

GEPHE SUMMARY

<p>RGC2/Dm3 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=RGC2/Dm3#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00000984</p> <p>Courtier</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=Physiology#gephebase-summary-title)</p> <p>Pathogen resistance (https://www.gephebase.org/search-criteria?/and+Trait=Pathogen+resistance#gephebase-summary-title)</p> <p>Lactuca serriola</p> <p>Lactuca serriola</p> <p>Data not curated</p> <p>Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=Domesticated#gephebase-summary-title)</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>Taxon A</p> <p>Latin Name</p> <p>Lactuca serriola (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Lactuca+serriola#gephebase-summary-title)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Lactuca scariola; compass-plant; prickly lettuce; Lactuca serriola L.; Lactuca seriola</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Asterales; Asteraceae; Cichorioideae; Cichorieae; Lactucinae; Lactuca</p> <p>Parent</p> <p>Lactuca () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4235)</p> <p>NCBI Taxonomy ID</p> <p>75943 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=75943)</p> <p>is Taxon A an Intraspecies?</p> <p>No</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Lactuca serriola (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=Lactuca+serriola#gephebase-summary-title)</p> <p>Common Name</p> <p>-</p> <p>Synonyms</p> <p>Lactuca scariola; compass-plant; prickly lettuce; Lactuca serriola L.; Lactuca seriola</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; asterids; campanulids; Asterales; Asteraceae; Cichorioideae; Cichorieae; Lactucinae; Lactuca</p> <p>Parent</p> <p>Lactuca () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4235)</p> <p>NCBI Taxonomy ID</p> <p>75943 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=75943)</p> <p>is Taxon B an Intraspecies?</p> <p>No</p>
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GENOTYPIC CHANGE

<p>RGC2</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>GO:0043531 : ADP binding (https://www.ebi.ac.uk/QuickGO/term/GO:0043531)</p> <p>-</p> <p>-</p> <p>No (https://www.gephebase.org/search-criteria?/and+Presumptive+Null=No#gephebase-summary-title)</p> <p>Coding (https://www.gephebase.org/search-criteria?/and+Molecular+Type=Coding#gephebase-summary-title)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p> <p>GO - Cellular Component</p>	<p>UniProtKB Lactuca sativa</p> <p>Q6Y136 (http://www.uniprot.org/uniprot/Q6Y136)</p> <p>AAP40935 (https://www.ncbi.nlm.nih.gov/nuccore/AAP40935)</p> <p>GenebankID or UniProtKB</p> <p>Presumptive Null</p> <p>Molecular Type</p>
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Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type=~Unknown~#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=~Unknown~#gephebase-summary-title))

Molecular Details of the Mutation

Various haplotypes detected using PCR - absence of amplification could be due to deletion or to gene conversion

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping~#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping~#gephebase-summary-title))

Main Reference

The disease resistance gene Dm3 is infrequent in natural populations of *Lactuca serriola* due to deletions and frequent gene conversions at the RGC2 locus. (2006) (<https://pubmed.ncbi.nlm.nih.gov/16762035>)

Authors

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Abstract

Resistance genes can exhibit heterogeneous patterns of variation. However, there are few data on their frequency and variation in natural populations. We analysed the frequency and variation of the resistance gene Dm3, which confers resistance to *Bremia lactucae* (downy mildew) in 1033 accessions of *Lactuca serriola* (prickly lettuce) from 49 natural populations. Inoculations with an isolate of *Bremia lactucae* carrying avirulence gene Avr3 indicated that the frequency of Dm3 in natural populations of *L. serriola* was very low. Molecular analysis demonstrated that Dm3 was present in only one of the 1033 wild accessions analysed. The sequence of the 5' region of Dm3 was either highly conserved among accessions, or absent. In contrast, frequent chimeras were detected in the 3' leucine-rich repeat-encoding region. Therefore low frequency of the Dm3 specificity in natural populations was due to either the recent evolution of Dm3 specificity, or deletions of the whole gene as well as variation in 3' region caused by frequent gene conversions. This is the most extensive analysis of the prevalence of a known disease resistance gene to date, and indicates that the total number of resistance genes in a species may be very high. This has implications for the scales of germplasm conservation and exploitation of sources of resistance.

Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS