

## Genomes & Diversity

Gramene currently hosts 44 complete reference genomes. In collaboration with Ensembl Genomes, for each reference genome, we incorporate community annotation from primary sources and enrich this information with a series of standardized analyses. These include functional annotation by InterProScan and classification using controlled vocabularies (e.g., GO and PO).

Evolutionary histories are provided by Compara phylogenetic gene trees and complemented by analyses of whole genome alignments. In recent years, Gramene has also positioned itself as a resource for genome variation data in food crops including Asian and African rice, maize, sorghum, wheat, barley, grape and tomato.

## Pathways & Networks

The Plant Reactome (<http://plantreactome.gramene.org>) is a new platform for the comparative analysis of plant metabolic and regulatory networks, produced in collaboration with the Human Reactome Project. The April release of Plant Reactome included over 240 metabolic and signaling pathways for 67 plant species including rice, Arabidopsis, maize, Brassicas, and other crucifers. Gramene produces and hosts or mirrors metabolic pathways databases and visualization tools in the BioCyc collection. These are now hosted at CyVerse (<http://pathway.iplantcollaborative.org>).



## Outreach



Meet us at key scientific meetings including the *Maize Genetics Conference*, *Plant and Animal Genomes*, *ICAR* and *ASPB's Plant Biology*. We also participate in several Research Coordination Networks to understand community needs, and to establish and promote common data exchange formats.

## Web Services

- Gramene Mart for custom data dumps
- Public MySQL & DAS servers
- RESTful API

## Cite Us

**Tello-Ruiz *et al* (2016).** Gramene 2016: comparative plant genomics & pathway resources. *NAR* 44 (D1): D1133

## Contact us

[feedback@gramene.org](mailto:feedback@gramene.org)

Like our Facebook page!

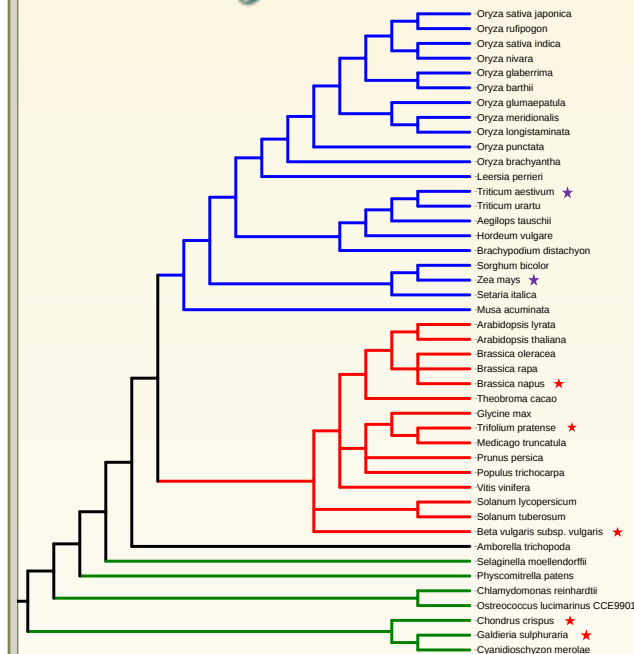


Twitter [@GrameneDatabase](https://twitter.com/GrameneDatabase)



## Funding

Current work is being supported by the NSF Plant Genome Research Resource grant award #1127112 and the USDA-ARS #1907-21000-030-00D.



★ New

★ Updated

## Comparative genomics across the plant kingdom

<http://www.gramene.org/>

*Gramene continues to grow with 44 complete genomes (build 52), including crops, model organisms and lower plants. Together these serve as a reference resource for comparative analyses, for the broad scientific community, in support of basic and translational research which impact societal interests in food security, energy production, and climate change.*

**Gramene** Search for genes, species, pathways, ontology terms, domains... 1809919 genes in 44 genomes

**Gramene Portals**

- Genome Browser**: Browse genomes with annotations, variation and comparative tools
- Plant Reactome**: Browse and analyze metabolic and regulatory pathways
- Tools**: Tools for processing both our data and yours
- Plant Expression ATLAS**: Browse plant expression results at EBI ATLAS
- BLAST**: Query protein
- Track Hub Registry**: Track a globe publicly
- Bulk FTP**: Download data

**Latest News**

Gramene at the 2017 Maize Genetics Pre-Conference Workshops

**Older news**

Everything you wanted to know about plants synteny? - Join our Gramene Webinar on February 7th

Gramene is attending the HPG Conference 2017 - See you in San Diego!

GARNet newsletter available for download

**Gramene Mart**

Search for genes, species, pathways, ontology terms, domains... 4 genes in 2 genomes

**Compare Gene Tree**

This phylogen shows the relationships between this gene and other similar to it, as determined by Ensembl Compara.

**Multiple Sequence Alignment**

Color Scheme: PR00090 - UBEA-like

Links to other resources: Ensembl Gene Tree view, LBA like (Shared by 22 of 791 (2.8%) genes in this genome)

**Gramene BLAST** BioMart Tools Downloads Help Feedback UploadData

Gene: **Zm00001d033673**

Location: Chromosome 1: 270,553,676-270,554,276 forward strand

About this gene: This gene has 1 transcript (splice variant), 49 orthologues and 17 paralogs.

