

## Genomes & Diversity

As of January of 2014, Gramene hosts a total of 28 complete and 10 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*, rice & "African rice", barley, maize, sorghum, wheat, grape, and *Brachypodium*.

## Pathways & Networks

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

We recently introduced the Plant Reactome [<http://plantreactome.oicr.on.ca>], 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 a beta version of the rice pathways database based on RiceCyc v3.3. We plan to include *Arabidopsis* pathways later this year, and eventually projections to maize and other plant species.



## 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

[www.gramene.org/contact](http://www.gramene.org/contact)

Visit our  Facebook page!

## Funding

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

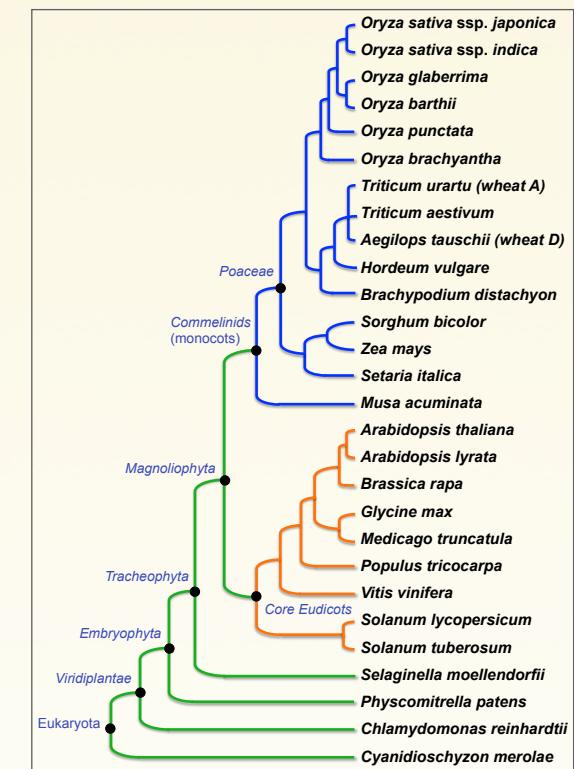
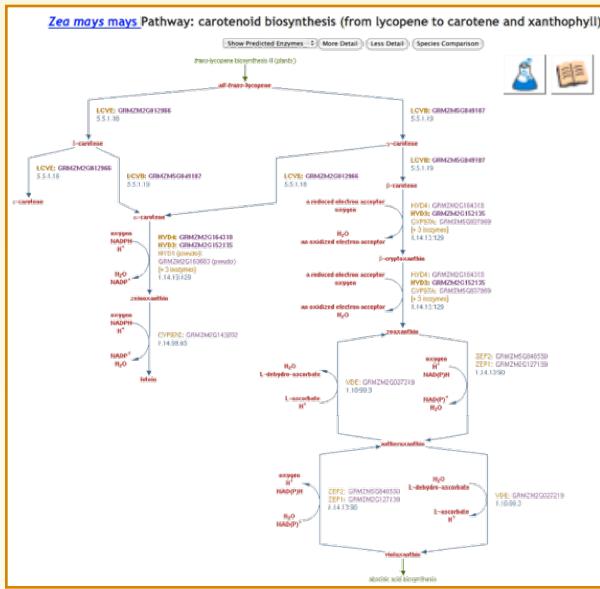


Image: Gramene 40 (Jan 2014). By J Stein

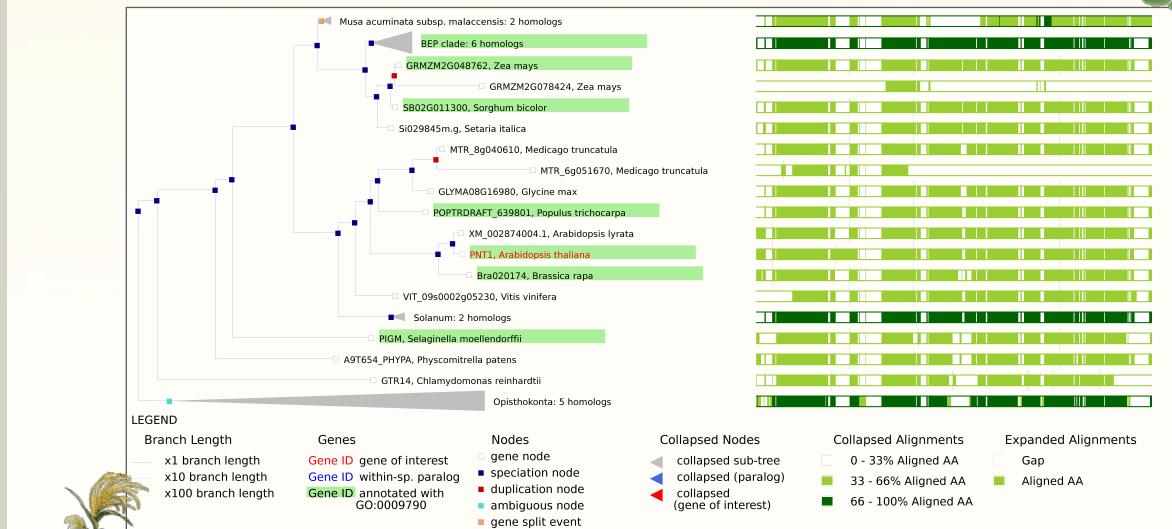
## Comparative genomics across the plant kingdom

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

Gramene continues to grow, now at 28 complete genomes (build 40), 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)



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

**About Plant Reactome**

Plant Reactome (now available in beta version) is a freely accessible plant pathway database which hosts plant metabolic and regulatory pathways. Plant Reactome pathways are derived from curated literature, pathways and reactions reported in the published literature or derived by ontology-based computational projections from curated pathways in the Model Plant Metabolic Network and Gramene Reactome databases. Pathways, reactions and gene entries in Plant Reactome are cross-referenced to many bioinformatics databases...

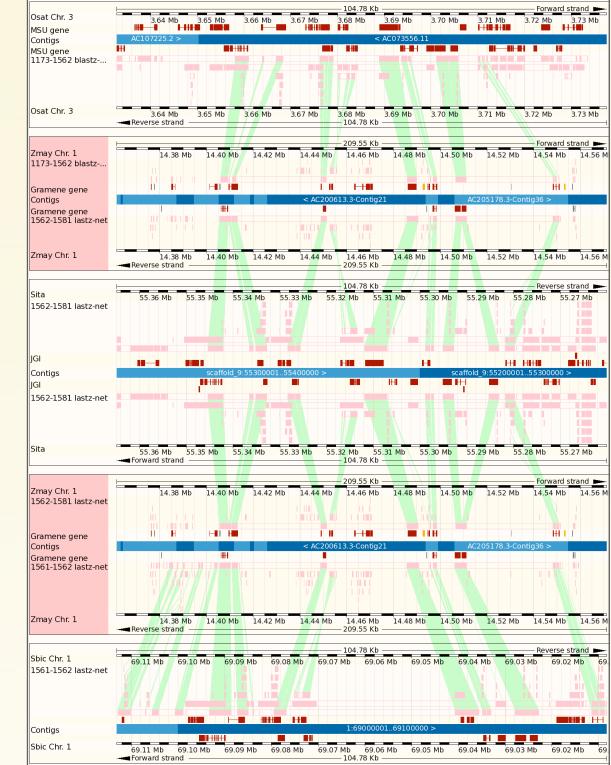
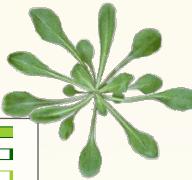
**Featured pathway: Calvin cycle**

Click image to see pathway

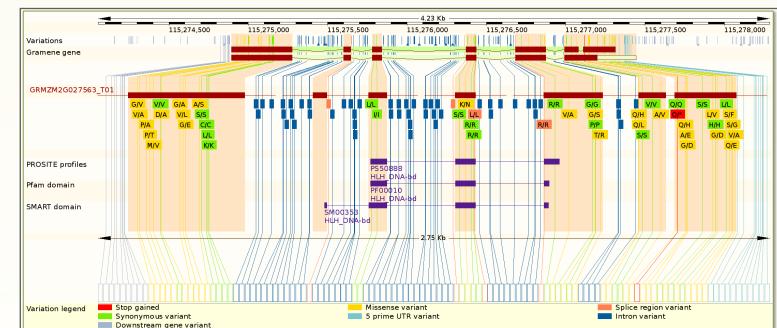
**News and Notes**

- 21 new rice pathways
- Gramene database build 37b released
- Introductory Video Tutorial
- Plant Reactome presented at the twenty-first Plant and Animal Genome Meeting
- Useful Links:
- Gramene Plant Pathway Database [View]
- KEGG Pathway database [View]
- WikiPathways: Plants Portal [View]
- MetaCyc [View]
- Plant Metabolism Network [View]
- Reactome [View]

The beta version of the Plant Reactome includes 129 curated rice pathways (Source: RiceCyc v 3.3)



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



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

