,44-46 |
| Y | <p>the whole document, especially page 1129</p> <p>-----</p> | 7-12 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 01/10454

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.: 1-6, 19-30, 35-47, all partially
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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:

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

Continuation of Box I.2

Claims Nos.: 1-6, 19-30, 35-47, all partially

Present claims 1-6, 19-30, 35-47 relate to collection comprising an extremely large number of possible nucleic acid molecules. In fact, the claims contain so many options, variables and possible permutations that a lack of clarity (and/or conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has been carried out using the terms of claim 1 as keywords and in addition for those parts of the application which do appear to be clear (and/or concise), namely the subject-matter of claims 7-18 and 31-34, the examples of repeats mentioned on description page 6, last paragraph.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 01/10454

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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