

GEPHE SUMMARY

| | | | |
|---|----------------|------------|--------------|
| M (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^M^#gephebase-summary-title) | Gephebase Gene | GP00000559 | GephelD |
| | Entry Status | Courtier | Main curator |
| Published | | | |

PHENOTYPIC CHANGE

| Trait Category | | | |
|--|-----------------------------|--|-----------------------------|
| Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title) | Trait | | |
| Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait=^Pathogen resistance^#gephebase-summary-title) | | Trait State in Taxon A | |
| Linum usitatissimum | | Trait State in Taxon B | |
| Linum usitatissimum | | 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 |
| Linum usitatissimum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Linum usitatissimum^#gephebase-summary-title) | | Linum usitatissimum (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Linum usitatissimum^#gephebase-summary-title) | |
| flax | Common Name | flax | Common Name |
| flax; Linum usitatissimum L. | Synonyms | flax; Linum usitatissimum L. | Synonyms |
| species | Rank | species | Rank |
| cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Malpighiales; Linaceae; Linum | Lineage | cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; fabids; Malpighiales; Linaceae; Linum | Lineage |
| Linum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4005) | Parent | Linum () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4005) | Parent |
| 4006 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4006) | NCBI Taxonomy ID | 4006 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4006) | NCBI Taxonomy ID |
| No | is Taxon A an Infraspecies? | No | is Taxon B an Infraspecies? |

GENOTYPIC CHANGE

| | | |
|--|-------------------------|-------------------------------|
| - | Generic Gene Name | UniProtKB Linum usitatissimum |
| - | Synonyms | GenebankID or UniProtKB |
| - | String | |
| - | Sequence Similarities | |
| - | GO - Molecular Function | |
| GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531) | | |
| GO - Biological Process | | |
| GO:0007165 : signal transduction (https://www.ebi.ac.uk/QuickGO/term/GO:0007165) | | |
| GO - Cellular Component | | |
| - | | Presumptive Null |
| No (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) | | Aberration Type |

100-999 bp

Molecular Details of the Mutation

426bp deletion, probably by unequal recombination

Experimental Evidence

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%5ELinkage+Mapping%23gephebase-summary-title>)

Main Reference

Inactivation of the flax rust resistance gene M associated with loss of a repeated unit within the leucine-rich repeat coding region. (1997) (<https://pubmed.ncbi.nlm.nih.gov/9144966>)

Authors

Anderson PA; Lawrence GJ; Morrish BC; Ayliffe MA; Finnegan EJ; Ellis JG

Abstract

The M rust resistance gene from flax was cloned after two separate approaches, an analysis of spontaneous M mutants with an L6 gene-derived DNA probe and tagging with the maize transposon Activator, independently identified the same gene. The gene encodes a protein of the nucleotide binding site leucine-rich repeat class and is related (86% nucleotide identity) to the unlinked L6 rust resistance gene. In contrast to the L locus, which contains a single gene with multiple alleles, approximately 15 related genes occur at the complex M locus, with only one encoding the M resistance specificity. The M protein contains two direct repeats of 147 and 149 amino acids in the C-terminal part of the leucine-rich region. Three mutant alleles of M encoding a product containing a single repeat unit of 154 amino acids were isolated. The mutant DNA sequences probably occurred by unequal intragenic exchange in the coding region of the repeats. The recombinant alleles lost M resistance and gained no detectable new resistance specificity.

Additional References

RELATED GEPHE

Related Genes

1 (L6) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=%5E4006%5Eand+Trait=Pathogen+resistance%5Eand+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

Same nucleotide change observed in three independent mutants - The authors hypothesize that either an intragenic recombination event between the two repeats or slipped alignment during replication gave rise to the same independent deletions. Only one case is reported here in Gephebase.