

GEPHE SUMMARY

FAAH (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~FAAH^#gephebase-summary-title)	Gephebase Gene	GP00000301	GepheID
Published	Entry Status	Martin	Main curator

PHENOTYPIC CHANGE

Behavior (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Behavior^#gephebase-summary-title)	Trait Category		
Anxiety (fear reduction) (https://www.gephebase.org/search-criteria?/and+Trait=~Anxiety+(fear+reduction)^#gephebase-summary-title)	Trait		
Homo sapiens	Trait State in Taxon A		
Homo sapiens	Trait State in Taxon B		
Unknown	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific^#gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
	Latin Name		Latin Name
Homo sapiens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Homo+sapiens^#gephebase-summary-title)	Latin Name	Homo sapiens (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Homo+sapiens^#gephebase-summary-title)	Latin Name
human	Common Name	human	Common Name
human; man; Homo sapiens Linnaeus, 1758; Home sapiens; Homo sampiens; Homo sapeins; Homo sapien; Homo sapians; Homo sapien; Homo sapience; Homo sapiense; Homo sapients; Homo sapines; Homo spaiens; Homo spiens; Humo sapiens	Synonyms	human; man; Homo sapiens Linnaeus, 1758; Home sapiens; Homo sampiens; Homo sapeins; Homo sapien; Homo sapians; Homo sapien; Homo sapience; Homo sapiense; Homo sapients; Homo sapines; Homo spaiens; Homo spiens; Humo sapiens	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Hominoidea; Hominidae; Homininae; Homo	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Mammalia; Theria; Eutheria; Boreoeutheria; Euarchontoglires; Primates; Haplorrhini; Simiiformes; Catarrhini; Hominoidea; Hominidae; Homininae; Homo	Lineage
Homo () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9605)	Parent	Homo () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9605)	Parent
9606 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9606)	NCBI Taxonomy ID	9606 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9606)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

Faah	Generic Gene Name	P97612 (http://www.uniprot.org/uniprot/P97612)	UniProtKB Rattus norvegicus
Faah1	Synonyms	0	GenebankID or UniProtKB
10116.ENSRNOP00000015961 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=10116.ENSRNOP00000015961)	String		
Belongs to the amidase family.	Sequence Similarities		
GO:0042802 : identical protein binding (https://www.ebi.ac.uk/QuickGO/term/GO:0042802)	GO - Molecular Function		
GO:0042803 : protein homodimerization activity (https://www.ebi.ac.uk/QuickGO/term/GO:0042803)			

GO:0008289 : lipid binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0008289>)
 GO:0005543 : phospholipid binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0005543>)
 GO:0016788 : hydrolase activity, acting on ester bonds
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0016788>)
 GO:0004040 : amidase activity (<https://www.ebi.ac.uk/QuickGO/term/GO:0004040>)
 GO:0103073 : anandamide amidohydrolase activity
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0103073>)
 GO:0017064 : fatty acid amide hydrolase activity
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0017064>)
 GO:0102077 : oleamide hydrolase activity
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0102077>)

GO - Biological Process

GO:0009062 : fatty acid catabolic process
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0009062>)
 GO:0006631 : fatty acid metabolic process
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0006631>)
 GO:0097756 : negative regulation of blood vessel diameter
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0097756>)

GO - Cellular Component

GO:0016021 : integral component of membrane
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)
 GO:0000139 : Golgi membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0000139>)
 GO:0005789 : endoplasmic reticulum membrane
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0005789>)
 GO:0031090 : organelle membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0031090>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=~No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~No^#gephebase-summary-title))

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

Pro129Thr (C385A; common variant rs324420)

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=~Association+Mapping^#gephebase-summary-title))

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Main Reference

FAAH genetic variation enhances fronto-amygdala function in mouse and human. (2015) (<https://pubmed.ncbi.nlm.nih.gov/25731744>)

Authors

Dincheva I; Drysdale AT; Hartley CA; Johnson DC; Jing D; King EC; Ra S; Gray JM; Yang R; DeGruccio AM; Huang C; Cravatt BF; Glatt CE; Hill MN; Casey BJ; Lee FS

Abstract

Cross-species studies enable rapid translational discovery and produce the broadest impact when both mechanism and phenotype are consistent across organisms. We developed a knock-in mouse that biologically recapitulates a common human mutation in the gene for fatty acid amide hydrolase (FAAH) (C385A; rs324420), the primary catabolic enzyme for the endocannabinoid anandamide. This common polymorphism impacts the expression and activity of FAAH, thereby increasing anandamide levels. Here, we show that the genetic knock-in mouse and human variant allele carriers exhibit parallel alterations in biochemistry, neurocircuitry and behaviour. Specifically, there is reduced FAAH expression associated with the variant allele that selectively enhances fronto-amygdala connectivity and fear extinction learning, and decreases anxiety-like behaviours. These results suggest a gain of function in fear regulation and may indicate for whom and for what anxiety symptoms FAAH inhibitors or exposure-based therapies will be most efficacious, bridging an important translational gap between the mouse and human.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

See GWAS literature on additional traits associated to this SNP