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Published:

— with international search report (Art. 21(3))

— with sequence listing part of description (Rule 5.2(a))

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1 October 2009

(54) Title: METHODS OF IMPROVING GENETIC PROFILES OF DAIRY ANIMALS AND PRODUCTS

(57) Abstract: The present invention provides methods for improving desirable dairy traits through the use of a genetic profile. Also provided are methods for determining an animal's genotype with respect to multiple markers used in the analysis of the genetic profile. In some embodiments, the genetic profile includes at least one marker associated with the polled trait. The invention also provides methods for selecting or allocating animal for predetermined uses, for picking potential parent animal for breeding, and for producing improved dairy products.



WO 2009/085689 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/86811

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01N 33/48 (2009.01)

USPC - 435/6; 436/63

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 - 435/6; 436/63

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(DB=PGPB,USPT,USOC,EPAB,JPAB), Google Scholar(cow bull snp polled), Google(Hereford, Angus)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	WO 2007/112490 A1 (KHATKAR et al), 11 October 2007 (11.10.2007); pg 3, ln 1-28; pg 6, ln 23, 30-35; pg 7, ln 1-3; pg 8, ln 4-5, 8-11; SEQ ID NOS: 77, 176, 262, 502, 540, 541, 644, 870, 876, 2608, 2668, 3143, 4607, 4814, 5046, 5966, 5968, 6068, 6953 and 7011	1, 4-10, 11, 14-20 ----- 2-3, 12-13
Y	US 2007/0134701 A1 (DE NISE et al), 14 June 2007 (14.06.2007); Abstract, para [0003], [0005]	2-3, 12-13
Y	GenBank Accession # BC11022; Created 18 November 2005 (18.11.2005). [online], [retrieved on 14 May 2009 (14.05.2009)]. Retrieved from the Internet <URL:http://www.ncbi.nlm.nih.gov/nuccore/82571558>	2-3, 12-13

☐ 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

"&" document member of the same patent family

Date of the actual completion of the international search

15 May 2009 (05.15.2009)

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/86811

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.: 21-23, 33
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:

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 1-20, directed to a method for allocating a bovine or potential parent bovine for use according to a genetic profile having at least 12 or more loci.

Group II: claims 24-32 and 34-43, directed to a bovine animal or product, having a genetic profile with at least 12 or more loci.

Group III: claims 44-46, directed to a method for determining the genetic profile of a bovine product having at least 12 or more loci.

- 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

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

International application No.

PCT/US 08/86811

Continuation of Box III: Lack of Unity of Invention:

The inventions listed as Groups I - III 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:

The special technical feature of the Group I claims is a method for allocating a bovine or potential parent bovine for use according to a genetic profile having at least 12 or more loci. The special technical feature of the Group II claims is a bovine animal or product, having a genetic profile with at least 12 or more loci. The special technical feature of the Group III claims is a method for determining the genetic profile of a bovine product having at least 12 or more loci.

The only common technical element shared by the above groups is that they are related to genetic profiling of bovine animals and products. The above Groups also share the set of loci from which the profile may be drawn. However, these common technical elements do not represent an improvement over the prior art of WO 2007/112490 A1 to Khatkar et al. (see pg. 1, ln 23-35; pg. 2, ln 25-30; pg. 3, ln 1-9; SEQ ID NOs: 77, 176, 262, 502, 540, 541, 644, 870, 876, 2608, 2668, 3143 and 4607) Therefore, the inventions of Groups I -III lack unity of invention under PCT Rule 13 because they do not share a same or corresponding special technical feature.