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18 February 2010

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Previous Correction:

see Notice of 16 July 2009

(54) Title: **EHRlichia CANIS DIVA (DIFFERENTIATE INFECTION FROM VACCINATED ANIMALS)**

(57) Abstract: The invention provides Ehrlichia canis antigens that can be used to detect *E. canis* infected animals regardless of whether the animals have been vaccinated for *E. canis*. The invention also provides compositions and methods for determining the presence of *E. canis* antigens and antibodies.



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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/82038

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01N 33/554 (2009.01)

USPC - 435/7.32

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)

USPC- 435/7.32

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)

PubWEST (USPT, PGPB, EPAB, JPAB), Google Scholar: Ehrlichia canis, infection, natural infection, treatment, monitor, antibody, p19 epitope

GenCore 6.3: SEQ ID NO:23

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category*      | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                      | Relevant to claim No.         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| X<br>----<br>Y | US 2006/0173006 A1 (Krah, III et al.) 19 October 2006 (19.10.2006) para [0005], [0008], [0010], [0012], [0014]-[0015], [0044], [0049]-[0050], SEQ ID NO:10                                                              | 1-3, 8-19<br>-----<br>4-7, 20 |
| Y              | Gauthier et al. Western immunoblot analysis for distinguishing vaccination and infection status with Borrelia burgdorferi (Lyme disease) in dogs. J Vet Diagn Invest 1999, 11:259-265; abstract, pg 263, col 2, Table 3 | 4-7                           |
| Y              | US 2006/0211062 A1 (O'Connor, Jr.) 21 October 2006 (21.10.2006) para [0016], [0168]                                                                                                                                     | 20                            |

☐ Further documents are listed in the continuation of Box C.

## \* 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

13 October 2009 (13.10.2009)

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20 OCT 2009

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/82038

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Group I+: claims 1-20, drawn to a composition comprising a purified polypeptide and a method of using said polypeptide. The first named invention encompasses a purified polypeptide having at least 95% identity to SEQ ID NO: 23. Additional SEQ ID NO(s) will be searched for an additional fee. Should Applicant have SEQ ID NO(s) searched, Applicant must specify them.

[NOTE: The scope of the claims is limited by excluding SEQ ID 22, because the submitted CRF included SEQ ID 23 twice (once as SEQ ID 22 and once as SEQ ID 23) and there is no CRF for SEQ ID 22.]

The inventions listed as Group I+ 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:

\*\*\*\*\* Please see extra sheet for continuation \*\*\*\*\*

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 additional fees, this Authority did not invite payment of additional fees.
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.:  
1-20 limited to SEQ ID NO:23

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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\*\*\*\*\* Supplemental Box \*\*\*\*\*

Continuation of: Box NO III. Observations where unity of invention is lacking

The invention of Group I+ share the technical feature of peptides useful for detection of Ehrlichia canis. However, this shared technical feature does not represent a contribution over the prior art. US 2006/0234322 A1 to Krah et al. teaches a protein having amino acid sequence SEQ ID NO:10, of which the claimed peptides are portions or variations thereof. As the above peptides were obvious at the time of the invention, this cannot be considered a special technical feature that would otherwise unify the groups.

Group I+ therefore lacks unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.