

FPN2 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~FPN2~#gephebase-summary-title)	Gephebase Gene	GP00000354	GepheID
Published	Entry Status	Martin	Main curator

Physiology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Physiology^#gephebase-summary-title)		Trait Category
Metal tolerance (https://www.gephebase.org/search-criteria?/and+Trait=~Metal tolerance^#gephebase-summary-title)		Trait
Arabidopsis thaliana- Col0		Trait State in Taxon A
Arabidopsis thaliana- Ts-1		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
Arabidopsis thaliana (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Arabidopsis thaliana^#gephebase-summary-title)		Latin Name
thale cress		Common Name
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress		Synonyms
species		Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis		Lineage
Arabidopsis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3701)		Parent
3702 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 3702)		NCBI Taxonomy ID
Yes		is Taxon A an Intraspecies?
Arabidopsis thaliana- Col0		Taxon A Description
Arabidopsis thaliana- Ts-1		Taxon B Description

IREG2	Generic Gene Name	UniProtKB Arabidopsis thaliana
	Synonyms	GenebankID or UniProtKB
ARABIDOPSIS THALIANA IRON-REGULATED PROTEIN 2; ATIREG2; F12E4.370; F12E4_370; FERROPORTIN 2; FPN2; iron regulated 2; At5g03570		F4KGN5 (http://www.uniprot.org/uniprot/F4KGN5) CP002688 (https://www.ncbi.nlm.nih.gov/nucore/CP002688)
	String	
3702.AT5G03570.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 3702.AT5G03570.1)		
	Sequence Similarities	
Belongs to the ferroportin (FP) (TC 2.A.100) family. SLC40A subfamily.		
	GO - Molecular Function	
GO:0015087 : cobalt ion transmembrane transporter activity (https://www.ebi.ac.uk/QuickGO/term/GO:0015087)		
GO:0005381 : iron ion transmembrane transporter activity		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0005381>)

GO - Biological Process

GO:0010106 : cellular response to iron ion starvation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010106>)
GO:0055068 : cobalt ion homeostasis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0055068>)
GO:0006824 : cobalt ion transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0006824>)
GO:0006826 : iron ion transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0006826>)
GO:0035444 : nickel cation transmembrane transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0035444>)
GO:0015675 : nickel cation transport (<https://www.ebi.ac.uk/QuickGO/term/GO:0015675>)
GO:0000041 : transition metal ion transport
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000041>)

GO - Cellular Component

GO:0016021 : integral component of membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)
GO:0009705 : plant-type vacuole membrane
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009705>)

Yes (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes~#gephebase-summary-title)	Presumptive Null
Coding (https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding~#gephebase-summary-title)	Molecular Type
Insertion (https://www.gephebase.org/search-criteria?/and+Aberration Type=~Insertion~#gephebase-summary-title)	Aberration Type
1-9 bp	Insertion Size
1bp insertion resulting in frameshift	Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title)	Experimental Evidence
The ferroportin metal efflux proteins function in iron and cobalt homeostasis in Arabidopsis. (2009) (https://pubmed.ncbi.nlm.nih.gov/19861554)	Main Reference
Morrissey J; Baxter IR; Lee J; Li L; Lahner B; Grotz N; Kaplan J; Salt DE; Guerinot ML	Authors
Relatively little is known about how metals such as iron are effluxed from cells, a necessary step for transport from the root to the shoot. Ferroportin (FPN) is the sole iron efflux transporter identified to date in animals, and there are two closely related orthologs in Arabidopsis thaliana, IRON REGULATED1 (IREG1/FPN1) and IREG2/FPN2. FPN1 localizes to the plasma membrane and is expressed in the stele, suggesting a role in vascular loading; FPN2 localizes to the vacuole and is expressed in the two outermost layers of the root in response to iron deficiency, suggesting a role in buffering metal influx. Consistent with these roles, fpn2 has a diminished iron deficiency response, whereas fpn1 fpn2 has an elevated iron deficiency response. Ferroportins also play a role in cobalt homeostasis; a survey of Arabidopsis accessions for ionic phenotypes showed that truncation of FPN2 results in elevated shoot cobalt levels and leads to increased sensitivity to the metal. Conversely, loss of FPN1 abolishes shoot cobalt accumulation, even in the cobalt accumulating mutant frd3. Consequently, in the fpn1 fpn2 double mutant, cobalt cannot move to the shoot via FPN1 and is not sequestered in the root vacuoles via FPN2; instead, cobalt likely accumulates in the root cytoplasm causing fpn1 fpn2 to be even more sensitive to cobalt than fpn2 mutants.	Abstract
	Additional References

RELATED GEPHE

5 (FRD3 (FERRIC REDUCTASE DEFECTIVE3), heavy metal atpase3 (HMA3), heavy metal atpase5 (HMA5), Molybdenum transporter1 (MOT1), heavy metal atpase4 (HMA4)) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~3702~/and+Trait=Metal tolerance/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS