



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification<sup>5</sup> : C07K 7/10, C12N 15/00, 15/82, A61K 37/02</p>	A3	<p>(11) International Publication Number: <b>WO 94/15961</b></p> <p>(43) International Publication Date: 21 July 1994 (21.07.94)</p>
<p>(21) International Application Number: PCT/US94/00383</p> <p>(22) International Filing Date: 12 January 1994 (12.01.94)</p> <p>(30) Priority Data: 08/003,884 13 January 1993 (13.01.93) US</p> <p>(71) Applicant: PIONEER HI-BRED INTERNATIONAL, INC. [US/US]; 700 Capital Square, 400 Locust Street, Des Moines, IA 50309 (US).</p> <p>(72) Inventors: RAO, A., Gururaj; 4628 70th Place, Urbandale, IA 50322 (US). ZHONG, Lingxiu; 5225 Twana, Apartment 31, Des Moines, IA 50310 (US).</p> <p>(74) Agents: ROTH, Michael, J. et al.; 700 Capital Square, 400 Locust Street, Des Moines, IA 50309 (US).</p>	<p>(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 24 November 1994 (24.11.94)</p>	
<p>(54) Title: SYNTHETIC AMPHIPATHIC PEPTIDES WITH ANTIMICROBIAL ACTIVITY</p>		
<p>(57) Abstract</p> <p>Synthetic polypeptides exhibiting amphipathic alpha-helices provide cell-expressible antimicrobial activity.</p>		

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## INTERNATIONAL SEARCH REPORT

 Intern. Application No  
 PCT/US 94/00383

A. CLASSIFICATION OF SUBJECT MATTER IPC 5 C07K7/10 C12N15/00 C12N15/82 A61K37/02		
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 5 C07K C12N A61K		
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)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO,A,92 01462 (THE SCRIPPS RESEARCH INSTITUTE) 6 February 1992 * whole disclosure *	1-20
A	WO,A,92 18146 (THE CHILDREN'S HOSPITAL OF PHILADELPHIA) 29 October 1992 * whole disclosure *	1-20
A	EP,A,0 182 278 (WAKUNAGA SEIYAKU) 28 May 1986 * whole disclosure *	1-20
A	EP,A,0 502 718 (PIONEER HI-BRED INT.) 9 September 1992 * whole disclosure *	1-20
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> 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
Date of the actual completion of the international search  4 October 1994		Date of mailing of the international search report  18. 10. 94
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016		Authorized officer  Hermann, R

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 94/00383

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>THE EMBO JOURNAL vol. 9, no. 1, 1990 pages 217 - 224 KYLSTEN, P. ET AL. 'The cecropin locus in drosophila' * figure 3 *</p> <p style="text-align: center;">-----</p>	1-20

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 94/00383

## 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.:  
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 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:

see annex

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.:  
  
1-20 all partially  
  
(subject 1,2,3)
  
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

1.- Claims 1-20, all partially: Peptides having the C-terminal sequence AGPGVTIGIAHAKSQLW (= SEQ.I.D. Nos. 1-8), and all subject-matter relating to such peptides.

2.- Claims 1-20, all partially: Peptides having the sequence GWLRRIGRRIERVGQH (SEQ.I.D. Nos. 9,11,12), and all subject-matter relating to such peptides.

3.- Claims 1-20, all partially: Peptides having the sequence LKKALRALARHWK (SEQ.I.D. Nos 10-12), and all subject-matter relating to such peptides.

4.- Claims 1-120, all partially: Peptides having the C-terminal sequence ALMGEAVQT (= SEQ.I.D. Nos 13-15), and all subject-matter relating to such peptides.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 94/00383

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9201462	06-02-92	JP-T- 6504260	19-05-94
		US-A- 5294605	15-03-94
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WO-A-9218146	29-10-92	US-A- 5225399	06-07-93
		AU-B- 652261	18-08-94
		AU-A- 1914992	17-11-92
		EP-A- 0544860	09-06-93
		JP-T- 6500573	20-01-94
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EP-A-0182278	28-05-86	JP-A- 61122299	10-06-86
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EP-A-0502718	09-09-92	AU-A- 1139992	10-09-92
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