

GEPHE SUMMARY

<p>Tva (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=Tva^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002257</p> <p>Martin</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>Pathogen resistance (virus) (https://www.gephebase.org/search-criteria?/and+Trait=Pathogen+resistance+(virus)^#gephebase-summary-title)</p> <p>Sensitive</p> <p>Resistance to avian sarcoma and leukosis viruses subgroup A</p> <p>Taxon A</p> <p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=Intraspecific^#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>
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Taxon A	Latin Name	Taxon B	Latin Name
Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Gallus+gallus^#gephebase-summary-title)	Gallus gallus	Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Gallus+gallus^#gephebase-summary-title)	Gallus gallus
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

<p>tva</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)</p> <p>Yes (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=Yes^#gephebase-summary-title)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> <p>GO - Cellular Component</p>	<p>UniProtKB Gallus gallus</p> <p>Q6JBY7 (http://www.uniprot.org/uniprot/Q6JBY7)</p> <p>0</p> <p>GenebankID or UniProtKB</p> <p>Presumptive Null</p>
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Coding (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=~Coding^#gephebase-summary-title>)

Molecular Type

Insertion (<https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Insertion^#gephebase-summary-title>)

Aberration Type

1-9 bp

Insertion Size

c.48insCTCG

Molecular Details of the Mutation

Candidate Gene (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Candidate+Gene^#gephebase-summary-title>)

Experimental Evidence

Two different molecular defects in the Tva receptor gene explain the resistance of two tvar lines of chickens to infection by subgroup A avian sarcoma and leukosis viruses. (2004)
(<https://pubmed.ncbi.nlm.nih.gov/15564460>)

Main Reference

Elleder D; Melder DC; Trejbalova K; Svoboda J; Federspiel MJ

Authors

Abstract

The subgroup A to E avian sarcoma and leukosis viruses (ASLVs) are highly related and are thought to have evolved from a common ancestor. These viruses use distinct cell surface proteins as receptors to gain entry into avian cells. Chickens have evolved resistance to infection by the ASLVs. We have identified the mutations responsible for the block to virus entry in chicken lines resistant to infection by subgroup A ASLVs [ASLV(A)]. The tva genetic locus determines the susceptibility of chicken cells to ASLV(A) viruses. In quail, the ASLV(A) susceptibility allele tva(s) encodes two forms of the Tva receptor; these proteins are translated from alternatively spliced mRNAs. The normal cellular function of the Tva receptor is unknown; however, the extracellular domain contains a 40-amino-acid, cysteine-rich region that is homologous to the ligand binding region of the low-density lipoprotein receptor (LDLR) proteins. The chicken tva(s) cDNAs had not yet been fully characterized; we cloned the chicken tva cDNAs from two lines of subgroup A-susceptible chickens, line H6 and line 0. Two types of chicken tva(s) cDNAs were obtained. These cDNAs encode a longer and shorter form of the Tva receptor homologous to the Tva forms in quail. Two different defects were identified in cDNAs cloned from two different ASLV(A)-resistant inbred chickens, line C and line 7(2). Line C tva(r) contains a single base pair substitution, resulting in a cysteine-to-tryptophan change in the LDLR-like region of Tva. This mutation drastically reduces the binding affinity of Tva(R) for the ASLV(A) envelope glycoproteins. Line 7(2) tva(r2) contains a 4-bp insertion in exon 1 that causes a change in the reading frame, which blocks expression of the Tva receptor.

Additional References

RELATED GEPHE

2 (BTN1A1, MX1) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~9031^/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

5 (<https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=~Tva^/and+Taxon+ID=~9031^/or+Gene+Gephebase=~Tva^/and+Taxon+ID=~9031^#gephebase-summary-title>)

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@AllelicSeries <https://omia.org/OMIA001299/9031/>