## Genomes & Diversity

Gramene currently hosts 67 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 functional analyses (e.g., InterProScan, GO and PO assignments). Evolutionary histories are provided by Compara phylogenetic gene trees and complemented by analyses of whole genome alignments. Gramene has also positioned itself as a resource for genome variation data in food crops including three Arabidopsis species, rice, maize, sorghum, wheat, and barley.

## Pathways & Networks

The Plant Reactome (<a href="http://plantreactome.gramene.org">http://plantreactome.gramene.org</a>) is a new platform for the comparative analysis of plant metabolic and regulatory networks, produced in collaboration with the Human Reactome Project. The October release of Plant Reactome includes 305 metabolic and signaling pathways for 97 plant species including maize, rice, three Arabidopsis species, grape, tomato, Brassicas, and other crucifers.

Gramene also produces and hosts or mirrors metabolic pathways databases and visualization tools in the BioCyc collection. These are now hosted at CyVerse (<a href="http://pathway.iplantcollaborative.org">http://pathway.iplantcollaborative.org</a>).

#### Outreach

Meet us at key scientific meetings including Plant
Biology, PAG, and Maize Genetics. 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 APIs

#### Cite Us

Tello-Ruiz *et al* (2018). Gramene 2018: unifying comparative genomics and pathway resources for plant research. NAR 46 (D1): D1181

Contact us

# feedback@gramene.org

Like our Facebook page!



Twitter @GrameneDatabase

## **Funding**

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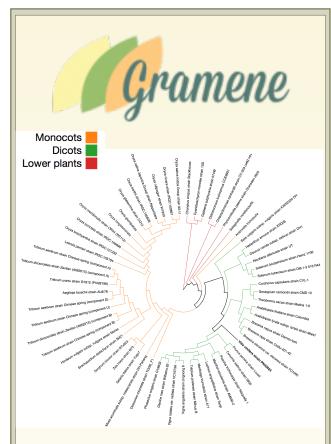
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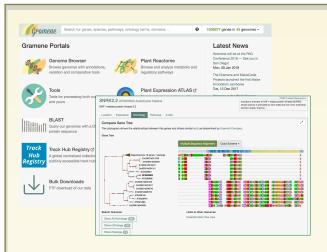


**New:** Coffee, hot pepper, artichoke, liverwort, tef & durum wheat. **Updated**: Chocolate tree.

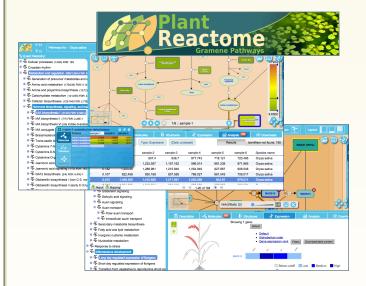
# Comparative Genomics Across the Plant Kingdom

# http://www.gramene.org

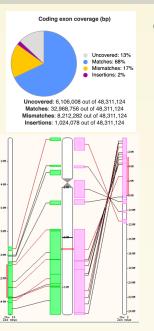
Gramene continues to grow! Now at 67 reference genomes and pathways for 97 species, including crops, model organisms and lower plants (build 62). Together these serve as a reference resource for comparative analyses, for the broad scientific community, in support of basic and translational research which impact societal interests in food security, energy production, and mitigating the effect of climate change.



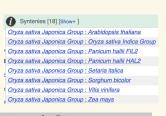
Robust search capabilities include new expression & pathways panels, pruning of gene trees to show selected species, highlighted protein domain structure, and zooming to nucleotide level.



Plant Reactome hosts curated rice pathways and homology-based projections to 97 species, including three species of *Arabidopsis*, grape, orange, strawberry, banana, tomato, potato, pepper, and coffee. Gene expression views from ATLAS available in both genome and pathway browsers.

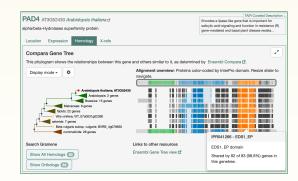


Cereals Comparative Genomics. Browse whole-genome alignments between O. sativa Japonica & 66 species (left): exon coverage for rice & grape, and 18 synteny maps (below).

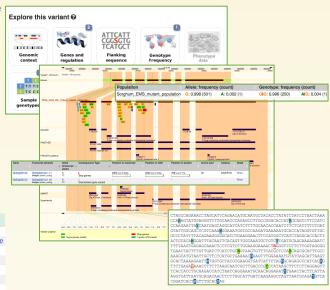


Gene-level co-synteny defines homeologs
between monocot reference genomes rice chr4

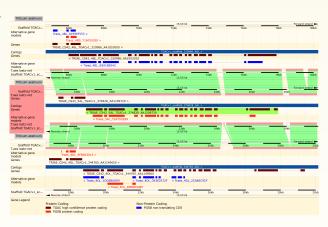
and maize.



Phylogenetic tree view for *Arabidopsis thaliana* PAD4, an alpha/beta-hydrolase using Gramene's integrated search. Pruning by species is enabled. Protein domains are corcoded, showing conservation throughout the eukaryotic lineage.



View, mine, and download SNP and structural diversity and their consequence on gene/transcript function. Featured above is EMS-induced variation in sorghum.



Wheat polyploid views and wholegenome alignments in the context of gene annotations across multiple species.