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(71) Applicant (for all designated States except US): PIONEER HI-BRED INTERNATIONAL, INC. [US/US]; 800 Capital Square, 400 Locus Street, Des Moines, IA 50309 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SIMMONS, Carl, R. [US/US]; 4228 Holland Drive, Dea Moines, IA 50310 (US). NAVARRO ACEVEDO, Pedro, A. [US/US]; 315 S. 4th Street, Ames, IA 50010 (US).

(74) Agents: FOUTCH, Louise, A., et al.; Pioneer Hi-Bred International, Inc., 7100 NW 62nd Avenue, P.O. Box 1000, Johnston, IA 50131-1000 (US).

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(54) Title: ANTIMICROBIAL PEPTIDES AND METHODS OF USE

(57) Abstract: The invention provides isolated KCP-like nucleic acids and their encoded proteins. The present invention provides methods and compositions relating to altering KCP-like nucleic acid and/or protein concentration and/or composition of plants. The invention further provides recombinant expression cassettes, host cells, and transgenic plants.

INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 01/28429

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C12N15/29 C12N15/82 C12N5/10 C07K14/415 C12Q1/68  
 G01N33/68 A01H5/00 A01H5/10

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 C12N C07K C12Q G01N A01H

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, WPI Data, PAJ, BIOSIS, MEDLINE, SEQUENCE SEARCH, CAB Data, EMBL

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HERZOG MICHEL ET AL: "GASA, a gibberellin-regulated gene family from Arabidopsis thaliana related to the tomato GAST1 gene." PLANT MOLECULAR BIOLOGY, vol. 27, no. 4, 1995, pages 743-752, XP002217193 ISSN: 0167-4412 the whole document	1-16
X	US 5 932 713 A (MAEKAWA YOSHIHIKO ET AL) 3 August 1999 (1999-08-03) column 1 -column 11; claims 1,7,8; figure 3; examples 1-4 column 33 -column 35	1-12

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

Date of the actual completion of the international search <b>24 January 2003</b>	Date of mailing of the international search report <b>13. 02. 2003</b>
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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 <b>Oderwald, H</b>
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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/28429

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>DATABASE EMBL 'Online!  EBI Hinxton, UK;  17 January 2000 (2000-01-17)  WALBOT V.: "Maize ESTs from various cDNA  libraries sequenced at Stanford  University"  Database accession no. AW288976  XP002217194  abstract</p>	1-4
X	<p>DATABASE EMBL 'Online!  EBI Hinxton, UK;  11 August 2000 (2000-08-11)  WALBOT V.: "Maize ESTs from various cDNA  libraries sequenced at Stanford  University"  Database accession no. BE552680  XP002228602  abstract</p>	1-4
A	<p>WO 94 11511 A (ZENECA LTD ;BROEKAERT  WILLEM FRANS (BE); CAMMUE BRUNO PHILIPPE  ANG) 26 May 1994 (1994-05-26)  the whole document</p>	1-12
A	<p>WO 92 21699 A (ICI PLC)  10 December 1992 (1992-12-10)  the whole document</p>	1-12
A	<p>SEGURA ANA ET AL: "Snakin-1, a peptide  from potato that is active against plant  pathogens."  MOLECULAR PLANT-MICROBE INTERACTIONS,  vol. 12, no. 1, January 1999 (1999-01),  pages 16-23, XP008009348  ISSN: 0894-0282  the whole document</p>	9,13-16

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/28429

## 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 additional 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.:  
  
1-16 partially (inventions 1 and 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**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

**Invention 1: 1-16 partially**

A nucleic acid molecule comprising SEQ ID NO: 1. A polypeptide encoded by said nucleic acid comprising SEQ ID NO: 37. A vector, an expression cassette, a host cell, a transgenic plant cell, a transgenic plant, a transgenic seed, a method of modulating the level of a KCP-like protein in a plant, a method for identifying KCP-like proteins comprising said nucleic and polypeptide.

**Invention 2-36: claims 1-16 partially**

same as invention 1 but comprising a polypeptide and corresponding nucleic acid sequence in the order given in claim 1 (invention 2 is limited to SEQ ID NO: 2 and 38 and invention 36 is limited to SEQ ID NO: 36 and 72).

**INTERNATIONAL SEARCH REPORT**  
 Information on patent family members

International Application No

PCT/US 01/28429

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