

## Genomes & Diversity

Gramene currently hosts 39 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 Arabidopsis, maize, Asian rice, African rice, sorghum, wheat, barley, grape, tomato, and Brachypodium.

## Pathways & Networks

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/>]. 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 November release of Plant Reactome included >240 reference rice metabolic and signaling pathways (based on RiceCyc v3.3), and homology-based projections for 62 plant species including Arabidopsis thaliana and maize.



## Outreach

Meet us at key scientific meetings including Plant and Animal Genomes, Maize Genetics Conference, ASPB's Plant Biology, and ICAR. 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 - custom data dumps
- Public MySQL & DAS servers
- RESTful API

## Cite Us

Tello-Ruiz *et al* (2016). Gramene 2016: comparative plant genomics and pathway resources. NAR gkv1179

## Contact us

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

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## Funding

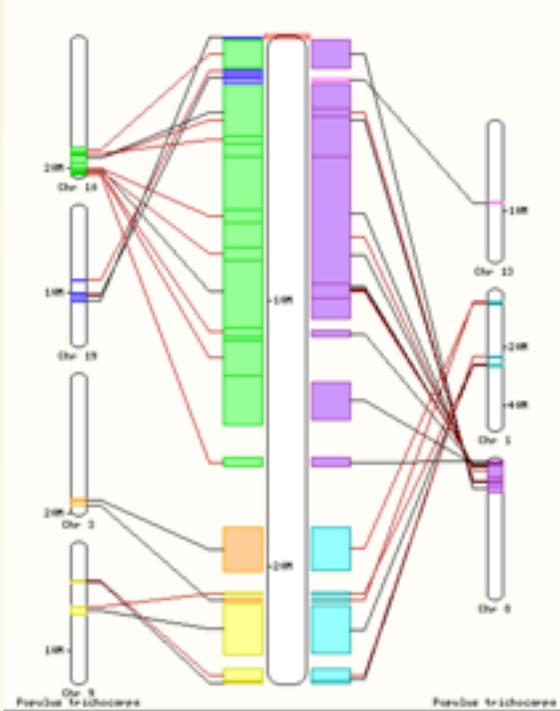
Current work is being supported by the NSF Plant Genome Research Resource grant award #1127112 and the USDA-ARS #1907-21000-030-00D.



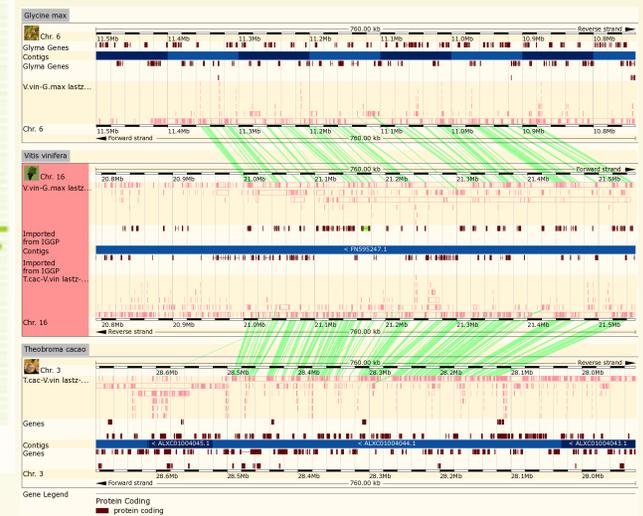
Comparative genomics across the plant kingdom

<http://www.gramene.org>

Gramene continues to grow. Now at 39 reference genomes (11 with genetic variation), and pathways for 62 species (build 50), 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.



Phylogenetic tree for grape PNT1, a glycosyltransferase. Highlighted genes are associated with embryo development (GO: 0009790) showing conservation throughout the eukaryotic lineage



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

*Vitis vinifera* does not show whole-genome duplication since the Eudicot split, making it an excellent evolutionary reference for eudicots

New and improved search capabilities: [search.gramene.org](http://search.gramene.org) & [data.gramene.org](http://data.gramene.org)

SNP diversity displayed in genomic and regulatory (i.e., functional protein domains) context. Also provided are individual genotypes, population allele & genotype frequency, and when available, associated phenotypes



Plant Reactome includes curated rice pathways and homology-based projections to 62 species, including grape