

GEPHE SUMMARY

IGF2BP1 (https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^IGF2BP1^#gephebase-summary-title)	Gephebase Gene	GP00002128	GephelD
Published	Entry Status	Santos	Main curator

PHENOTYPIC CHANGE

Trait Category			
Morphology (https://www.gephebase.org/search-criteria/?and+Trait Category=^Morphology^#gephebase-summary-title)	Trait		
Body size (weight) (https://www.gephebase.org/search-criteria/?and+Trait=^Body+size+(weight)^#gephebase-summary-title)	Trait State in Taxon A		
smaller body size	Trait State in Taxon B		
larger body size	Ancestral State		
Taxon A	Taxonomic Status		
Domesticated (https://www.gephebase.org/search-criteria/?and+Taxonomic+Status=^Domesticated^#gephebase-summary-title)			
Taxon A	Latin Name	Taxon B	Latin Name
Anas platyrhynchos (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Anas+platyrhynchos^#gephebase-summary-title)		Anas platyrhynchos (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Anas+platyrhynchos^#gephebase-summary-title)	
mallard	Common Name	mallard	Common Name
Anas boschas; Anas domesticus; Anas platyrhynchos f. domestica; mallard; duck; mallard duck; mallard ducks; Anas platyrhynchos Linnaeus 1758; Anas platyrhynchos	Synonyms	Anas boschas; Anas domesticus; Anas platyrhynchos f. domestica; mallard; duck; mallard duck; mallard ducks; Anas platyrhynchos Linnaeus 1758; Anas platyrhynchos	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; Anseriformes; Anatidae; Anatinae; Anas	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; Anseriformes; Anatidae; Anatinae; Anas	Lineage
Anas (ducks) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8835)	Parent	Anas (ducks) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8835)	Parent
8839 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8839)	NCBI Taxonomy ID	8839 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8839)	NCBI Taxonomy ID
Yes	is Taxon A an Infraspecies?	Yes	is Taxon B an Infraspecies?
Wild mallard ducks	Taxon A Description	Domesticated breed - Pekin duck	Taxon B Description

GENOTYPIC CHANGE

IGF2BP1	Generic Gene Name	UniProtKB Gallus gallus
ZBP1; VICKZ1	Synonyms	GenebankID or UniProtKB
9031.ENSGALP00000001973 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=9031.ENSGALP00000001973)	String	0
Belongs to the RRM IMP/VICKZ family.	Sequence Similarities	
GO:0003729 : mRNA binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003729) GO:0003730 : mRNA 3'-UTR binding (https://www.ebi.ac.uk/QuickGO/term/GO:0003730)	GO - Molecular Function	

GO - Biological Process

GO:0010976 : positive regulation of neuron projection development

(<https://www.ebi.ac.uk/QuickGO/term/GO:0010976>)

GO:0017148 : negative regulation of translation

(<https://www.ebi.ac.uk/QuickGO/term/GO:0017148>)

GO:0051028 : mRNA transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0051028>)

GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

GO:0030175 : filopodium (<https://www.ebi.ac.uk/QuickGO/term/GO:0030175>)

GO:0030027 : lamellipodium (<https://www.ebi.ac.uk/QuickGO/term/GO:0030027>)

GO:0048471 : perinuclear region of cytoplasm

(<https://www.ebi.ac.uk/QuickGO/term/GO:0048471>)

GO:0070937 : CRD-mediated mRNA stability complex

(<https://www.ebi.ac.uk/QuickGO/term/GO:0070937>)

GO:0030426 : growth cone (<https://www.ebi.ac.uk/QuickGO/term/GO:0030426>)

Presumptive Null

No (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%No%#gephebase-summary-title>)

Molecular Type

Cis-regulatory (<https://www.gephebase.org/search-criteria?/and+Molecular+Type=%Cis-regulatory%#gephebase-summary-title>)

Aberration Type

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

Molecular Details of the Mutation

We found that the phenotypic values of body size related traits together with IGF2BP1 expression levels were successfully fine-mapped of the causal variation in an ~100-kb region (chr28: 4,413,785-4,513,671) located on the 148 kb upstream of the IGF2BP1 gene

Experimental Evidence

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%Linkage+Mapping%#gephebase-summary-title>)

Main Reference

An intercross population study reveals genes associated with body size and plumage color in ducks. (2018) (<https://pubmed.ncbi.nlm.nih.gov/30018292>)

Authors

Zhou Z; Li M; Cheng H; Fan W; Yuan Z; Gao Q; Xu Y; Guo Z; Zhang Y; Hu J; Liu H; Liu D; Chen W; Zheng Z; Jiang Y; Wen Z; Liu Y; Chen H; Xie M; Zhang Q; Huang W; Wang W; Hou S; Jiang Y

Abstract

Comparative population genomics offers an opportunity to discover the signatures of artificial selection during animal domestication, however, their function cannot be directly revealed. We discover the selection signatures using genome-wide comparisons among 40 mallards, 36 indigenous-breed ducks, and 30 Pekin ducks. Then, the phenotypes are fine-mapped based on resequencing of 1026 ducks from an F₁ segregating population generated by wild×domestic crosses. Interestingly, the two key economic traits of Pekin duck are associated with two selective sweeps with fixed mutations. A novel intronic insertion most possibly leads to a splicing change in MITF accounted for white duck down feathers. And a putative long-distance regulatory mutation causes continuous expression of the IGF2BP1 gene after birth which increases body size by 15% and feed efficiency by 6%. This study provides new insights into genotype-phenotype associations in animal research and constitutes a promising resource on economically important genes in fowl.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS