

GEPHE SUMMARY

|                                                                                                                                                                                                                             |                |            |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|--------------|
| ABCG2 ( <a +abcg2+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+ABCG2+"#gephebase-summary-title</a> ) | Gephebase Gene | GP00000016 | GepheID      |
|                                                                                                                                                                                                                             | Entry Status   | Martin     | Main curator |
|                                                                                                                                                                                                                             | Published      |            |              |

PHENOTYPIC CHANGE

|                                                                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                   |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Physiology ( <a +physiology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Physiology+"#gephebase-summary-title</a> )                                                                                                        |  | Trait Category                                                                                                                                                                                                                                                                                                                                    |  |
| Milk yield ( <a +milk+yield+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Milk+yield+"#gephebase-summary-title</a> )                                                                                                                          |  | Trait                                                                                                                                                                                                                                                                                                                                             |  |
| Ovis aries                                                                                                                                                                                                                                                                                                                                        |  | Trait State in Taxon A                                                                                                                                                                                                                                                                                                                            |  |
| Ovis aries - Spanish Churra                                                                                                                                                                                                                                                                                                                       |  | Trait State in Taxon B                                                                                                                                                                                                                                                                                                                            |  |
| Data not curated                                                                                                                                                                                                                                                                                                                                  |  | Ancestral State                                                                                                                                                                                                                                                                                                                                   |  |
| Domesticated ( <a +domesticated+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated+"#gephebase-summary-title</a> )                                                                                              |  | Taxonomic Status                                                                                                                                                                                                                                                                                                                                  |  |
| Taxon A                                                                                                                                                                                                                                                                                                                                           |  | Taxon B                                                                                                                                                                                                                                                                                                                                           |  |
| Ovis aries<br>( <a +ovis+aries+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Ovis+aries+"#gephebase-summary-title</a> )                                                                                             |  | Ovis aries<br>( <a +ovis+aries+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Ovis+aries+"#gephebase-summary-title</a> )                                                                                             |  |
| sheep                                                                                                                                                                                                                                                                                                                                             |  | sheep                                                                                                                                                                                                                                                                                                                                             |  |
| Ovis ammon aries; Ovis orientalis aries; Ovis ovis; sheep; domestic sheep; lambs; wild sheep; Ovis aries Linnaeus, 1758                                                                                                                                                                                                                           |  | Ovis ammon aries; Ovis orientalis aries; Ovis ovis; sheep; domestic sheep; lambs; wild sheep; Ovis aries Linnaeus, 1758                                                                                                                                                                                                                           |  |
| species                                                                                                                                                                                                                                                                                                                                           |  | species                                                                                                                                                                                                                                                                                                                                           |  |
| cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Artiodactyla; Ruminantia; Pecora; Bovidae; Caprinae; Ovis |  | cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Laurasiatheria; Artiodactyla; Ruminantia; Pecora; Bovidae; Caprinae; Ovis |  |
| Ovis () - (Rank: genus)<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935</a> )                                                                                                                                                                    |  | Ovis () - (Rank: genus)<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9935</a> )                                                                                                                                                                    |  |
| 9940<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940</a> )                                                                                                                                                                                       |  | 9940<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9940</a> )                                                                                                                                                                                       |  |
| is Taxon A an Intraspecies?                                                                                                                                                                                                                                                                                                                       |  | is Taxon B an Intraspecies?                                                                                                                                                                                                                                                                                                                       |  |
| Yes                                                                                                                                                                                                                                                                                                                                               |  | Yes                                                                                                                                                                                                                                                                                                                                               |  |
| Ovis aries                                                                                                                                                                                                                                                                                                                                        |  | Ovis aries - Spanish Churra                                                                                                                                                                                                                                                                                                                       |  |

GENOTYPIC CHANGE

|                                                                                                                                                                                                                                             |  |                         |  |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------|--|------------------------------------------------------------------------------------------------------------------------------------|
| Abcg2                                                                                                                                                                                                                                       |  | Generic Gene Name       |  | UniProtKB Mus musculus                                                                                                             |
| MXR; ABCP; BCRP; MXR1; ABC15; Bcrp1; A1428558; Abcp                                                                                                                                                                                         |  | Synonyms                |  | GenebankID or UniProtKB                                                                                                            |
| 10090.ENSMUSP00000031822<br>( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000031822">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000031822</a> ) |  | String                  |  | NP_001072125 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/NP_001072125">https://www.ncbi.nlm.nih.gov/nuccore/NP_001072125</a> ) |
| Belongs to the ABC transporter superfamily. ABCG family. Eye pigment precursor importer (TC 3.A.1.204) subfamily.                                                                                                                           |  | Sequence Similarities   |  |                                                                                                                                    |
| GO:0005524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a> )                                                                                                      |  | GO - Molecular Function |  |                                                                                                                                    |
| GO:0042626 : ATPase activity, coupled to transmembrane movement of substances ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0042626">https://www.ebi.ac.uk/QuickGO/term/GO:0042626</a> )                                                 |  |                         |  |                                                                                                                                    |

GO:0008092 : cytoskeletal protein binding  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008092>)  
GO:0015238 : drug transmembrane transporter activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0015238>)  
GO:0042802 : identical protein binding  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042802>)  
GO:0046983 : protein dimerization activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0046983>)  
GO:0042803 : protein homodimerization activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042803>)  
GO:0008559 : xenobiotic transmembrane transporting ATPase activity  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008559>)

GO - Biological Process

GO:0055085 : transmembrane transport  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0055085>)  
GO:0033344 : cholesterol efflux (<https://www.ebi.ac.uk/QuickGO/term/GO:0033344>)  
GO:0046618 : drug export (<https://www.ebi.ac.uk/QuickGO/term/GO:0046618>)  
GO:0015893 : drug transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0015893>)  
GO:0060136 : embryonic process involved in female pregnancy  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060136>)  
GO:0019389 : glucuronoside metabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0019389>)  
GO:1904479 : negative regulation of intestinal absorption  
(<https://www.ebi.ac.uk/QuickGO/term/GO:1904479>)  
GO:0046415 : urate metabolic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0046415>)  
GO:0015747 : urate transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0015747>)

GO - Cellular Component

GO:0016021 : integral component of membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)  
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)  
GO:0016324 : apical plasma membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016324>)  
GO:0016020 : membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0016020>)  
GO:0031966 : mitochondrial membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0031966>)  
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)  
GO:0043235 : receptor complex (<https://www.ebi.ac.uk/QuickGO/term/GO:0043235>)

|                                                                                                                                                                                                                                                              |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|                                                                                                                                                                                                                                                              | Presumptive Null                  |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#gephebase-summary-title</a> )                                |                                   |
|                                                                                                                                                                                                                                                              | Molecular Type                    |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Molecular Type=~Unknown^#gephebase-summary-title</a> )                                    |                                   |
|                                                                                                                                                                                                                                                              | Aberration Type                   |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown^#gephebase-summary-title</a> )                                  |                                   |
|                                                                                                                                                                                                                                                              | Molecular Details of the Mutation |
| unknown                                                                                                                                                                                                                                                      |                                   |
|                                                                                                                                                                                                                                                              | Experimental Evidence             |
| Candidate Gene ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Candidate Gene^#gephebase-summary-title</a> ) |                                   |
|                                                                                                                                                                                                                                                              | Main Reference                    |
| The role of bovine causal genes underlying dairy traits in Spanish Churra sheep. (2011) ( <a href="https://pubmed.ncbi.nlm.nih.gov/21749424">https://pubmed.ncbi.nlm.nih.gov/21749424</a> )                                                                  |                                   |
|                                                                                                                                                                                                                                                              | Authors                           |
| Garc  a-Fern  ndez M; Guti  rrez-Gil B; S  nchez JP; Mor  n JA; Garc  a-G  mez E; Alvarez L; Arranz JJ                                                                                                                                                       |                                   |

Abstract

In dairy cattle, quantitative trait nucleotides (QTNs) underlying quantitative trait loci (QTL) for milk production traits have been identified in bovine DGAT1, GHR and ABCG2 genes. The SPP1 gene has also been proposed to be a regulator of lactation. In sheep, QTL underlying milk production traits have been reported only recently, and no proven QTN has been identified. Taking into account the close phylogenetic relationship between sheep and cattle, this study examined the possible effects of the aforementioned genes on sheep milk production traits. We first studied the genetic variability of the DGAT1, GHR, ABCG2 and SPP1 genes in 15 rams of the Spanish Churra dairy sheep breed. Second, we performed an association analysis between SNPs identified in these genes and three milk production traits recorded in a commercial population of Churra sheep. This analysis revealed only three significant associations at the nominal level (P-value <0.05) involving allelic variants of the ABCG2 gene, whereas no significant association was found for the DGAT1, GHR and SPP1 genes. When the Bonferroni correction was applied to take into account the multiple tests performed, none of the associations identified at the nominal level remained significant. Nevertheless, taking into account the high level of false-negative findings that can arise when applying the stringent Bonferroni correction, we think that our results provide a valuable primary assessment of strong candidate genes for milk traits in sheep.

      2011 The Authors, Animal Genetics    2011 Stichting International Foundation for Animal Genetics.

Additional References

RELATED GEPHE

|                   |                    |
|-------------------|--------------------|
|                   | Related Genes      |
| No matches found. |                    |
|                   | Related Haplotypes |
| No matches found. |                    |

EXTERNAL LINKS

COMMENTS