

GEPHE SUMMARY

BTN1A1 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^BTN1A1^#gephebase-summary-title)	Gephebase Gene	GP00002160	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)	Trait Category		
Pathogen resistance (virus) (https://www.gephebase.org/search-criteria?/and+Trait=^Pathogen+resistance+(virus)^#gephebase-summary-title)	Trait		
Sensitive to type C avian leukosis viruses	Trait State in Taxon A		
Resistant to type C avian leukosis viruses (autosomal recessive)	Trait State in Taxon B		
Unknown	Ancestral State		
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Domesticated^#gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Gallus+gallus^#gephebase-summary-title)	Latin Name	Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Gallus+gallus^#gephebase-summary-title)	Latin Name
chicken	Common Name	chicken	Common Name
Gallus gallus domesticus; chicken; bantam; chickens	Synonyms	Gallus gallus domesticus; chicken; bantam; chickens	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria; Aves; Neognathae; Galloanserae; Galliformes; Phasianidae; Phasianinae; Gallus	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria; Aves; Neognathae; Galloanserae; Galliformes; Phasianidae; Phasianinae; Gallus	Lineage
Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)	Parent	Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)	Parent
9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)	NCBI Taxonomy ID	9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

BTN1A1	Generic Gene Name	Q13410 (http://www.uniprot.org/uniprot/Q13410)	UniProtKB Homo sapiens
BT; BTN; BTN1	Synonyms	()	GenebankID or UniProtKB
9606.ENSPO0000244513 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPO0000244513)	String		
Belongs to the immunoglobulin superfamily. BTN/MOG family.	Sequence Similarities		
GO:0005102 : signaling receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005102)	GO - Molecular Function		
GO:0038023 : signaling receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0038023)	GO - Biological Process		
GO:0050852 : T cell receptor signaling pathway			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0050852>)
 GO:0050776 : regulation of immune response
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0050776>)
 GO:0001817 : regulation of cytokine production
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0001817>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
 GO:0005887 : integral component of plasma membrane
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)
 GO:0005615 : extracellular space (<https://www.ebi.ac.uk/QuickGO/term/GO:0005615>)
 GO:0009897 : external side of plasma membrane
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0009897>)

Presumptive Null

Yes ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes^#gephebase-summary-title))

Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding^#gephebase-summary-title))

Aberration Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~SNP^#gephebase-summary-title))

SNP Coding Change

Nonsense

Molecular Details of the Mutation

g.808011C>A c.165C>A p.C55*

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping^#gephebase-summary-title))

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Cys	STP	55

Main Reference

The receptor for the subgroup C avian sarcoma and leukosis viruses, Tvc, is related to mammalian butyrophilins, members of the immunoglobulin superfamily. (2005)
 (<https://pubmed.ncbi.nlm.nih.gov/16051833>)

Authors

Elleder D; Stepanets V; Melder DC; Senigl F; Geryk J; Pajer P; Plach¹/₂ J; Hejnar J; Svoboda J; Federspiel MJ

Abstract

The five highly related envelope subgroups of the avian sarcoma and leukosis viruses (ASLVs), subgroup A [ASLV(A)] to ASLV(E), are thought to have evolved from an ancestral envelope glycoprotein yet utilize different cellular proteins as receptors. Alleles encoding the subgroup A ASLV receptors (Tva), members of the low-density lipoprotein receptor family, and the subgroup B, D, and E ASLV receptors (Tvb), members of the tumor necrosis factor receptor family, have been identified and cloned. However, alleles encoding the subgroup C ASLV receptors (Tvc) have not been cloned. Previously, we established a genetic linkage between tvc and several other nearby genetic markers on chicken chromosome 28, including tva. In this study, we used this information to clone the tvc gene and identify the Tvc receptor. A bacterial artificial chromosome containing a portion of chicken chromosome 28 that conferred susceptibility to ASLV(C) infection was identified. The tvc gene was identified on this genomic DNA fragment and encodes a 488-amino-acid protein most closely related to mammalian butyrophilins, members of the immunoglobulin protein family. We subsequently cloned cDNAs encoding Tvc that confer susceptibility to infection by subgroup C viruses in chicken cells resistant to ASLV(C) infection and in mammalian cells that do not normally express functional ASLV receptors. In addition, normally susceptible chicken DT40 cells were resistant to ASLV(C) infection after both tvc alleles were disrupted by homologous recombination. Tvc binds the ASLV(C) envelope glycoproteins with low-nanomolar affinity, an affinity similar to that of binding of Tva and Tvb with their respective envelope glycoproteins. We have also identified a mutation in the tvc gene in line L15 chickens that explains why this line is resistant to ASLV(C) infection.

Additional References

RELATED GEPHE

Related Genes

2 (MX1, Tva) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~9031^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~9031^/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

