Gramene: A Resource For Comparative Genomics in Plants

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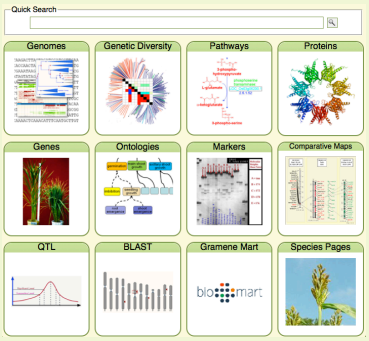
Gramene is used by plant biologists to conduct basic and applied research in genomics. Its power comes from the integration of functional, genetic & comparative information.

Gramene Provides Multiple Entry Points into Genomic Data



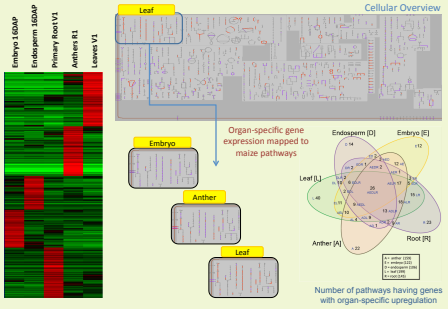
Genome Browsers for 15 Species

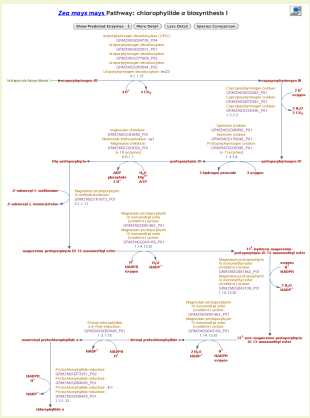
Maize, sorghum, domesticated and wild rice, *Brachypodium* and *Physcomitrella*. Eudicots *Arabidopsis thaliana*, *A. lyrata*, soybean, poplar, and grape. Algae, moss and spikemoss.

The MaizeCyc Pathway Database

In collaboration with MaizeGDB

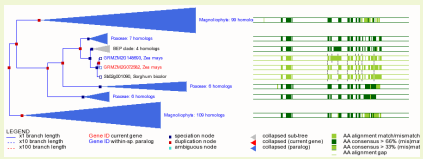
Pathway visualizations rendered by uploading data from the maize developmental genome-wide expression atlas by **Sekhon *et al* (2011)**, The Plant Journal 66, 553–563.





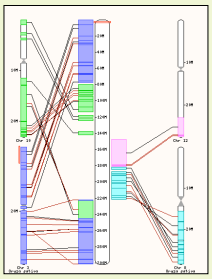
Phylogenomics

Ensembl Compara GeneTrees

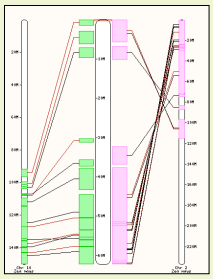


Automated ortholog and paralog calls made by reconciliation of gene trees with species tree. Orthologs used to detect synteny between genomes.

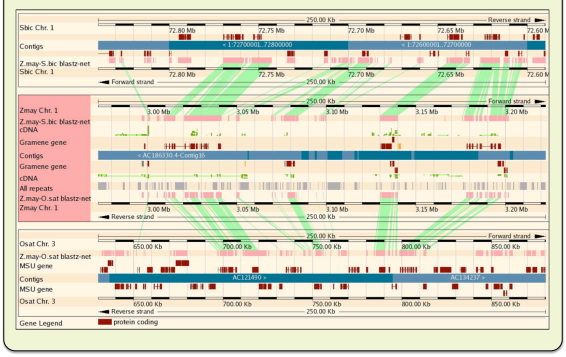
Maize vs Rice
Find orthologous regions in other genomes



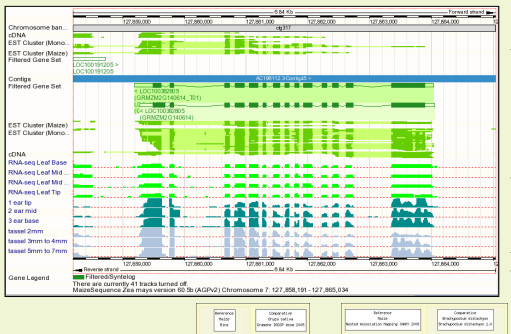
Maize *vs* Sorghum
Find homeologous duplicated regions in maize



Whole Genome Alignments Displayed in Multi-species View

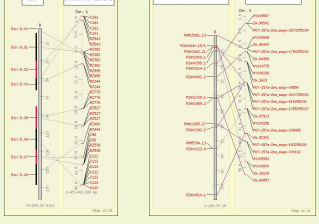


RNA-seq data sets in their genomic context

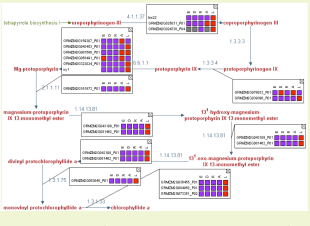


Comparative Map Viewer (CMap)

Gramene comparative map viewer (CMap) holds 21 maize maps users can compare to 200 other genetic, QTL, physical, & sequence maps from 32 species



Candidate-gene expression quantification available on *desktop mode*



Metabolic pathways annotated for 10 plant genomes and one plant reference database allow comparative candidate-gene and genome-wide expression analyses

Selected Publications

Youens-Clark K, et al. (2010) Gramene database in 2010: updates and extensions. *Nucleic Acids Research*, 39 (suppl 1): D1085-D1094.
Jaiswal P, et al. (2006) Gramene: a bird's eye view of cereal genomes. *Nucleic Acids Research*.
Yamazaki Y, et al. (2005) *Plant Cell Physiol* 46: 63-68.
Ware D, et al. (2002) Gramene: a resource for comparative grass genomics. *Nucleic Research*, 30, 103-105.
Ware DH, et al. (2002) Gramene, a tool for grass genomics. *Plant Physiol* 130: 1606-1613.
Jaiswal P, et al. (2002) Gramene: development and integration of trait and gene ontologies for rice. *Comparative and Functional Genomics* 3: 132-136.

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