GEPHE SUMMARY

Gephebase Gene

HTR2C serotonin receptor (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^HTR2C serotonin receptor^#gephebase-summary-title)

Entry Status

Published

GepheID

GP00001595

Main curator

Prigent

PHENOTYPIC CHANGE

Trait Category

Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)

Trait

Immune response (complement activation) (https://www.gephebase.org/search-criteria?/and+Trait=^Immune response (complement activation)^#gephebase-summary-title)

Trait State in Taxon A

Laying hen of Rhode Island Red type

Trait State in Taxon B

Laying hen of White Leghorn type

Ancestral State

Unknown

Taxonomic Status

Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name

Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Gallus gallus^#gephebase-summary-title)

Common Name

chicken

Synonyms

Gallus gallus domesticus; chicken; bantam; chickens

Rank

species

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

Parent

Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9030)

NCBI Taxonomy ID

9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9031)

is Taxon A an Infraspecies?

Yes

Taxon A Description

Laying hen of Rhode Island Red type

Taxon B

Latin Name

Gallus gallus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Gallus gallus^#gephebase-summary-title)

Common Name

chicken

Synonyms

Gallus gallus domesticus; chicken; bantam; chickens

Rank

species

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

Parent

Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9030)

NCBI Taxonomy ID

9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 9031)

is Taxon B an Infraspecies?

Yes

Taxon B Description

Laying hen of White Leghorn type

GENOTYPIC CHANGE

Generic Gene Name

HTR2C

Synonyms

-

String

9031.ENSGALP00000009390 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9031.ENSGALP00000009390)

Sequence Similarities

Belongs to the G-protein coupled receptor 1 family.

GO - Molecular Function

GO:0004930 : G protein-coupled receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0004930)
GO:0030594 : neurotransmitter receptor activity

UniProtKB Gallus gallus

F1N989 (http://www.uniprot.org/uniprot/F1N989)

GenebankID or UniProtKB

()

(https://www.ebi.ac.uk/QuickGO/term/GO:0030594)
GO:0004993 : G protein-coupled serotonin receptor activity
(https://www.ebi.ac.uk/QuickGO/term/GO:0004993)
GO:0071886 : 1-(4-iodo-2,5-dimethoxyphenyl)propan-2-amine binding
(https://www.ebi.ac.uk/QuickGO/term/GO:0071886)
GO:0001587 : Gq/11-coupled serotonin receptor activity
(https://www.ebi.ac.uk/QuickGO/term/GO:0001587)
GO:0051378 : serotonin binding (https://www.ebi.ac.uk/QuickGO/term/GO:0051378)

GO - Biological Process

GO:0007268 : chemical synaptic transmission
(https://www.ebi.ac.uk/QuickGO/term/GO:0007268)
GO:0019934 : cGMP-mediated signaling
(https://www.ebi.ac.uk/QuickGO/term/GO:0019934)
GO:0070374 : positive regulation of ERK1 and ERK2 cascade
(https://www.ebi.ac.uk/QuickGO/term/GO:0070374)
GO:0042493 : response to drug (https://www.ebi.ac.uk/QuickGO/term/GO:0042493)
GO:0007626 : locomotory behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0007626)
GO:0007200 : phospholipase C-activating G protein-coupled receptor signaling pathway
(https://www.ebi.ac.uk/QuickGO/term/GO:0007200)
GO:0007631 : feeding behavior (https://www.ebi.ac.uk/QuickGO/term/GO:0007631)
GO:0045600 : positive regulation of fat cell differentiation
(https://www.ebi.ac.uk/QuickGO/term/GO:0045600)
GO:0007187 : G protein-coupled receptor signaling pathway, coupled to cyclic nucleotide
second messenger (https://www.ebi.ac.uk/QuickGO/term/GO:0007187)
GO:0051482 : positive regulation of cytosolic calcium ion concentration involved in
phospholipase C-activating G protein-coupled signaling pathway
(https://www.ebi.ac.uk/QuickGO/term/GO:0051482)
GO:0001662 : behavioral fear response
(https://www.ebi.ac.uk/QuickGO/term/GO:0001662)
GO:0007208 : phospholipase C-activating serotonin receptor signaling pathway
(https://www.ebi.ac.uk/QuickGO/term/GO:0007208)
GO:0010513 : positive regulation of phosphatidylinositol biosynthetic process
(https://www.ebi.ac.uk/QuickGO/term/GO:0010513)
GO:0032098 : regulation of appetite (https://www.ebi.ac.uk/QuickGO/term/GO:0032098)
GO:0043397 : regulation of corticotropin-releasing hormone secretion
(https://www.ebi.ac.uk/QuickGO/term/GO:0043397)
GO:0031644 : regulation of neurological system process
(https://www.ebi.ac.uk/QuickGO/term/GO:0031644)
GO:0051209 : release of sequestered calcium ion into cytosol
(https://www.ebi.ac.uk/QuickGO/term/GO:0051209)

GO - Cellular Component

GO:0005887 : integral component of plasma membrane
(https://www.ebi.ac.uk/QuickGO/term/GO:0005887)
GO:0030425 : dendrite (https://www.ebi.ac.uk/QuickGO/term/GO:0030425)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

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

Main Reference

Across-line SNP association study of innate and adaptive immune response in laying hens. (2010) (https://pubmed.ncbi.nlm.nih.gov/19781038)

Authors

Biscarini F; Bovenhuis H; van Arendonk JA; Parmentier HK; Jungerius AP; van der Poel JJ

Abstract

The aim of the present study was to detect quantitative trait loci (QTL) for innate and adaptive immunity in laying hens. For this purpose, the associations between 1022 single nucleotide polymorphism (SNP) markers and immune traits were studied in 583 hens from nine different layer lines. Immune traits were natural antibodies for keyhole limpet haemocyanin (KLH) and lipopolysaccharide (LPS) at 20, 40 and 65 weeks, acquired antibodies to the vaccinal virus of Newcastle disease at 20 weeks, and complement activity measured on sheep and bovine red blood cells at 20, 40 and 65 weeks. We adopted a novel approach based on across-line analysis and testing of the SNP-by-line interaction. Among lines, linkage disequilibrium is conserved at shorter distances than in individual lines; therefore, SNPs significantly associated with immune traits across lines are expected to be near the functional mutations. In the analysis, the SNPs that had a significant across-line effect but did not show significant SNP-by-line interaction were identified to test whether the association was consistent in the individual lines. Ultimately, 59 significant associations between SNPs and immune traits were detected. Our results confirmed some previously identified QTL and identified new QTL potentially involved in the immune function. We found evidence for a role of IL17A (chromosome 3) in natural and acquired antibody titres and in the classical and alternative pathways of complement activation. The major histocompatibility genes on chromosome 16 showed significant association with natural and acquired antibody titres and classical complement activity. The IL12B gene on chromosome 13 was associated with natural antibody titres.

Additional References

RELATED GEPHE

Related Genes

4 (HTR3A serotonin receptor, Interleukin 10 (IL10), Interleukin 12B (IL12B), Interleukin 17A (IL17A)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^9031^/and+Trait=Immune response/and+groupHaplotypes=true#gephebase-summary-title)

No matches found.

EXTERNAL LINKS

COMMENTS

1 associated SNP