**Transcripts**

Show transcript table

**Gene expression**

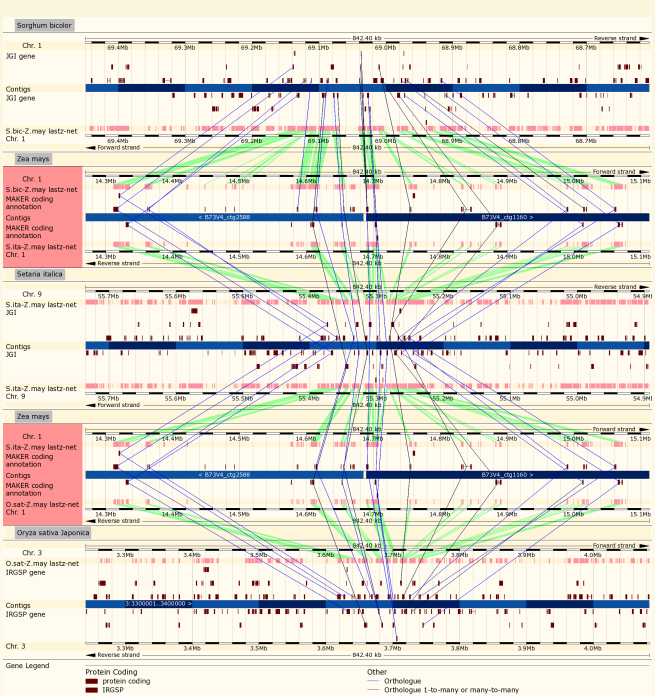
Showing 2 experiment:

- Default
- Alphabetical order
- Gene expression rank

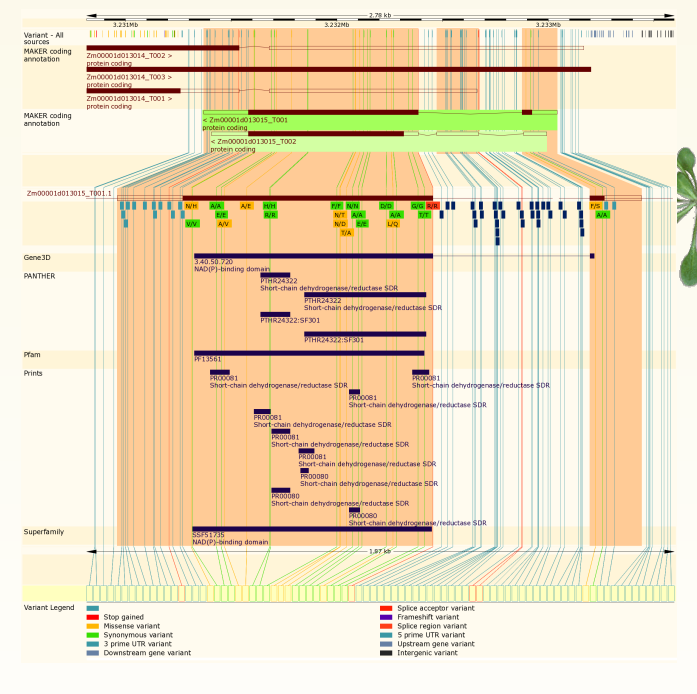
Filters: Download table content

Legend: Below cutoff, Low, Medium, High

This expression view is provided by Expression Atlas. Please direct any queries or feedback to [amyas@ebi.ac.uk](mailto:amyas@ebi.ac.uk)



## ATLAS data visualization tools are connected to Gramene, Ensembl Plants and Plant Reactome resources



## New and improved search capabilities

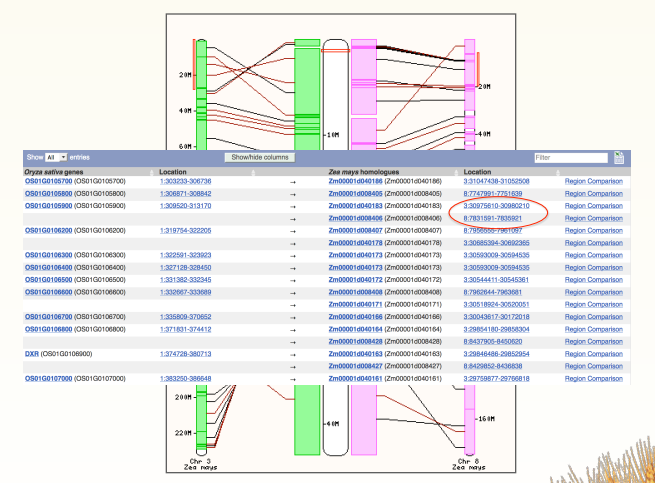
**Plant REACTOME**

Pathway-gene associations based on phylogeny.

Plant Reactome includes curated over 200 rice pathways and homology-based projections to 66 species, including maize. Shown above are pathway-gene associations based on phylogeny.

SNP diversity displayed in the context of functional protein domains. Population genotypes also available in graphical & tabular form

The multi-species view shows alignments the context of gene annotations across multiple species



Duplicate maize regions show co-synteny with rice