

GEPHE SUMMARY

slc2a11b (<a +slc2a11b+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+slc2a11b+"#gephebase-summary-title)	Gephebase Gene	GP00002367	GepheID
	Entry Status	Santos	Main curator
	Published		

PHENOTYPIC CHANGE

		Trait Category	
Morphology (<a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title)		Trait	
Coloration (eyes) (<a +coloration+(eyes)+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Coloration+(eyes)+"#gephebase-summary-title)		Trait State in Taxon A	
Orange iris color		Trait State in Taxon B	
Pearl (white) iris color		Ancestral State	
Taxon A		Taxonomic Status	
Domesticated (<a +domesticated+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Domesticated+"#gephebase-summary-title)			
Taxon A		Taxon B	
Columba livia (<a +columba+livia+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Columba+livia+"#gephebase-summary-title)		Columba livia (<a +columba+livia+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Columba+livia+"#gephebase-summary-title)	
Common Name		Common Name	
rock pigeon		rock pigeon	
Synonyms		Synonyms	
Columba livia domestica; rock pigeon; carrier pigeon; domestic pigeon; rock dove; Columba livia Gmelin, JF, 1789		Columba livia domestica; rock pigeon; carrier pigeon; domestic pigeon; rock dove; Columba livia Gmelin, JF, 1789	
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; Columbiformes; Columbidae; Columba		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; Columbiformes; Columbidae; Columba	
Parent		Parent	
Columba () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8931)		Columba () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8931)	
NCBI Taxonomy ID		NCBI Taxonomy ID	
8932 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8932)		8932 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8932)	
is Taxon A an Intraspecies?		is Taxon B an Intraspecies?	
Yes		Yes	
Taxon A Description		Taxon B Description	
orange-eyed Archangel domestic pigeon		pearl-eyed Old Dutch Capuchin domestic pigeon	

GENOTYPIC CHANGE

		Generic Gene Name	
slc2a11b		F6P601 (http://www.uniprot.org/uniprot/F6P601)	
Synonyms		GenebankID or UniProtKB	
slc2a11b; SO:0001217		()	
String			
-			
Sequence Similarities			
-			
GO - Molecular Function			
GO:0015149 : hexose transmembrane transporter activity (https://www.ebi.ac.uk/QuickGO/term/GO:0015149)			
GO - Biological Process			
GO:0015749 : monosaccharide transmembrane transport (https://www.ebi.ac.uk/QuickGO/term/GO:0015749)			

GO:0016020 : membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0016020>)
GO:0005887 : integral component of plasma membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005887>)

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

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

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

Nonsense

“The premature stop codon in pearl-eyed pigeons falls in exon 3 of SLC2A11B, and is predicted to severely truncate the resulting protein from 504 to 57 amino acids.”

“Based on genotypes at the two coding SNPs in the pearl eye haplotype, we found that gene expression in embryo head samples only shows changes associated with the pearl eye haplotype in SLC2A11B, and not in any other genes within 15â€‰kb of the pearl eye haplotype, further supporting SLC2A11B as the primary candidate for the pearl eye phenotype (supplementary fig. S3A, Supplementary Material online). Embryo heads homozygous for the pearl allele show a significant reduction in SLC2A11B expression ($P=3.94 \times 10^{-6}$, two-tailed t-test; supplementary fig. S3B, Supplementary Material online). Analysis of read distribution within the SLC2A11B gene shows a decrease in spliced reads specifically within the first three annotated exons, suggesting that alternative splicing or nonsense-mediated decay may be occurring (supplementary fig. S3D, Supplementary Material online).”

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

	Taxon A	Taxon B	Position
Codon	TGG	TGA	-
Amino-acid	Trp	STP	-

Two Genomic Loci Control Three Eye Colors in the Domestic Pigeon (*Columba livia*). (2021) (<https://pubmed.ncbi.nlm.nih.gov/34459920>)

Maclary ET; Phillips B; Wauer R; Boer EF; Bruders R; Gilvarry T; Holt C; Yandell M; Shapiro MD

The iris of the eye shows striking color variation across vertebrate species, and may play important roles in crypsis and communication. The domestic pigeon (*Columba livia*) has three common iris colors, orange, pearl (white), and bull (dark brown), segregating in a single species, thereby providing a unique opportunity to identify the genetic basis of iris coloration. We used comparative genomics and genetic mapping in laboratory crosses to identify two candidate genes that control variation in iris color in domestic pigeons. We identified a nonsense mutation in the solute carrier SLC2A11B that is shared among all pigeons with pearl eye color, and a locus associated with bull eye color that includes EDNRB2, a gene involved in neural crest migration and pigment development. However, bull eye is likely controlled by a heterogeneous collection of alleles across pigeon breeds. We also found that the EDNRB2 region is associated with regionalized plumage depigmentation (piebalding). Our study identifies two candidate genes for eye colors variation, and establishes a genetic link between iris and plumage color, two traits that vary widely in the evolution of birds and other vertebrates.

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The genetics and evolution of eye color in domestic pigeons (*Columba livia*). (2021) (<https://pubmed.ncbi.nlm.nih.gov/34460822>)

Molecular parallelisms between pigmentation in the avian iris and the integument of ectothermic vertebrates. (2021) (<https://pubmed.ncbi.nlm.nih.gov/33621224>)

RELATED GEPHE

6 (MC1R, Mlana, ndp (norrin), SLC45A2=MATP, SOX10, tyrosinase-related protein 1 (TYRP1)) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~8932^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

No matches found.

EXTERNAL LINKS

COMMENTS

