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LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI,
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



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(54) Title: DISCRIMINATION BETWEEN GnRH-I AND GnRH-II

(57) Abstract: A peptide that comprises a modified GnRH decapeptide sequence which allows for a testosterone level that is essentially non-detectable after vaccination with the peptide in a suitable dosage and/or allows for an immunogenic response that allows for the effective discrimination between GnRH-I and GnRH-II and a method for the immunocastration of pigs and for the treatment of prostate cancers of humans

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 01/00666

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K7/23 C07K16/26 A61K39/00 A61K38/09 A61P35/00

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 A61K A61P

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)

CHEM ABS Data, EPO-Internal, WPI Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	TURKSTRA JA ET AL.: "The role of the individual amino acids of a GnRH-tandem-dimer-peptide used as an antigen for immunocastration of male piglets determined with systematic alanine replacements" VACCINE, vol. 20, 2002, pages 406-412, XP002215433 the whole document ---	
A	OONK HB ET AL.: "New GnRH-like peptide construct to optimize efficient immunocastration of male pigs by immunoneutralization of GnRH" VACCINE, vol. 16, no. 11/12, 1998, pages 1074-1082, XP004124606 the whole document ---	

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 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

2 October 2002

Date of mailing of the international search report

18/10/2002

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INTERNATIONAL SEARCH REPORT

Int: nal Application No

PCT/NL 01/00666

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category ^o	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 744 450 A (HOEGER ET AL.) 28 April 1998 (1998-04-28) column 1, line 50 - line 60; claims 1-9; tables 2,10 -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL 01/00666

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:

Although claims 13 (both), 14, 16-18 and 24 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. Claims Nos.: 1-4 and 6-16 (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.: 1-4 and 6-16 (all partially)

Present claims 1-4 and 6-16 relate to peptides defined by reference to a desirable characteristic or property, namely their ability to generate an immunogenic response that allows for discrimination between different types of GnRH.

The claims cover all peptides having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT for only a very limited number of such peptides. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the peptides by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible.

Moreover, it is unclear in the sense of Article 6 PCT what is meant by a modified GnRH decapeptide sequence, wherein at least one of the amino acids is replaced by a different amino acid, e.g. by Ala (see claims 3 and 4). Such an expression may comprise a wide range of peptides, even peptides wherein all amino acids are replaced, e.g. a decapeptide AAAAAAAAAA, and is therefore speculative, embracing a great variety of possibilities not yet explored by the applicant, the effect of which cannot be expected by the skilled person using the teaching disclosed in the current application and his technical knowledge to reproduce without undue burden all the possibilities which are actually claimed.

Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the peptides of claim 5.

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/NL 01/00666

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5744450	A	28-04-1998	US 5580957 A	03-12-1996
			US 5352796 A	04-10-1994
			US 5296468 A	22-03-1994
			AT 176904 T	15-03-1999
			AU 682702 B2	16-10-1997
			AU 7061194 A	17-01-1995
			CA 2165469 A1	05-01-1995
			DE 69416676 D1	01-04-1999
			DE 69416676 T2	16-09-1999
			EP 0703900 A1	03-04-1996
			IL 110032 A	22-09-1999
			JP 9500110 T	07-01-1997
			NZ 267921 A	19-12-1997
			WO 9500474 A1	05-01-1995
			US 5565574 A	15-10-1996
			US 5710249 A	20-01-1998
			ZA 9404345 A	03-04-1995
			AT 182899 T	15-08-1999
			AU 664989 B2	14-12-1995
			AU 1588292 A	21-10-1992
			CA 2101316 A1	15-09-1992
			DE 69229722 D1	09-09-1999
			DE 69229722 T2	17-02-2000
			EP 0575490 A1	29-12-1993
			ES 2137945 T3	01-01-2000
			IE 920825 A1	23-09-1992
			IL 101074 A	30-09-1997
			IL 118659 A	20-06-1999
			JP 3222050 B2	22-10-2001
			JP 8277253 A	22-10-1996
			JP 2522628 B2	07-08-1996
			JP 6505751 T	30-06-1994
			KR 123009 B1	24-11-1997
			NZ 241755 A	25-06-1993
			PT 100246 A , B	30-07-1993
			WO 9217025 A2	01-10-1992
			ZA 9201559 A	25-11-1992