

## Genomes & Diversity

As of September of 2014, Gramene hosts a total of 39 complete and 4 partial 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, rice, "African rice", sorghum, wheat, barley, grape, and *Brachypodium*.

## Pathways & Networks

Gramene produces and hosts or mirrors metabolic pathways databases and visualization tools in the BioCyc collection.

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 current release of Plant Reactome includes 218 reference rice metabolic and signaling pathways (based on RiceCyc v3.3), and homology-based projections for 17 plant species including *Arabidopsis thaliana* and maize.



## Outreach & Releases

Our release cycle has moved from two to five major releases per year, ensuring timely updates to data and software. We reach our users at key scientific meetings including *Plant and Animal Genomes*, *Maize Genetics Conference*, *ICAR* and *ASPB's Plant Biology*. Gramene also participates in several Research Coordination Networks to understand community needs and to establish and promote common data exchange formats.

## Web Services

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

## Cite Us

Monaco *et al* (2014). Gramene 2013: comparative plant genomics resources. *NAR* 42 (D1): D1193

## Contact us

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

Visit our  Facebook page!

## Funding

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

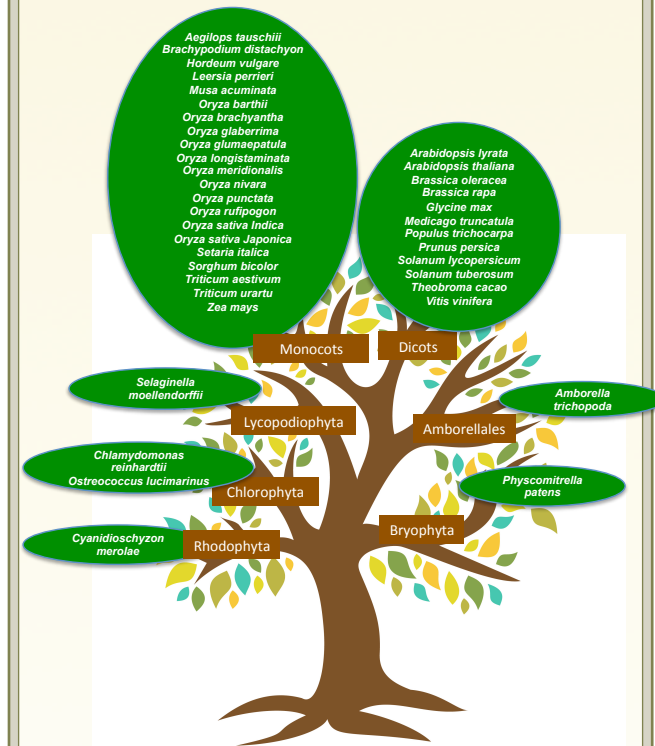
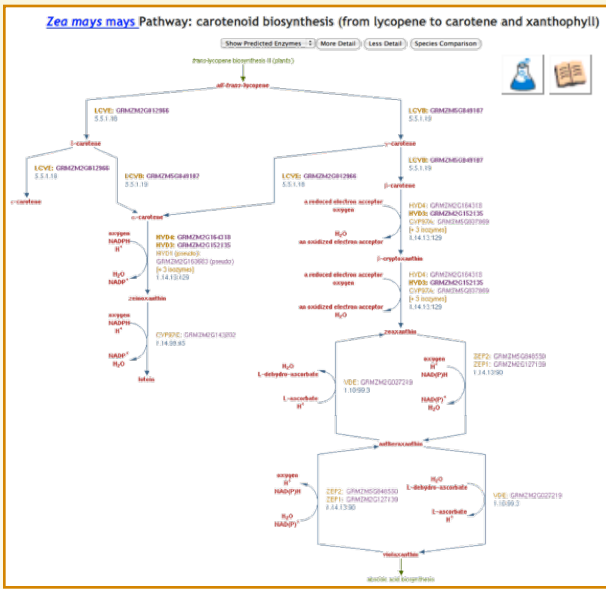


Image: Gramene 42 (September 2014). By Marcela K. Monaco

## Comparative genomics across the plant kingdom

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

Gramene continues to grow, now at 39 complete genomes (build 42), 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 has biological pathways for various plant species, including *Zea mays* (MaizeCyc), *Oryza sativa* (RiceCyc), and a reference plant pathway database (PlantCyc)

plantreactome.gramene.org

Home & Search

Switch Species: *Oryza sativa*

Pathways:
 

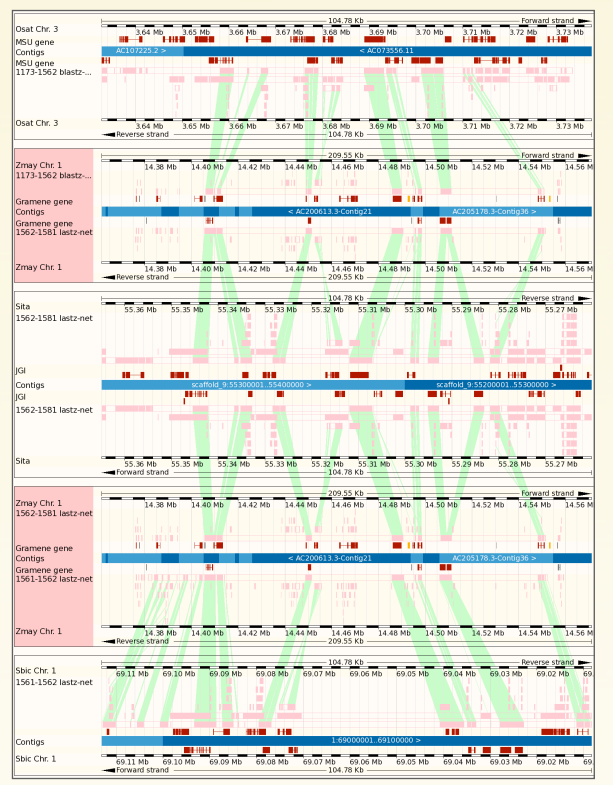
- Aegilops tauschii
- Arabidopsis thaliana
- Brachypodium distachyon
- Brassica rapa
- Cycine max
- Fordium vulgare
- Medicago truncatula
- Musa acuminata
- Oryza sativa**
- Populus trichocarpa
- Pinus persica
- Sesuvia portulacastrum
- Solanum tuberosum
- Sorghum bicolor
- Triticum aestivum
- Triticum urartu
- Vitis vinifera
- Zea mays

Equivalent events in other organisms: Ethylene biosynthesis and signaling (Arabidopsis thaliana), Ethylene biosynthesis and signaling (Zea mays)

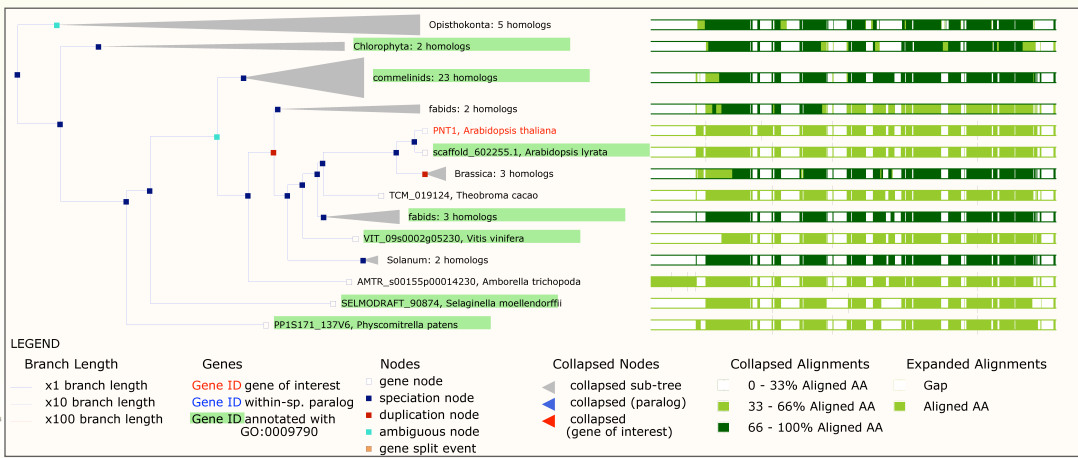
Download pathway in one of the formats:
 

- Download options:
  - PlantCyc (28 metabolites)
  - KEGG (1 external reference)
  - EC2 (1 external reference)
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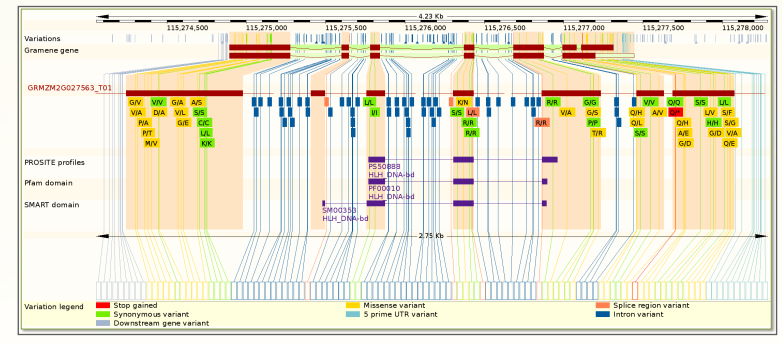
The current version of the Plant Reactome includes 218 curated rice pathways and homology-based projections for 17 plant species



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



Phylogenetic tree for *Arabidopsis* gene PNT1, a glycosyltransferase, associated with embryo development (GO:0009790), showing conservation throughout the eukaryotic lineage



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