

## GEPHE SUMMARY

<p>DOG1 (DELAY OF GERMINATION 1) (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^DOG1+(DELAY+OF+GERMINATION+1)^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^DOG1+(DELAY+OF+GERMINATION+1)^#gephebase-summary-title</a>)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>GP00001397</p> <p>Arnoult</p> <p>Entry Status</p>	<p>GepheID</p> <p>Main curator</p>
---	--	------------------------------------

## PHENOTYPIC CHANGE

<p>Physiology (<a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title</a>)</p> <p>Seed dormancy (<a href="https://www.gephebase.org/search-criteria?/and+Trait=^Seed+dormancy^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Seed+dormancy^#gephebase-summary-title</a>)</p> <p>Various A. Thaliana accessions from Sweden. More or less dormant</p> <p>Various A. Thaliana accessions from Sweden. More or less dormant</p> <p>Unknown</p> <p>Intraspecific (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#gephebase-summary-title</a>)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Arabidopsis thaliana (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title</a>)</p> <p>thale cress</p> <p>thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress</p> <p>species</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis</p> <p>Arabidopsis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a>)</p> <p>3702 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a>)</p> <p>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>Various A. Thaliana accessions from Sweden. More or less dormant</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</p>	<p>Arabidopsis thaliana (<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Arabidopsis+thaliana^#gephebase-summary-title</a>)</p> <p>thale cress</p> <p>thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress</p> <p>species</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis</p> <p>Arabidopsis () - (Rank: genus) (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a>)</p> <p>3702 (<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Various A. Thaliana accessions from Sweden. More or less dormant</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Intraspecies?</p> <p>Taxon B Description</p>
--	---	--	---	--	---

## GENOTYPIC CHANGE

<p>DOG1</p> <p>ATDOG1; DELAY OF GERMINATION 1; GAAS5; germination ability after storage 5; GLUCOSE SENSING QTL 5; GSQ5; K15122.3; K15122_3; At5g45830</p> <p>3702.AT5G45830.1 (<a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G45830.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT5G45830.1</a>)</p> <p>-</p> <p>GO:0043565 : sequence-specific DNA binding (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043565">https://www.ebi.ac.uk/QuickGO/term/GO:0043565</a>)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p>	<p>A0SVK0 (<a href="http://www.uniprot.org/uniprot/A0SVK0">http://www.uniprot.org/uniprot/A0SVK0</a>)</p> <p>834623 (<a href="https://www.ncbi.nlm.nih.gov/nuccore/834623">https://www.ncbi.nlm.nih.gov/nuccore/834623</a>)</p> <p>-</p> <p>-</p>	<p>UniProtKB Arabidopsis thaliana</p> <p>GenebankID or UniProtKB</p>
--	--	---	--

GO - Biological Process

GO:0006351 : transcription, DNA-templated  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006351>)  
GO:0009738 : abscisic acid-activated signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009738>)  
GO:2000033 : regulation of seed dormancy process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000033>)  
GO:0010162 : seed dormancy process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010162>)  
GO:0010182 : sugar mediated signaling pathway  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010182>)

GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)

Presumptive Null

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

Molecular Type

Cis-regulatory (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title>)

Aberration Type

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

Molecular Details of the Mutation

At least 3 haplotypes defined by 4 SNPs in a putative regulatory region of DOG-1.

Experimental Evidence

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

Main Reference

Multiple alleles at a single locus control seed dormancy in Swedish Arabidopsis. (2016) (<https://pubmed.ncbi.nlm.nih.gov/27966430>)

Authors

Kerdaffrec E; Filiault DL; Korte A; Sasaki E; Nizhynska V; Seren Åœ; Nordborg M

Abstract

Seed dormancy is a complex life history trait that determines the timing of germination and is crucial for local adaptation. Genetic studies of dormancy are challenging, because the trait is highly plastic and strongly influenced by the maternal environment. Using a combination of statistical and experimental approaches, we show that multiple alleles at the previously identified dormancy locus DELAY OF GERMINATION1 jointly explain as much as 57% of the variation observed in Swedish Arabidopsis thaliana, but give rise to spurious associations that seriously misled genome-wide association studies unless modeled correctly. Field experiments confirm that the major alleles affect germination as well as survival under natural conditions, and demonstrate that locally adaptive traits can sometimes be dissected genetically.

Additional References

RELATED GEPHE

Related Genes

2 (D14 (KAI2 paralogs), RDO5 REDUCED DORMANCY5) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^3702^/and+Trait=Seed dormancy/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

1 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^DOG1 \(DELAY OF GERMINATION 1\)^/and+Taxon ID=^3702^/or+Gene Gephebase=^DOG1 \(DELAY OF GERMINATION 1\)^/and+Taxon ID=^3702^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^DOG1 (DELAY OF GERMINATION 1)^/and+Taxon ID=^3702^/or+Gene Gephebase=^DOG1 (DELAY OF GERMINATION 1)^/and+Taxon ID=^3702^#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS