

GEPHE SUMMARY

<p>beta-casein (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~beta-casein^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002025</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology^#gephebase-summary-title)</p> <p>Milk protein content (casein) (https://www.gephebase.org/search-criteria?/and+Trait=~Milk+protein+content+(casein)^#gephebase-summary-title)</p> <p>Bos taurus - normal milk</p> <p>Bos taurus - A milk - mostly lacks a form of β^2-casein proteins called A1 and instead has mostly the A2 form - allele A2</p> <p>Taxon A</p> <p>Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Domesticated^#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Bos taurus</p> <p>(https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Bos+taurus^#gephebase-summary-title)</p> <p>cattle</p> <p>Bos bovis; Bos primigenius taurus; cattle; bovine; cow; dairy cow; domestic cattle; domestic cow; Bos taurus Linnaeus, 1758; Bos Taurus</p> <p>species</p> <p>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; Bovinae; Bos</p> <p>Bos (oxen, cattle) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9903)</p> <p>9913 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9913)</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon A an Intraspecies?</p>	<p>Bos taurus</p> <p>(https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Bos+taurus^#gephebase-summary-title)</p> <p>cattle</p> <p>Bos bovis; Bos primigenius taurus; cattle; bovine; cow; dairy cow; domestic cattle; domestic cow; Bos taurus Linnaeus, 1758; Bos Taurus</p> <p>species</p> <p>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; Bovinae; Bos</p> <p>Bos (oxen, cattle) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9903)</p> <p>9913 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9913)</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p>
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GENOTYPIC CHANGE

<p>CSN2</p> <p>-</p> <p>9913.ENSBTAP00000003409 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9913.ENSBTAP00000003409)</p> <p>Belongs to the beta-casein family.</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p>	<p>P02666 (http://www.uniprot.org/uniprot/P02666)</p> <p>0</p>	<p>UniProtKB Bos taurus</p> <p>GenebankID or UniProtKB</p>
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GO:0042803 : protein homodimerization activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0042803>)

GO:0016209 : antioxidant activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0016209>)

GO:0008191 : metalloendopeptidase inhibitor activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0008191>)

GO:0019870 : potassium channel inhibitor activity
 (https://www.ebi.ac.uk/QuickGO/term/GO:0019870)
 GO:0004869 : cysteine-type endopeptidase inhibitor activity
 (https://www.ebi.ac.uk/QuickGO/term/GO:0004869)

GO - Biological Process

GO:0050728 : negative regulation of inflammatory response
 (https://www.ebi.ac.uk/QuickGO/term/GO:0050728)
 GO:0032355 : response to estradiol (https://www.ebi.ac.uk/QuickGO/term/GO:0032355)
 GO:0008217 : regulation of blood pressure
 (https://www.ebi.ac.uk/QuickGO/term/GO:0008217)
 GO:0009408 : response to heat (https://www.ebi.ac.uk/QuickGO/term/GO:0009408)
 GO:2000117 : negative regulation of cysteine-type endopeptidase activity
 (https://www.ebi.ac.uk/QuickGO/term/GO:2000117)
 GO:0043124 : negative regulation of I-kappaB kinase/NF-kappaB signaling
 (https://www.ebi.ac.uk/QuickGO/term/GO:0043124)
 GO:1903720 : negative regulation of I-kappaB phosphorylation
 (https://www.ebi.ac.uk/QuickGO/term/GO:1903720)
 GO:1903488 : negative regulation of lactation
 (https://www.ebi.ac.uk/QuickGO/term/GO:1903488)
 GO:0010804 : negative regulation of tumor necrosis factor-mediated signaling pathway
 (https://www.ebi.ac.uk/QuickGO/term/GO:0010804)
 GO:1903496 : response to 11-deoxycorticosterone
 (https://www.ebi.ac.uk/QuickGO/term/GO:1903496)
 GO:1903494 : response to dehydroepiandrosterone
 (https://www.ebi.ac.uk/QuickGO/term/GO:1903494)
 GO:0032570 : response to progesterone
 (https://www.ebi.ac.uk/QuickGO/term/GO:0032570)

GO - Cellular Component

GO:0005794 : Golgi apparatus (https://www.ebi.ac.uk/QuickGO/term/GO:0005794)
 GO:0005796 : Golgi lumen (https://www.ebi.ac.uk/QuickGO/term/GO:0005796)
 GO:0005615 : extracellular space (https://www.ebi.ac.uk/QuickGO/term/GO:0005615)

No (https://www.gephebase.org/search-criteria?/and+Presumptive Null="No"#gephebase-summary-title) Presumptive Null
 Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type="Coding"#gephebase-summary-title) Molecular Type
 SNP (https://www.gephebase.org/search-criteria?/and+Aberration Type="SNP"#gephebase-summary-title) Aberration Type
 Nonsynonymous SNP Coding Change
 g.87181619A>C c.245A>C p.H82P CAT>CCT Molecular Details of the Mutation
 Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence="Linkage Mapping"#gephebase-summary-title) Experimental Evidence

	Taxon A	Taxon B	Position
Codon	CAT	CCT	87181619
Amino-acid	His	Pro	82

DNA-based identification of novel bovine casein gene variants. (2013) (https://pubmed.ncbi.nlm.nih.gov/23102962) Main Reference
 Gallinat JL; Qanbari S; DrÄqgemÄ¼ller C; Pimentel EC; Thaller G; Tetens J Authors
 Abstract
 In cattle, at least 39 variants of the 4 casein proteins (I±(S1)-, I²-, I±(S2)- and I°-casein) have been described to date. Many of these variants are known to affect milk-production traits, cheese-processing properties, and the nutritive value of milk. They also provide valuable information for phylogenetic studies. So far, the majority of studies exploring the genetic variability of bovine caseins considered European taurine cattle breeds and were carried out at the protein level by electrophoretic techniques. This only allows the identification of variants that, due to amino acid exchanges, differ in their electric charge, molecular weight, or isoelectric point. In this study, the open reading frames of the casein genes CSN1S1, CSN2, CSN1S2, and CSN3 of 356 animals belonging to 14 taurine and 3 indicine cattle breeds were sequenced. With this approach, we identified 23 alleles, including 5 new DNA sequence variants, with a predicted effect on the protein sequence. The new variants were only found in indicine breeds and in one local Iranian breed, which has been phenotypically classified as a taurine breed. A multidimensional scaling approach based on available SNP chip data, however, revealed an admixture of taurine and indicine populations in this breed as well as in the local Iranian breed Golpayegani. Specific indicine casein alleles were also identified in a few European taurine breeds, indicating the introgression of indicine breeds into these populations. This study shows the existence of substantial undiscovered genetic variability of bovine casein loci, especially in indicine cattle breeds. The identification of new variants is a valuable tool for phylogenetic studies and investigations into the evolution of the milk protein genes.

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Additional References

RELATED GEPHE

No matches found.

Related Genes

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

<https://omia.org/OMIA002033/9913/>