

GEPHE SUMMARY

	Gephebase Gene		GepheID
Thyroid stimulating hormone receptor (#Gephebase-summary-title)		GP00001127	
	Entry Status	Martin	Main curator
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (#Gephebase-summary-title)		Trait	
Metabolism (#Gephebase-summary-title)			
	Trait State in Taxon A		
Gallus gallus		Trait State in Taxon B	
Gallus gallus			
	Ancestral State		
Data not curated		Taxonomic Status	
Domesticated (#Gephebase-summary-title)			
	Taxon A		Taxon B
	Latin Name		Latin Name
Gallus gallus (#Gephebase-summary-title)		Gallus gallus (#Gephebase-summary-title)	
	Common Name		Common Name
chicken		chicken	
	Synonyms		Synonyms
Gallus gallus domesticus; chicken; bantam; chickens		Gallus gallus domesticus; chicken; bantam; chickens	
	Rank		Rank
species		species	
	Lineage		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		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		Parent
Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)		Gallus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9030)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)		9031 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9031)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Homo sapiens
TSHR		P16473 (http://www.uniprot.org/uniprot/P16473)	
	Synonyms		GenebankID or UniProtKB
LGR3; CHNG1; hTSHR-I		ADE20174 (https://www.ncbi.nlm.nih.gov/nuccore/ADE20174)	
	String		
9606.ENSPO0000298171 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPO0000298171)			
	Sequence Similarities		
Belongs to the G-protein coupled receptor 1 family. FSH/LSH/TSH subfamily.			
	GO - Molecular Function		
GO:0044877 : protein-containing complex binding (https://www.ebi.ac.uk/QuickGO/term/GO:0044877)			
GO:0038023 : signaling receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0038023)			
GO:0008528 : G protein-coupled peptide receptor activity			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0008528>)
GO:0004996 : thyroid-stimulating hormone receptor activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0004996>)

GO - Biological Process

GO:0009755 : hormone-mediated signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009755>)
GO:0007186 : G protein-coupled receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007186>)
GO:0008284 : positive regulation of cell proliferation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008284>)
GO:0007267 : cell-cell signaling (<https://www.ebi.ac.uk/QuickGO/term/GO:0007267>)
GO:0007166 : cell surface receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007166>)
GO:0120162 : positive regulation of cold-induced thermogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0120162>)
GO:0007189 : adenylate cyclase-activating G protein-coupled receptor signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007189>)
GO:0007187 : G protein-coupled receptor signaling pathway, coupled to cyclic nucleotide second messenger (<https://www.ebi.ac.uk/QuickGO/term/GO:0007187>)
GO:0007190 : activation of adenylate cyclase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007190>)
GO:0045762 : positive regulation of adenylate cyclase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045762>)
GO:1904588 : cellular response to glycoprotein
(<https://www.ebi.ac.uk/QuickGO/term/GO:1904588>)
GO:1905229 : cellular response to thyrotropin-releasing hormone
(<https://www.ebi.ac.uk/QuickGO/term/GO:1905229>)
GO:0038194 : thyroid-stimulating hormone signaling pathway
(<https://www.ebi.ac.uk/QuickGO/term/GO:0038194>)

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:0043235 : receptor complex (<https://www.ebi.ac.uk/QuickGO/term/GO:0043235>)
GO:0016323 : basolateral plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016323>)
GO:0009986 : cell surface (<https://www.ebi.ac.uk/QuickGO/term/GO:0009986>)

No (<a #gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=" no"="">https://www.gephebase.org/search-criteria?/and+Presumptive Null="No" #gephebase-summary-title)	Presumptive Null
Coding (<a #gephebase-summary-title"="" coding"="" href="https://www.gephebase.org/search-criteria?/and+Molecular Type=">https://www.gephebase.org/search-criteria?/and+Molecular Type="Coding" #gephebase-summary-title)	Molecular Type
SNP (<a #gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Aberration Type=" snp"="">https://www.gephebase.org/search-criteria?/and+Aberration Type="SNP" #gephebase-summary-title)	Aberration Type
Nonsynonymous	SNP Coding Change
Gly558Arg	Molecular Details of the Mutation
Association Mapping (<a #gephebase-summary-title"="" association="" href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=" mapping"="">https://www.gephebase.org/search-criteria?/and+Experimental Evidence="Association Mapping" #gephebase-summary-title)	Experimental Evidence

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Whole-genome resequencing reveals loci under selection during chicken domestication. (2010) (https://pubmed.ncbi.nlm.nih.gov/20220755)	Main Reference
Rubin CJ; Zody MC; Eriksson J; Meadows JR; Sherwood E; Webster MT; Jiang L; Ingman M; Sharpe T; Ka S; Hallbäck Åk F; Besnier F; Carlborg O; Bed'hom B; Tixier-Boichard M; Jensen P; Siegel P; Lindblad-Toh K; Andersson L	Authors

Abstract

Domestic animals are excellent models for genetic studies of phenotypic evolution. They have evolved genetic adaptations to a new environment, the farm, and have been subjected to strong human-driven selection leading to remarkable phenotypic changes in morphology, physiology and behaviour. Identifying the genetic changes underlying these developments provides new insight into general mechanisms by which genetic variation shapes phenotypic diversity. Here we describe the use of massively parallel sequencing to identify selective sweeps of favourable alleles and candidate mutations that have had a prominent role in the domestication of chickens (*Gallus gallus domesticus*) and their subsequent specialization into broiler (meat-producing) and layer (egg-producing) chickens. We have generated 44.5-fold coverage of the chicken genome using pools of genomic DNA representing eight different populations of domestic chickens as well as red jungle fowl (*Gallus gallus*), the major wild ancestor. We report more than 7,000,000 single nucleotide polymorphisms, almost 1,300 deletions and a number of putative selective sweeps. One of the most striking selective sweeps found in all domestic chickens occurred at the locus for thyroid stimulating hormone receptor (TSHR), which has a pivotal role in metabolic regulation and photoperiod control of reproduction in vertebrates. Several of the selective sweeps detected in broilers overlapped genes associated with growth, appetite and metabolic regulation. We found little evidence that selection for loss-of-function mutations had a prominent role in chicken domestication, but we detected two deletions in coding sequences that we suggest are functionally important. This study has direct application to animal breeding and enhances the importance of the domestic chicken as a model organism for biomedical research.

Establishing the validity of domestication genes using DNA from ancient chickens. (2014) (https://pubmed.ncbi.nlm.nih.gov/24753608)	Additional References
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RELATED GEPHE

1 (ABCA1) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~9031^/and+Trait=Metabolism/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS

Selective sweeps of unknown adaptive or phenotypic significance - Although the function (and corresponding phenotype) associated with the derived allele remains unknown it is possible that this gene variant affects photoperiod control and the absence of strict seasonal reproduction (a trait commonly found in domestic animals but rare or absent among their wild relatives)