

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>GP00002261</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>	<p>Taxon A</p> <p>Latin Name</p> <p>Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Gallus+gallus^#gephebase-summary-title)</p> <p>Common Name</p> <p>chicken</p> <p>Synonyms</p> <p>Gallus gallus domesticus; chicken; bantam; chickens</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>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</p> <p>Parent</p> <p>Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)</p> <p>NCBI Taxonomy ID</p> <p>9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Gallus+gallus^#gephebase-summary-title)</p> <p>Common Name</p> <p>chicken</p> <p>Synonyms</p> <p>Gallus gallus domesticus; chicken; bantam; chickens</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>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</p> <p>Parent</p> <p>Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)</p> <p>NCBI Taxonomy ID</p> <p>9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>tva</p> <p>-</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

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

Aberration Type

1-9 bp

Deletion Size

c.507-511del5 ; splicing

Molecular Details of the Mutation

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

Experimental Evidence

Intronic deletions that disrupt mRNA splicing of the tva receptor gene result in decreased susceptibility to infection by avian sarcoma and leukosis virus subgroup A. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22171251>)

Main Reference

Reinić M; Plach J; Trejbalov K; Anđelić F; Kučerová D; Geryk J; Svoboda J; Hejnar J

Authors

The group of closely related avian sarcoma and leukosis viruses (ASLVs) evolved from a common ancestor into multiple subgroups, A to J, with differential host range among galliform species and chicken lines. These subgroups differ in variable parts of their envelope glycoproteins, the major determinants of virus interaction with specific receptor molecules. Three genetic loci, tva, tvb, and tvc, code for single membrane-spanning receptors from diverse protein families that confer susceptibility to the ASLV subgroups. The host range expansion of the ancestral virus might have been driven by gradual evolution of resistance in host cells, and the resistance alleles in all three receptor loci have been identified. Here, we characterized two alleles of the tva receptor gene with similar intronic deletions comprising the deduced branch-point signal within the first intron and leading to inefficient splicing of tva mRNA. As a result, we observed decreased susceptibility to subgroup A ASLV in vitro and in vivo. These alleles were independently found in a close-bred line of domestic chicken and Indian red jungle fowl (*Gallus gallus murghi*), suggesting that their prevalence might be much wider in outbred chicken breeds. We identified defective splicing to be a mechanism of resistance to ASLV and conclude that such a type of mutation could play an important role in virus-host coevolution.

Abstract

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