Exploring the fluid gene space of plants using the Gramene comparative genomic and pathway resource

Gramene
www.gramene.org

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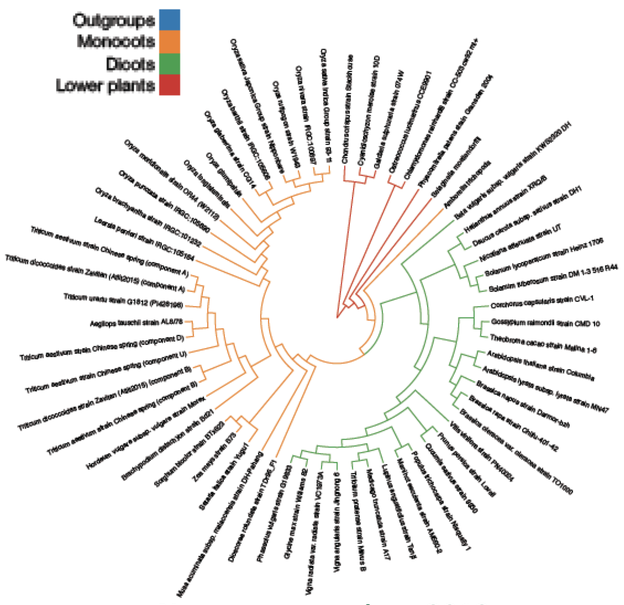
Produced in collaboration with

EnsemblPlants · Expression Atlas · Plant Reactome Gramene Pathways

A BOUNTY OF GENOMES

67 Plant Genomes in Build 62

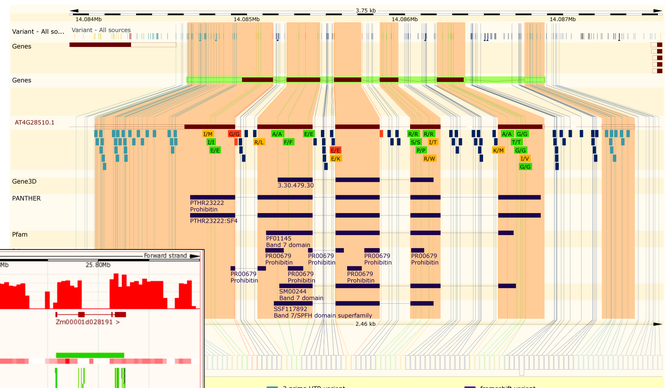


New genomes since 2019:

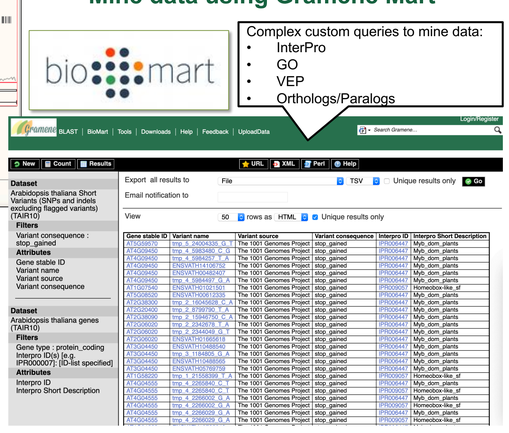
- Robusta coffee
- Hot pepper
- Global artichoke
- African tef
- Durum wheat
- Common liverwort
- Kiwifruit
- *Panicum hallii* FIL2 & HAL2

TO BROWSE / DISCOVER

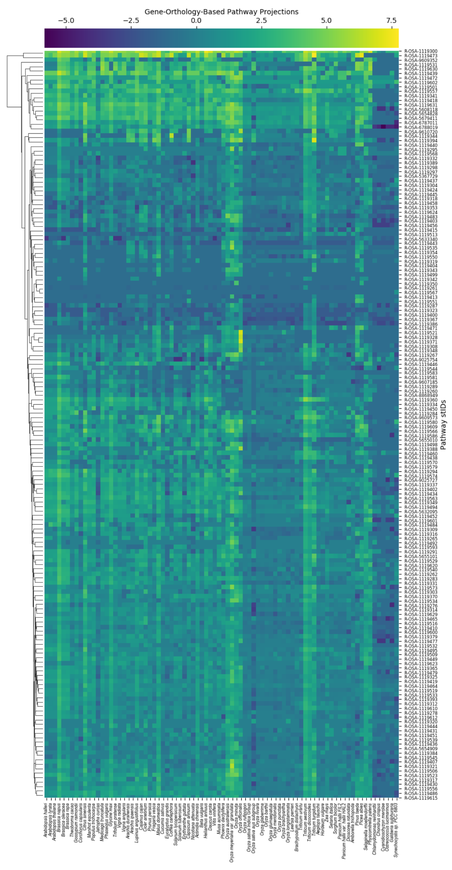
- Community annotation
- InterPro/GO/dbXref
- Variation Effect Prediction
- EST/RNA-seq
- Epigenetic marks
- Repeats & TE



