

## GEPHE SUMMARY

|  |   |                                 |                                    |
|--|---|---------------------------------|------------------------------------|
| <p>Hd6a (<a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^Hd6a^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^Hd6a^#gephebase-summary-title</a>)</p> <p>Published</p> | <p>Gephebase Gene</p> <p>Entry Status</p> | <p>GP00000442</p> <p>Martin</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>Flowering time (<a href="https://www.gephebase.org/search-criteria?/and+Trait=^Flowering+time^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Flowering+time^#gephebase-summary-title</a>)</p> <p>Oryza sativa - var. indica Kasalath</p> <p>Oryza sativa - var. japonica Nipponbare</p> <p>Data not curated</p> <p>Domesticated (<a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Domesticated^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Domesticated^#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>Oryza sativa - var. indica Kasalath</p> <p>Oryza sativa - var. japonica Nipponbare</p> <p>Domesticated</p> | <p>Taxon A</p> <p>Latin Name</p> <p>Oryza sativa<br/>(<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a>)</p> <p>Common Name</p> <p>rice</p> <p>Synonyms</p> <p>rice; red rice; Oryza sativa L.</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza</p> <p>Parent</p> <p>Oryza () - (Rank: genus)<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a>)</p> <p>NCBI Taxonomy ID</p> <p>4530<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a>)</p> <p>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>Taxon A Description</p> <p>Oryza sativa - var. indica Kasalath</p> | <p>Taxon B</p> <p>Latin Name</p> <p>Oryza sativa<br/>(<a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Oryza+sativa^#gephebase-summary-title</a>)</p> <p>Common Name</p> <p>rice</p> <p>Synonyms</p> <p>rice; red rice; Oryza sativa L.</p> <p>Rank</p> <p>species</p> <p>Lineage</p> <p>cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzaceae; Oryzinae; Oryza</p> <p>Parent</p> <p>Oryza () - (Rank: genus)<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4527</a>)</p> <p>NCBI Taxonomy ID</p> <p>4530<br/>(<a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=4530</a>)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Taxon B Description</p> <p>Oryza sativa - var. japonica Nipponbare</p> |
|---|---|---|---|---|

## GENOTYPIC CHANGE

|   |   |   |
|---|---|---|
| <p>HD6</p> <p>CKA2</p> <p>-</p> <p>Belongs to the protein kinase superfamily. Ser/Thr protein kinase family. CK2 subfamily.</p> <p>GO:0005524 : ATP binding (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a>)</p> <p>GO:0004674 : protein serine/threonine kinase activity (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0004674">https://www.ebi.ac.uk/QuickGO/term/GO:0004674</a>)</p> <p>GO:0009908 : flower development (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0009908">https://www.ebi.ac.uk/QuickGO/term/GO:0009908</a>)</p> <p>GO:0010229 : inflorescence development (<a href="https://www.ebi.ac.uk/QuickGO/term/GO:0010229">https://www.ebi.ac.uk/QuickGO/term/GO:0010229</a>)</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>UniProtKB Oryza sativa subsp. indica</p> <p>Q9AR27 (<a href="http://www.uniprot.org/uniprot/Q9AR27">http://www.uniprot.org/uniprot/Q9AR27</a>)</p> <p>0</p> <p>GenebankID or UniProtKB</p> |
|---|---|---|

GO:0009648 : photoperiodism (<https://www.ebi.ac.uk/QuickGO/term/GO:0009648>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

Presumptive Null

Yes ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Yes^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Yes^#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

Nonsense

Molecular Details of the Mutation

K91\*: AAG>TAG

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))

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

Main Reference

Hd6, a rice quantitative trait locus involved in photoperiod sensitivity, encodes the alpha subunit of protein kinase CK2. (2001) (<https://pubmed.ncbi.nlm.nih.gov/11416158>)

Authors

Takahashi Y; Shomura A; Sasaki T; Yano M

Abstract

Hd6 is a quantitative trait locus involved in rice photoperiod sensitivity. It was detected in backcross progeny derived from a cross between the japonica variety Nipponbare and the indica variety Kasalath. To isolate a gene at Hd6, we used a large segregating population for the high-resolution and fine-scale mapping of Hd6 and constructed genomic clone contigs around the Hd6 region. Linkage analysis with P1-derived artificial chromosome clone-derived DNA markers delimited Hd6 to a 26.4-kb genomic region. We identified a gene encoding the alpha subunit of protein kinase CK2 (CK2 alpha) in this region. The Nipponbare allele of CK2 alpha contains a premature stop codon, and the resulting truncated product is undoubtedly nonfunctional. Genetic complementation analysis revealed that the Kasalath allele of CK2 alpha increases days-to-heading. Map-based cloning with advanced backcross progeny enabled us to identify a gene underlying a quantitative trait locus even though it exhibited a relatively small effect on the phenotype.

Additional References

## RELATED GEPHE

Related Genes

9 (DTH2, EARLY FLOWERING 3/Hd17, Hd1, PRR37 pseudoresponse regulator protein 37, se5, Early flowering1 (EL1), HEADING DATE 1, Ehd1 (Response regulator), Ghd7) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~4530^/and+Trait=Flowering time/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~4530^/and+Trait=Flowering+time/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS