

GEPHE SUMMARY

AIP (https://www.gephebase.org/search-criteria?/and+GeneGephebase=AIP^#gephebase-summary-title)	Gephebase Gene	GP00002670	GepheID
	Entry Status	Courtier	Main curator
	Published		

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=Physiology^#gephebase-summary-title)		Trait Category	
Xenobiotic resistance (pollution) (https://www.gephebase.org/search-criteria?/and+Trait=Xenobiotic+resistance+(pollution)^#gephebase-summary-title)		Trait	
Fundulus grandis - sensitive - lives in non-polluted sites		Trait State in Taxon A	
Fundulus grandis - tolerant - adapted to polluted sites		Trait State in Taxon B	
Taxon A		Ancestral State	
Intraspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=Intraspecific^#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Fundulus grandis (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Fundulus+grandis^#gephebase-summary-title)		Fundulus grandis (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Fundulus+grandis^#gephebase-summary-title)	
Gulf killifish		Gulf killifish	
Gulf killifish; Fundulus grandis Baird & Girard, 1853		Gulf killifish; Fundulus grandis Baird & Girard, 1853	
species		species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleostei; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Atherinomorpha; Cyprinodontiformes; Cyprinodontidae; Fundulidae; Fundulus		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleostei; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Atherinomorpha; Cyprinodontiformes; Cyprinodontidae; Fundulidae; Fundulus	
Fundulus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8077)		Fundulus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8077)	
34779 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=34779)		34779 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=34779)	
No		No	

GENOTYPIC CHANGE

Aip		Generic Gene Name	UniProtKB Mus musculus
Ara9; Xap2; Fkbp16; AA408703; AW476050; D19Bwg1412e		Synonyms	GenebankID or UniProtKB
10090.ENSMUSP00000025767 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000025767)		String	
-		Sequence Similarities	
GO:0051082 : unfolded protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0051082)		GO - Molecular Function	
GO:0003712 : transcription coregulator activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003712)			
GO:0017162 : aryl hydrocarbon receptor binding			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0017162>)
GO:0036004 : GAF domain binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0036004>)
GO - Biological Process

GO:0006805 : xenobiotic metabolic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006805>)
GO:0051344 : negative regulation of cyclic-nucleotide phosphodiesterase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0051344>)
GO:0022417 : protein maturation by protein folding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0022417>)
GO:0006626 : protein targeting to mitochondrion
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006626>)
GO:0010738 : regulation of protein kinase A signaling
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010738>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)
GO:0005829 : cytosol (<https://www.ebi.ac.uk/QuickGO/term/GO:0005829>)
GO:0016020 : membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0016020>)
GO:0034751 : aryl hydrocarbon receptor complex
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034751>)

	Presumptive Null
Yes (<a +yes`#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Presumptive+Null=">https://www.gephebase.org/search-criteria?/and+Presumptive Null=`Yes`#gephebase-summary-title)	
	Molecular Type
Unknown (<a +unknown`#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Molecular+Type=">https://www.gephebase.org/search-criteria?/and+Molecular Type=`Unknown`#gephebase-summary-title)	
	Aberration Type
Unknown (<a +unknown`#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Aberration+Type=">https://www.gephebase.org/search-criteria?/and+Aberration Type=`Unknown`#gephebase-summary-title)	
	Molecular Details of the Mutation
exact mutation(s) unknown - very good candidate gene according to Fst and knowledge about the physiology	
	Experimental Evidence
Association Mapping (<a +association+mapping`#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=">https://www.gephebase.org/search-criteria?/and+Experimental Evidence=`Association Mapping`#gephebase-summary-title)	
	Main Reference
Adaptive introgression enables evolutionary rescue from extreme environmental pollution. (2019) (https://pubmed.ncbi.nlm.nih.gov/31048485)	
	Authors
Oziolor EM; Reid NM; Yair S; Lee KM; Guberman VerPloeg S; Bruns PC; Shaw JR; Whitehead A; Matson CW	
	Abstract
Radical environmental change that provokes population decline can impose constraints on the sources of genetic variation that may enable evolutionary rescue. Adaptive toxicant resistance has rapidly evolved in Gulf killifish (<i>Fundulus grandis</i>) that occupy polluted habitats. We show that resistance scales with pollution level and negatively correlates with inducibility of aryl hydrocarbon receptor (AHR) signaling. Loci with the strongest signatures of recent selection harbor genes regulating AHR signaling. Two of these loci introgressed recently (18 to 34 generations ago) from Atlantic killifish (<i>F. heteroclitus</i>). One introgressed locus contains a deletion in AHR that confers a large adaptive advantage [selection coefficient (s) = 0.8]. Given the limited migration of killifish, recent adaptive introgression was likely mediated by human-assisted transport. We suggest that interspecies connectivity may be an important source of adaptive variation during extreme environmental change.	
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	Additional References

RELATED GEPHE

	Related Genes
3 (AHR2, ARNT-1c, ARNT-L2a) (<a +34779`="" and+trait='Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title"' href="https://www.gephebase.org/search-criteria?/or+Taxon+ID=">https://www.gephebase.org/search-criteria?/or+Taxon ID=`34779`/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title)	
	Related Haplotypes
No matches found.	

EXTERNAL LINKS

COMMENTS

@Fitness Probably @Introgression from *Fundulus heteroclitus*