

GEPHE SUMMARY

	Gene	Gephebase Gene	GephelD
ARNT-L2a (https://www.gephebase.org/search-criteria?/and+Gene Gephebase^ARNT-L2a^#gephebase-summary-title)		GP00002671	Main curator
	Entry Status	Courtier	
Published			

PHENOTYPIC CHANGE

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

GENOTYPIC CHANGE

-	Generic Gene Name	P27540NULL (http://www.uniprot.org/uniprot/P27540NULL)	UniProtKB
-	Synonyms		GenebankID or UniProtKB
-	String	0	
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
-	GO - Cellular Component		
-			Presumptive Null
	Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Yes^#gephebase-summary-title)		

Unknown (https://www.gephebase.org/search-criteria?/and+Molecular Type=%5EUnknown%23gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=%5EUnknown%23gephebase-summary-title)	Aberration Type
exact mutation(s) unknown - very good candidate gene according to high differentiation region on chromosome 10 and knowledge about the physiology. ARNT-L2a is a nuclear dimerization partner of aryl hydrocarbon receptor (AHR) required for activation of the xenobiotic response pathway.	Molecular Details of the Mutation
Association Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5EAssociation Mapping%23gephebase-summary-title)	Experimental Evidence
Adaptive introgression enables evolutionary rescue from extreme environmental pollution. (2019) (https://pubmed.ncbi.nlm.nih.gov/31048485)	Main Reference
Oziolor EM; Reid NM; Yair S; Lee KM; Guberman VerPloeg S; Bruns PC; Shaw JR; Whitehead A; Matson CW	Authors
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.	Abstract

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[Additional References](#)

RELATED GEPHE

3 (AHR2, AIP, ARNT-1c) (https://www.gephebase.org/search-criteria?/or+Taxon ID=%5E34779%23gephebase-summary-title)	Related Genes
	Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

@Introgression from *Fundulus heteroclitus* @Fitness @@pb with UniProt P27540