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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.

(54) Title: CULTURING ANAPLASMA

(57) Abstract: The invention provides mammalian cells stably infected with *Anaplasma* species, as well as materials and methods related to propagating *Anaplasma* species in mammalian cells and isolating such *Anaplasma* species from mammalian cells.



WO 2004/016743 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25208

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12N 5/02, 1/20; A61K 39/02

US CL : 435/325, 252.1, 405; 424/234.1

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)

U.S. : 435/325, 252.1, 405; 424/234.1

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)
Please See Continuation Sheet**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,616,202 A (MARBLE) 26 October 1971 (26.10.1971), claims.	1,2 and 7
X	BLOUIN et al. Persistence of tick-derived Anaplasma marginale in cultured bovine turbinate and endothelial cells. Rev. Elev. Med. Vet. Pays. Trop. 1993, Vol. 46, No. 1-2, pages 49-56.	1,2,7 and 8



Further documents are listed in the continuation of Box C.



See patent family 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 application or patent 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

18 August 2005 (18.08.2005)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/25208

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim 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. ☐ Claim 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:
Please See Continuation 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.:

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.: 1,2,7 and 8

Remark on Protest

☐

The additional search fees were accompanied by the applicant's protest.

☐

No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, Claims 1, 2, 7 and 8 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.marginale*, said cell is a nucleated cell endothelial cell, bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group II, Claims 1, 3, 7 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.centrale*, said cell is a nucleated cell, said cell is an endothelial cell, bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group III Claims 1,4,7 and 8 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.bovis*, said cell is a nucleated cell, said cell is an endothelial cell, bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Groups IV Claims 9, 10 and 16-18 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with *A.ovis*, said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group V Claims 1, 5, 7 and 8 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.platys*, said cell is a nucleated cell, said cell is an endothelial cell, bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Groups VI Claims 9, 10 and 16-18 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.marginale*, said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group VII Claims 9, 11, 16-17 and 19 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.phagocytophilum* said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group VIII Claims 9, 12 and 16-17 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.centrale* said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group IX Claims 9, 13 and 16-17 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A.bovis* said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

INTERNATIONAL SEARCH REPORT

PCT/US03/25208

Group X Claims 9, 14 and 16-17 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A. ovis*, said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group XI Claims 9, 15 and 16-17 drawn to an isolated mammalian cell stably infected with *Anaplasma* species, said cell is infected with is *A. platys* said cell is a mammalian adherent cell, said cell is a bovine corneal endothelial cell, rhesus monkey micro vascular endothelial cell, human umbilical vascular endothelial cell etc.

Group XII Claims 20 -21 or 22-23 or 24 or 25 or 26-31 or 32-37 or 38 or 39 or 40-42 or 43-45 or 46 or 47 drawn to a method of making or propagating or obtaining various cells infected with *Anaplasma*.

The inventions listed as Groups I-XII 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:

2. The technical feature of linking Groups I-XII appears to be that they all relate to various nucleated or adherent cells infected with *Anaplasma* species and methods of making said cells.

However, Blouin et al (Rev Elev Med Vet Pays Trop. 1993, Vol 46, No 1-2, pages 49-56) disclose *Anaplasma marginale* in cultured bovine turbinate and endothelial cells. Therefore, the technical feature of linking groups I-XII does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art and hence unity of invention is lacking. Thus they share no common structure and function so as to form a single general inventive concept under Rule 13.1. Hence, unity is lacking among groups.

Continuation of B. FIELDS SEARCHED Item3:

MEDLINE, STN. PUBLISHED APPLICATIONS AND ISSUED PATENTS, DERWENT WORLD PATENTS, JPO DATABASE, EPO DATABASE; search terms: *Anaplasma*, *A. marginale*, *phagocytophilum ovis*, *platys*, *bovis*, *centrale*, nucleated cell, mammalian cell, culture, infect, transfect, monkey or rhesus cell or endothelial cell or HL-60 cell line