

GEPHE SUMMARY

ABC7 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=^ABC7^#gephebase-summary-title)	Gephebase Gene	GP00001379	GepheID
Published	Entry Status	Prigent	Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=^Physiology^#gephebase-summary-title)	Trait Category		
Iron metabolism (https://www.gephebase.org/search-criteria?/and+Trait=^Ironmetabolism^#gephebase-summary-title)	Trait		
Threespined stickleback fish ; marine habitat of Pacific basin	Trait State in Taxon A		
Threespined stickleback fish ; freshwater habitat of Pacific basin	Trait State in Taxon B		
Unknown	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=^Intraspecific^#gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
Gasterosteus aculeatus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Gasterosteusaculeatus^#gephebase-summary-title)	Latin Name	Gasterosteus aculeatus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Gasterosteusaculeatus^#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 Rank	three-spined stickleback; three spined stickleback; Gasterosteus aculeatus Linnaeus, 1758 species	Synonyms Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteomorpha; 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; Euteleosteomorpha; 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 NCBI Taxonomy ID	Gasterosteus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69292)	Parent NCBI Taxonomy ID
69293 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69293)	is Taxon A an Infrappecies?	69293 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=69293)	is Taxon B an Infrappecies?
Yes	Taxon A Description	Yes	Taxon B Description
Threespined stickleback fish ; marine habitat of Pacific basin		Threespined stickleback fish ; freshwater habitat of Pacific basin	

GENOTYPIC CHANGE

ABC7	Generic Gene Name	O75027 (http://www.uniprot.org/uniprot/O75027)	UniProtKB Homo sapiens
ABC7; ASAT; Atrm1p; EST140535	Synonyms		GenebankID or UniProtKB
9606.ENSPO0000253577 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPO0000253577)	String	0	
Belongs to the ABC transporter superfamily. ABCB family. Heavy Metal importer (TC 3.A.1.210) subfamily.	Sequence Similarities		
GO:0005524 : ATP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005524)	GO - Molecular Function		
GO:0042626 : ATPase activity, coupled to transmembrane movement of substances			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0042626>)

GO:0015232 : heme transporter activity

(<https://www.ebi.ac.uk/QuickGO/term/GO:0015232>)

GO - Biological Process

GO:0055085 : transmembrane transport

(<https://www.ebi.ac.uk/QuickGO/term/GO:0055085>)

GO:0006879 : cellular iron ion homeostasis

(<https://www.ebi.ac.uk/QuickGO/term/GO:0006879>)

GO - Cellular Component

GO:0016021 : integral component of membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

GO:0005743 : mitochondrial inner membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0005743>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

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

Main Reference

A genome-wide SNP genotyping array reveals patterns of global and repeated species-pair divergence in sticklebacks. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22197244>)

Authors

Jones FC; Chan YF; Schmutz J; Grimwood J; Brady SD; Southwick AM; Absher DM; Myers RM; Reimchen TE; Deagle BE; Schluter D; Kingsley DM

Abstract

Genes underlying repeated adaptive evolution in natural populations are still largely unknown. Stickleback fish (*Gasterosteus aculeatus*) have undergone a recent dramatic evolutionary radiation, generating numerous examples of marine-freshwater species pairs and a small number of benthic-limnetic species pairs found within single lakes [1]. We have developed a new genome-wide SNP genotyping array to study patterns of genetic variation in sticklebacks over a wide geographic range, and to scan the genome for regions that contribute to repeated evolution of marine-freshwater or benthic-limnetic species pairs. Surveying 34 global populations with 1,159 informative markers revealed substantial genetic variation, with predominant patterns reflecting demographic history and geographic structure. After correcting for geographic structure and filtering for neutral markers, we detected large repeated shifts in allele frequency at some loci, identifying both known and novel loci likely contributing to marine-freshwater and benthic-limnetic divergence. Several novel loci fall close to genes implicated in epithelial barrier or immune functions, which have likely changed as sticklebacks adapt to contrasting environments. Specific alleles differentiating sympatric benthic-limnetic species pairs are shared in nearby solitary populations, suggesting an allopatric origin for adaptive variants and selection pressures unrelated to sympatry in the initial formation of these classic vertebrate species pairs.

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Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

Candidate locus ; mapping is not precise enough