Mine data using Gramene Mart

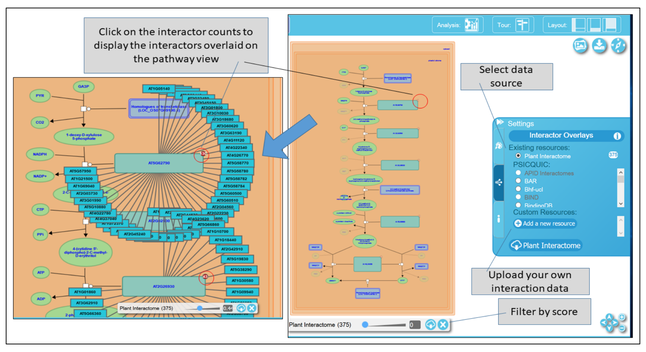


PATHWAYS & GENE EXPRESSION

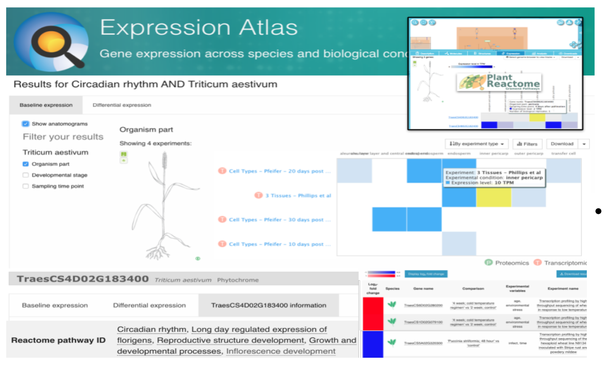


Gene orthology-based pathway projections for plant species in the Plant Reactome

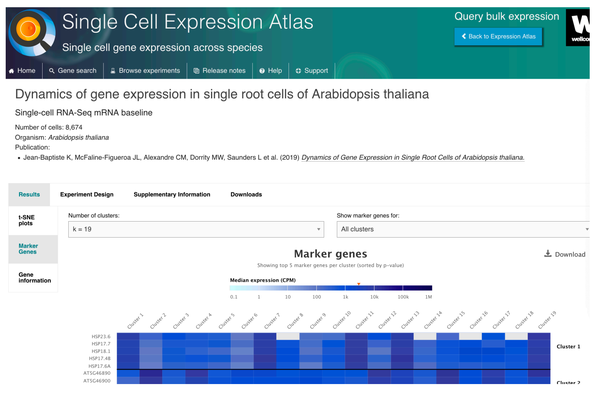
https://plantreactome.gramene.org

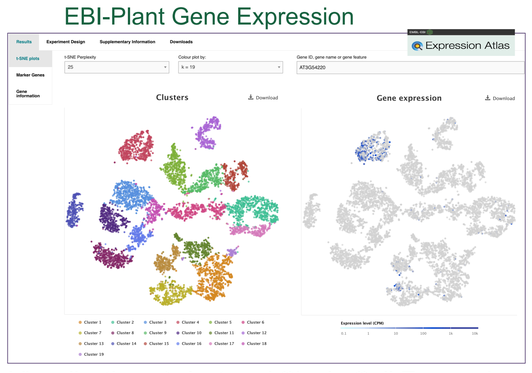


Plant Reactome: Gene-gene interaction overlay analysis for *Arabidopsis thaliana*



Plant Reactome data is accessible via the EBI-Plant Gene Expression



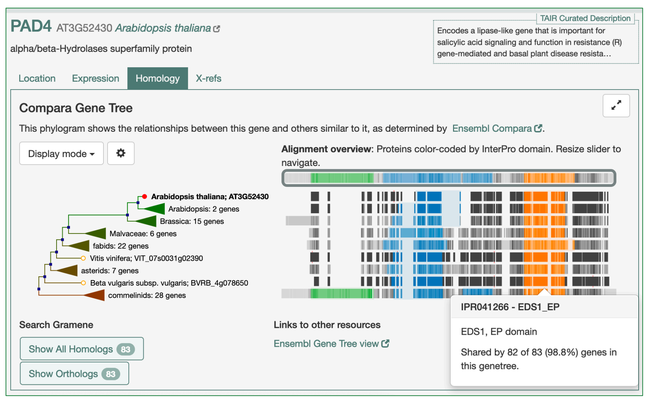


Visualization of clustered Single Cell Expression data for *Arabidopsis thaliana* in EBI Atlas

- Plant Reactome uses *Oryza sativa* (rice) as a reference species for manual curation of pathways and extends pathway knowledge to another 97 plant species via gene-orthology projection.
- We currently host 306 rice pathways, including metabolic and transport pathways, transcriptional networks, and plant developmental and signaling mechanisms.
- Users can upload and analyze their gene-expression/ gene-gene interaction data

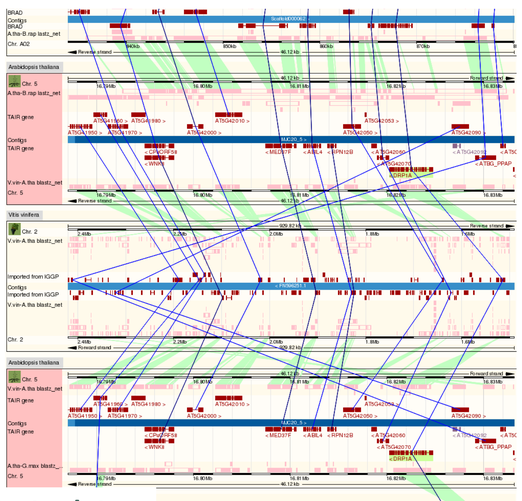
COMPARE / VISUALIZE / ANALYZE

Phylogenetic Gene Trees

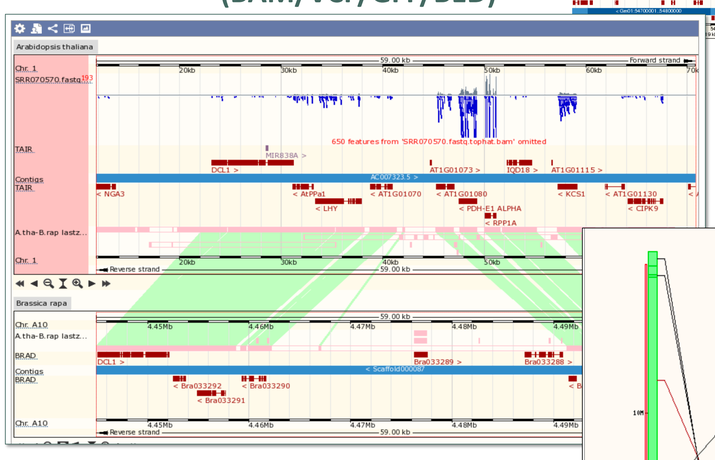


- Infers orthologs & paralogs
- Taxonomic dating
- Annotation overlays
- Export Newick & MSA
- dN, dS, dN/dS

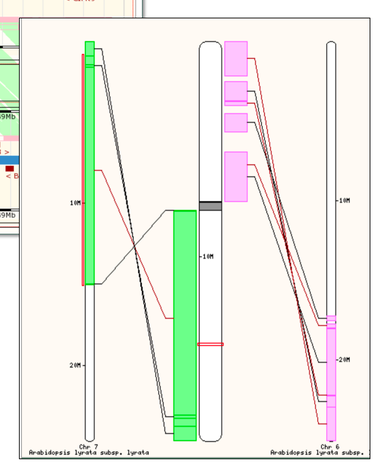
Multi-species view of Whole Genome Alignments



Upload & view private data (BAM/VCF/GFF/BED)



Synteny Maps



- Browse across genomes
- Find homoeologs via co-synteny

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- Oryza: Courtesy of DBrar, IRRI, The Philippines
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