

GEPHE SUMMARY

KCNH4 - uncertain (#Gephebase-uncertain)		Gephebase Gene	GP00000510	GepheID
Published		Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Physiology (#Physiology)		Trait Category		
Freshwater adaptation (#Freshwater adaptation)		Trait		
Gasterosteus aculeatus - marine		Trait State in Taxon A		
Gasterosteus aculeatus - freshwater		Trait State in Taxon B		
Taxon A		Ancestral State		
Intraspecific (#Intraspecific)		Taxonomic Status		
		Taxon A	Taxon B	
Gasterosteus aculeatus (#Gephebase-summary-title)		Latin Name	Gasterosteus aculeatus (#Gephebase-summary-title)	Latin Name
three-spined stickleback		Common Name	three-spined stickleback	Common Name
three-spined stickleback; three spined stickleback; Gasterosteus aculeatus Linnaeus, 1758 species		Synonyms	three-spined stickleback; three spined stickleback; Gasterosteus aculeatus Linnaeus, 1758 species	Synonyms
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Perciformes; Eupercaria; Perciformes; Cottioidei; Gasterosteales; Gasterosteidae; Gasterosteus		Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Perciformes; Eupercaria; Perciformes; Cottioidei; Gasterosteales; Gasterosteidae; Gasterosteus	Lineage
Gasterosteus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69292)		Parent	Gasterosteus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69292)	Parent
69293 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69293)		NCBI Taxonomy ID	69293 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69293)	NCBI Taxonomy ID
Yes		is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Gasterosteus aculeatus - marine		Taxon A Description	Gasterosteus aculeatus - freshwater	Taxon B Description

GENOTYPIC CHANGE

KCNH4		Generic Gene Name	Q9UQ05 (http://www.uniprot.org/uniprot/Q9UQ05)	UniProtKB Homo sapiens
BEC2; ELK1; Kv12.3		Synonyms	0	GenebankID or UniProtKB
9606.ENSPO0000264661 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPO0000264661)		String		
Belongs to the potassium channel family. H (Eag) (TC 1.A.1.20) subfamily. Kv12.3/KCNH4 sub-subfamily.		Sequence Similarities		
GO:0000155 : phosphorelay sensor kinase activity (https://www.ebi.ac.uk/QuickGO/term/GO:0000155)		GO - Molecular Function		

GO:0005249 : voltage-gated potassium channel activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005249>)

GO - Biological Process

GO:0006813 : potassium ion transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006813>)
GO:0042391 : regulation of membrane potential
(<https://www.ebi.ac.uk/QuickGO/term/GO:0042391>)
GO:0071805 : potassium ion transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0071805>)
GO:0034765 : regulation of ion transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034765>)

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:0008076 : voltage-gated potassium channel complex
(<https://www.ebi.ac.uk/QuickGO/term/GO:0008076>)

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

Large Inversion resulting in alternative transcripts

Experimental Evidence

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

Main Reference

The genomic basis of adaptive evolution in threespine sticklebacks. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22481358>)

Authors

Jones FC; Grabherr MG; Chan YF; Russell P; Mauceli E; Johnson J; Swofford R; Pirun M; Zody MC; White S; Birney E; Searle S; Schmutz J; Grimwood J; Dickson MC; Myers RM; Miller CT; Summers BR; Knecht AK; Brady SD; Zhang H; Pollen AA; Howes T; Amemiya C; ; Baldwin J; Bloom T; Jaffe DB; Nicol R; Wilkinson J; Lander ES; Di Palma F; Lindblad-Toh K; Kingsley DM

Abstract

Marine stickleback fish have colonized and adapted to thousands of streams and lakes formed since the last ice age, providing an exceptional opportunity to characterize genomic mechanisms underlying repeated ecological adaptation in nature. Here we develop a high-quality reference genome assembly for threespine sticklebacks. By sequencing the genomes of twenty additional individuals from a global set of marine and freshwater populations, we identify a genome-wide set of loci that are consistently associated with marine-freshwater divergence. Our results indicate that reuse of globally shared standing genetic variation, including chromosomal inversions, has an important role in repeated evolution of distinct marine and freshwater sticklebacks, and in the maintenance of divergent ecotypes during early stages of reproductive isolation. Both coding and regulatory changes occur in the set of loci underlying marine-freshwater evolution, but regulatory changes appear to predominate in this well known example of repeated adaptive evolution in nature.

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS