Metabolic Pathway Networks for Cereal Plants in The Gramene Database

Palitha Dharmawardhana[1], Liya Ren[2], Jim Thomason[2], Doreen Ware[2,3], Pankaj Jaiswal[1]

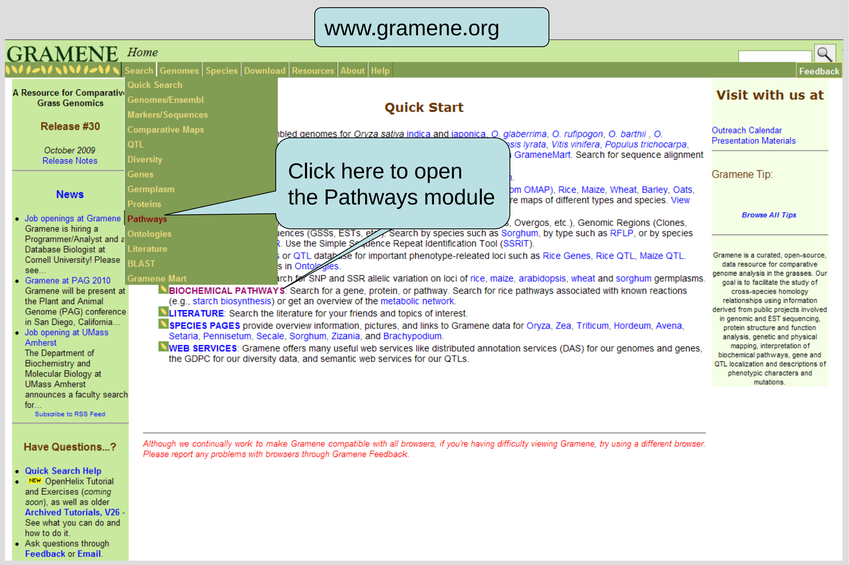
[1] Department of Botany and Plant Pathology, 3082 Cordley Hall, Oregon State University, Corvallis, OR, 97331-2902, USA; [2]Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, 11724 USA; [3]USDA-ARS NAA Plant, Soil & Nutrition Laboratory Research Unit, Cornell University, Ithaca, NY, 14853, USA,

Introduction

The Gramene database (www.gramene.org), a comprehensive comparative plant genomics platform develops and curates RiceCyc and SorghumCyc pathway databases for cereal plants. RiceCyc with 342 known and/or predicted metabolic pathways for Oryza sativa japonica cv. Nipponbare has undergone several rounds of data quality enhancement and manual curation whereas SorghumCyc with 328 pathways for Sorghum bicolor Strain BTX623 is in its initial computational build. The plant metabolic pathways module within Gramene mirrors several other species specific pathways such as Arabidopsis, Medicago, Tomato, Potato and Coffee as well as MetaCyc reference database allowing the user to extract interspecific comparison between pathways and associated genes. The user is also able to download lists of genes associated with each pathway. The database comes with the Omics Viewer data visualization tool. This tool allows users to overlay microarray, transcriptomic, proteomic, and metabolomic datasets with expressed values on pathway maps. The overlaid views allow to visualize the pathways and reactions that are up/down regulated in an experiment or a set of experiments. We have also built an Omics Validator tool to validate user provided expression data files by mapping probe IDs from various microarray platforms to their respective gene IDs.

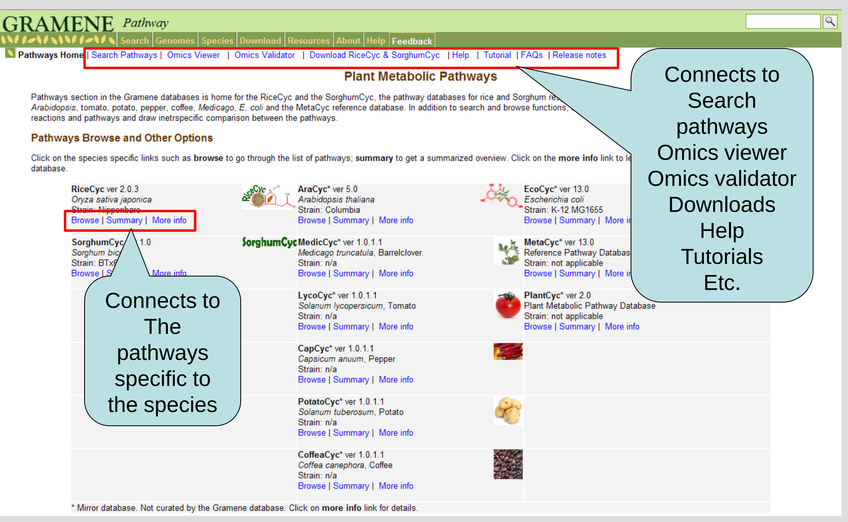
Gramene Home Page

www.gramene.org

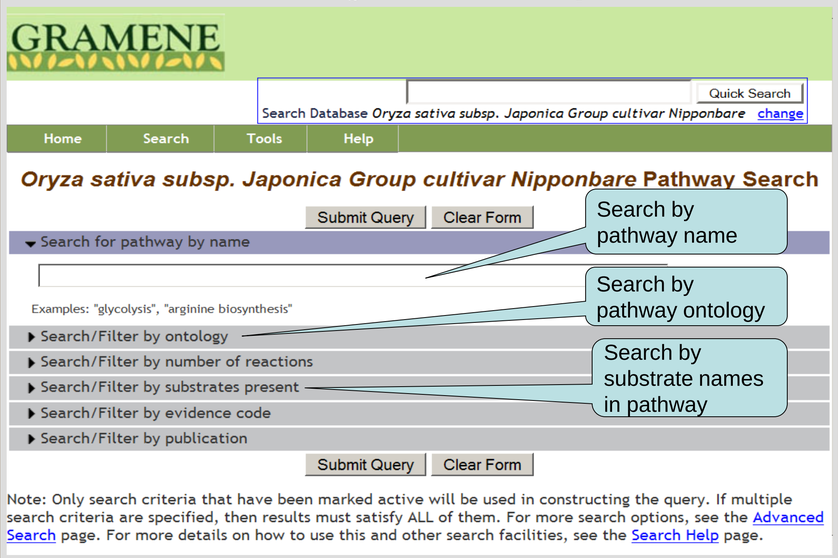


Pathways Home Page

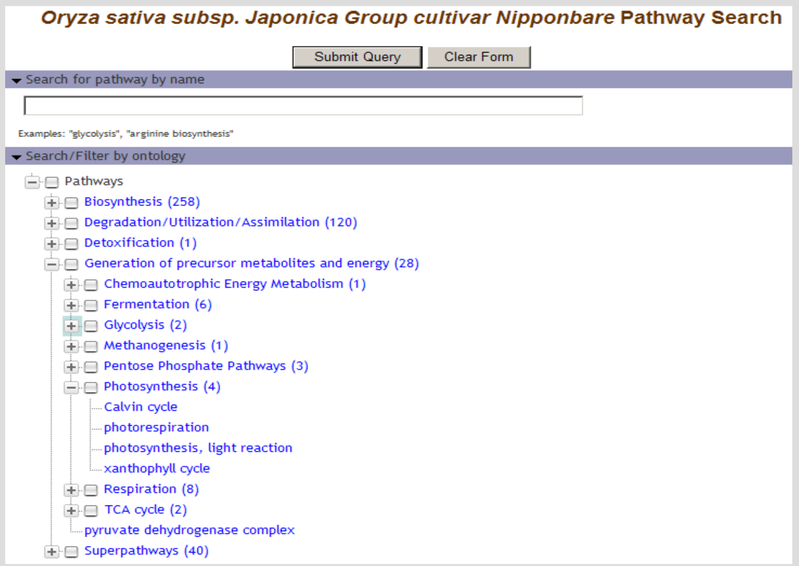
Pathway Page Navigation Options



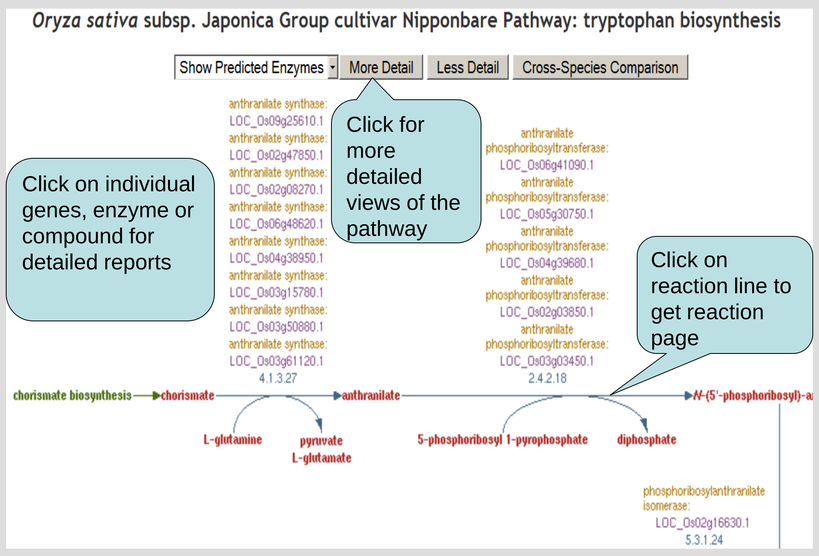
Pathway Search Options



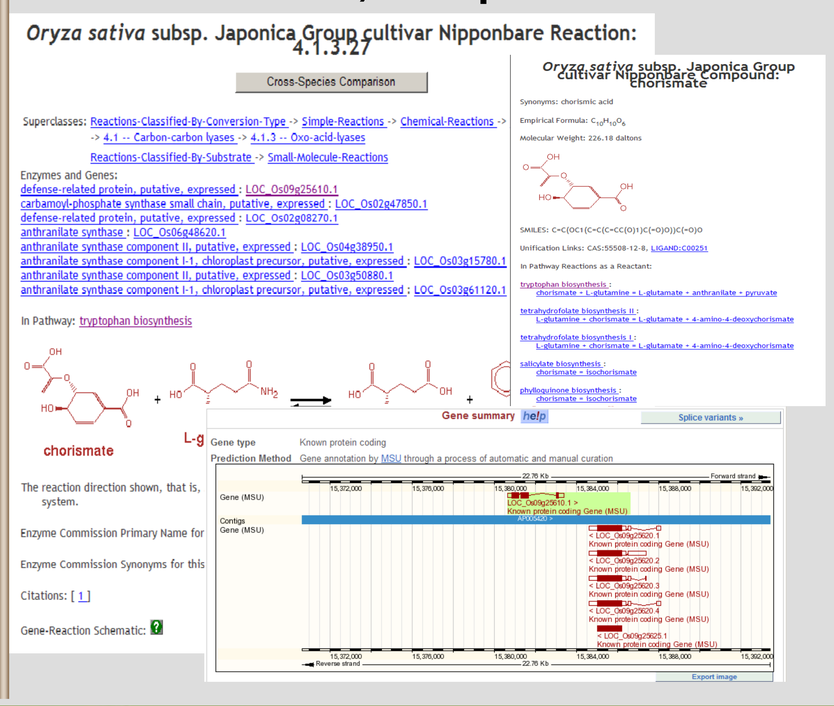
Browse by Pathway Ontologies



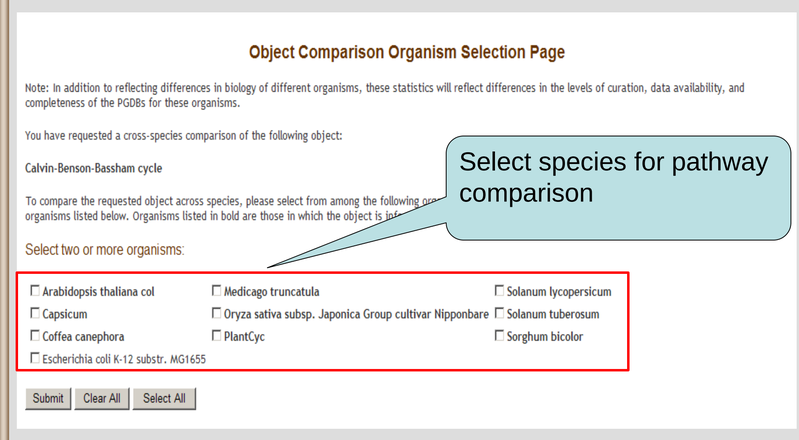
Pathway Information



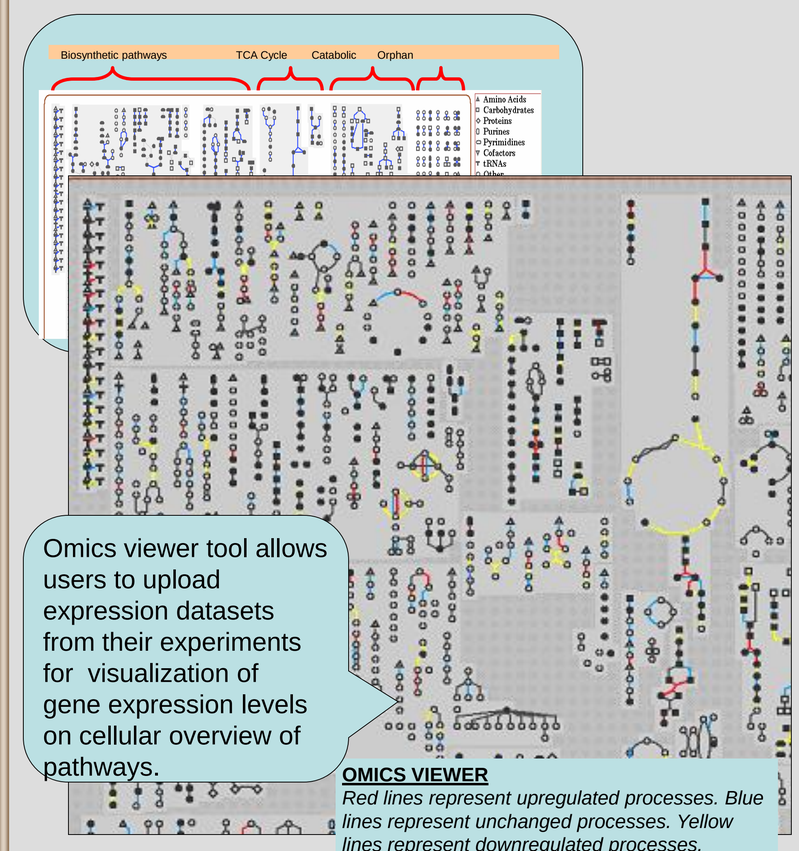
Information on: Gene, Protein, Reaction, Compound etc.



Comparative Analysis



Cellular overview and Omics Viewer



Ongoing Pathway Curation

More About Gramene

- Gramene is a collaboration between CSHL, Cornell University and Oregon State University supported by National Science Foundation grant No. 0703908
- Gramene is accessed by researchers in over 140 countries around the world. Online tutorials and help documents provide users with an overview of how to conduct a search within each module. Workshops are held frequently to train users in using the website.
- Gramene is a work in progress, holding a biannual release schedule with both updated data and software tools in each release.
- Gramene will be adding pathway databases for Maize and *Brachipodium* in the near future
- For up to date information, please visit Gramene website (www.gramene.org) or send feedback to gramene@gramene.org
- Please visit Gramene related posters P843 and P835