GEPHE SUMMARY

Gephebase Gene
Shattering1 - OsSh1 (https://www.gephebase.org/search-criteria?/and+Gene Gephebase=^Shattering1 - OsSh1^#gephebase-summary-title)

Entry Status
Published

GepheID
GP00001038

Main curator
Martin

PHENOTYPIC CHANGE

Trait Category
Physiology (https://www.gephebase.org/search-criteria?/and+Trait Category=^Physiology^#gephebase-summary-title)

Trait
Seed shattering (https://www.gephebase.org/search-criteria?/and+Trait=^Seed shattering^#gephebase-summary-title)

Trait State in Taxon A
Oryza barthii; Oryza sativa wild-type

Trait State in Taxon B
Oryza glaberrima (Africa; domesticated strains)

Ancestral State
Taxon A

Taxonomic Status
Domesticated (https://www.gephebase.org/search-criteria?/and+Taxonomic Status=^Domesticated^#gephebase-summary-title)

Taxon A

Latin Name
Oryza barthii (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Oryza barthii^#gephebase-summary-title)

Common Name
-

Synonyms
Oryza breviligulata; African wild rice; Oryza barthii A.Chev.; Oryza breviligulata A.Chev. & Roehr.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza

Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)

NCBI Taxonomy ID
65489 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 65489)

is Taxon A an Infraspecies?
No

Taxon B

Latin Name
Oryza glaberrima (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=^Oryza glaberrima^#gephebase-summary-title)

Common Name
African rice

Synonyms
African rice; Oryza glaberrima Steud.

Rank
species

Lineage
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; Liliopsida; Petrosaviidae; commelinids; Poales; Poaceae; BOP clade; Oryzoideae; Oryzeae; Oryzinae; Oryza

Parent
Oryza () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4527)

NCBI Taxonomy ID
4538 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 4538)

is Taxon B an Infraspecies?
No

GENOTYPIC CHANGE

Generic Gene Name
YAB2

Synonyms
FIL2; Os03g0650000; LOC_Os03g44710

String
39947.LOC_Os03g44710.1 (http://string-db.org/newstring_cgi/show_network_section.pl?identifier=39947.LOC_Os03g44710.1)

Sequence Similarities
Belongs to the YABBY family.

GO - Molecular Function
GO:0046872 : metal ion binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046872)

GO - Biological Process
GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)
GO:0045165 : cell fate commitment (https://www.ebi.ac.uk/QuickGO/term/GO:0045165)
GO:0010158 : abaxial cell fate specification

UniProtKB Oryza sativa subsp. japonica
Q10FZ7 (http://www.uniprot.org/uniprot/Q10FZ7)

GenebankID or UniProtKB
()

(https://www.ebi.ac.uk/QuickGO/term/GO:0010158)

GO - Cellular Component

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

Presumptive Null

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

Molecular Type

Gene Loss (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Gene Loss^#gephebase-summary-title)

Aberration Type

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

Deletion Size

10-100 kb

Molecular Details of the Mutation

45kb deletion resulting in complete removal of OsSh1 in O. glaberrima; resulting in seed abscission phenotype

Experimental Evidence

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

Main Reference

The genome sequence of African rice (Oryza glaberrima) and evidence for independent domestication. (2014) (https://pubmed.ncbi.nlm.nih.gov/25064006)

Authors

Wang M; Yu Y; Haberer G; Marri PR; Fan C; Goicoechea JL; Zuccolo A; Song X; Kudrna D; Ammiraju JS; Cossu RM; Maldonado C; Chen J; Lee S; Sisneros N; de Baynast K; Golser W; Wissotski M; Kim W; Sanchez P; Ndjiondjop MN; Sanni K; Long M; Carney J; Panaud O; Wicker T; Machado CA; Chen M; Mayer KF; Rounsley S; Wing RA

Abstract

The cultivation of rice in Africa dates back more than 3,000 years. Interestingly, African rice is not of the same origin as Asian rice (Oryza sativa L.) but rather is an entirely different species (i.e., Oryza glaberrima Steud.). Here we present a high-quality assembly and annotation of the O. glaberrima genome and detailed analyses of its evolutionary history of domestication and selection. Population genomics analyses of 20 O. glaberrima and 94 Oryza barthii accessions support the hypothesis that O. glaberrima was domesticated in a single region along the Niger river as opposed to noncentric domestication events across Africa. We detected evidence for artificial selection at a genome-wide scale, as well as with a set of O. glaberrima genes orthologous to O. sativa genes that are known to be associated with domestication, thus indicating convergent yet independent selection of a common set of genes during two geographically and culturally distinct domestication processes.

Additional References

RELATED GEPHE

Related Genes

1 (shattering4 - sh4) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^65489^/and+Trait=Seed shattering/or+Taxon ID=^4538^/and+Trait=Seed shattering/and+groupHaplotypes=true#gephebase-summary-title)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS