

Legume Information Resources

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Various organizations provide legume information resources as subsets within larger information resources. For example, TIGR provides annotated EST information on three legume species within their larger Gene Indices information resource. In an effort to organize dozens of legume information resources we have summarized them as multi-species information resources and species-specific information resources.

The multi-species information resources are presented in the following format:

Name of the information resource (URL),

- Species,
- Types of Information and
- Services

Multi-Species Information Resources

A note of caution: The summary should not be interpreted as a complete matrix. For example, the Legume Information System has data and information from a dozen species, but for most species the information consists of only linkage maps, QTL and mapped genetic markers. Only a few species, e.g., Medicago and Soybean have all data and information types in the LIS.

Legumes.org (<http://www.legumes.org/>)

- portal to other legume resources

Legume Information System (<http://comparative-legumes.org/>)

- Medicago, Lotus, Soybean, Peanut, Lentil, Alfalfa, Pea, Phaseolus beans, Chickpea, Cowpea, [Arabidopsis]
- Linkage maps, QTL, Physical maps, ESTs, EST clusters, Consensus EST contigs, Assembled Genomic Contigs, Annotations (GO, Interpro, Blocks+), Pathways, Whole Plant Phenotypes
- BLAST, motif analyses, ESTs by library, Placement of EST Consensus contigs on Assembled Genomic Contigs, Gene Predictions, Comparative views of functional annotations, Comparative Sequence Viewer, Comparative linkage and physical maps, portal to most legume resources

NCBI (<http://www.ncbi.nih.gov/>)

- All species with sequence data
- Primarily data. EST, GSS and Trace data (where available); genomic clone and WGS sequence assemblies; STS and other sequence-based marker data; protein sequences (predicted and experimental), protein structure and domains; Unigene

clusters for highly-represented species; limited SAGE expression data (only Medicago); limited genetic map data.(only Soybean)

- Wide variety of BLAST-based services; ePCR; similarity-based annotation of Unigene sequences, per-library analysis and Digital Differential Display of Unigene representation; mRNA-to-genomic alignment (Spidey); integrated map viewer; precomputed sequence similarities; third-party annotation

PlantGDB (<http://www.plantgdb.org/>)

- Medicago, Soybean, Alfalfa, Pea, Peanut, Phaseolus beans, Lupine, [Arabidopsis and many other plant species]
- Assembled EST contigs, Genomic Contigs
- BLAST, Placement of EST Consensus contigs on Assembled Genomic Contigs and GeneSeqer gene prediction

The TIGR Plant Repeat Databases

(<http://www.tigr.org/tdb/e2k1/plant.repeats/index.shtml>)

- Medicago, Lotus, Soybean, [Arabidopsis and other plant species]
- Compilation and identification of repeat sequences in Medicago

TIGR Gene Indices (<http://www.tigr.org/tdb/tgi/>)

- Medicago, Lotus, Soybean, [Arabidopsis and many more plant species]
- ESTs, EST clusters, Consensus EST contigs (TC), Assembled Genomic Contigs, Annotation of TC (TOGs-tentative ortholog assignment, GO annotations, tentative annotation) Pathways, Whole Plant Phenotypes
- BLAST, ESTs by library, Placement of EST Consensus contigs on Assembled Genomic Contigs and in KEGG Pathway maps via putative EC functions, Identification of ORFs, Identification of unique oligos, identification of alternative splice sites.

openSputnik comparative genomics platform (<http://sputnik.btk.fi/ests>)

- Medicago, Lotus, Soybean, Phaseolus coccineus (other plant species)
- ESTs, clusters and consensus sequences
- EST distribution reports by library property and functional assignment; consensus and predicted peptide functional annotation; SNP mining; BLAST services

The species-specific information resources are presented in the following format:

Name of the information resource (URL),

- Types of Information and
- Services

Alfalfa

AlfaGenes (<http://ukcrop.net/perl/ace/search/AlfaGenes>)

- genetic maps, molecular markers, ESTs, pathways, molecular markers, enzymes, metabolites, phenotypes, germplasm

Chickpea and Lentil

CoolGenes (<http://ukcrop.net/perl/ace/search/CoolGenes>)

- genetic maps data for Chickpea and Lentil

Lotus

Kazusa *Lotus japonicus* (<http://www.kazusa.or.jp/lotus/>)

- Linkage maps, Annotated clustered ESTs, Annotated genomic clones, seed stocks, RI lines
- BLAST against TAC/BAC end sequences

The *Lotus japonicus* Website (<http://www.lotusjaponicus.org/>)

- Mutant stocks,
- Tilling service

EU Project LOTUS (<http://www.mpimp-golm.mpg.de/lotus/>)

- EU Research Project overview

The Lotus Newsletter Home Page (<http://dmz.inia.org.uy/sitios/lnl/>)

The Lotus Newsletter (volumes 23-32 1991-2001) (<http://www.psu.missouri.edu/lnl/>)

Medicago

MENS - Medicago EST Navigation System (<http://medicago.toulouse.inra.fr/Mt/EST/>)

- Annotated and Assembled ESTs, cluster and library expression patterns, maps to KEGG pathways
- BLAST and pattern scan services

MtDB (<http://www.medicago.org/>)

- EST clusters, linkage maps, BAC overlaps, BAC registry, genomic clone marker associations, annotated repetitive elements
- ORF prediction, cluster comparison to TIGR TCs, BLAST services, alignment against unigenes from various species, genome-to-genome comparisons against Arabidopsis

Sequencing *Medicago truncatula* at the University of Oklahoma

(<http://www.genome.ou.edu/medicago.html>)

- Annotated BACs from WGS assembly, BAC Clone Descriptions
- BLAST

Medicago Genome Project at UC Davis (<http://mtgenome.ucdavis.edu/>)

- Physical map and linkage map, BAC end sequences, SSR, molecular markers
- Contig viewer, BLAST

TIGR *Medicago truncatula* Database (<http://www.tigr.org/tdb/e2k1/mta1/>)

- Annotated and Assembled genomic contigs,
- BLAST, Gene prediction, Assigned gene ontologies

Medicago genome database UrMeLDB

(<http://mips.gsf.de/proj/plant/jsf/medi/index.jsp>)

- Annotated and Assembled genomic contigs,

***Medicago truncatula* functional genomics and bioinformatics**

(<http://medicago.vbi.vt.edu/>)

- Genes, Proteins, Metabolites

The Samuel Roberts Noble Foundation 2D-PAGE Protein Database

(<http://www.noble.org/2DPAGE/Search.asp>)

- 2D-PAGE gel archives

- Browse and search based on multiple criteria including species, genotype/treatment, tissue source, subcellular fraction and date of analysis

Australian National University - 2D-PAGE Database (<http://semele.anu.edu.au/>)

- 2D-PAGE gel images
- Browse and search for 2D images from Medicago

Mt PROTEOMICS - *Medicago truncatula* Proteomics site

(<http://www.mtproteomics.fr.st/>)

- Proteome analysis of *Medicago truncatula* roots in interaction either with the mycorrhizal fungus *Glomus mosseae* or the bacterium *Sinorhizobium meliloti*;
- online images of gel results

Phaseolus Beans

Phaseomics: Phaseolus genome initiative (<http://www.phaseolus.net/>)

- Overview of initiative
- Portal to bean related resources

BeanGenes (<http://beangenes.cws.ndsu.nodak.edu/>)

- genetic maps, molecular markers, gene classification, phenotypes, pathogens, germplasm

Soybean

Soybase (<http://soybase.org/>)

- genetic and QTL maps, molecular markers, ESTs, pathways, germplasm, phenotypes
- soybean bulletin boards

SIU Soybean Genome (<http://soybeangenome.siu.edu/>)

- Soybean Forrest Physical Map; FPC contigs anchored to genetic map along with QTL, EST and marker data

Soybean Genomics Initiative (<http://soybean.ccgb.umn.edu/>)

- cDNA and BAC library info, SAGE tag data, EST clusters,
- BLAST

A Functional Genomics Program for Soybean

(<http://www.cbc.umn.edu/ResearchProjects/Soybean/Functional.html>)

- ESTs

NSF Soybean Functional Genomics Project

(<http://soybeangenomics.crops.ci.uiuc.edu/>)

- Microarray project overview and results

Soybean Genomics and Microarray Database

(<http://psi081.ba.ars.usda.gov/SGMD/Default.htm>)

- EST and analyzed microarray data

The Public Soybean EST Project at WUSTL

(<http://genome.wustl.edu/est/index.php?soybean=1>)

- EST and Trace Data

TAMU Soybean Genome

(http://hbz7.tamu.edu/homelinks/phymap/soybean/soy_home.htm)

- BAC/BIBAC-based physical map of the soybean genome from five complementary BAC and BIBAC libraries of 3Glycine max cvs.

Symbionts

Molecular Basics of Mycorrhizal Symbioses (<http://www.genetik.uni-bielefeld.de/MolMyk/>)

- Project status, macro/microarrays, Annotated EST clusters

RhizoBase- the Genome database for Rhizobia (<http://www.kazusa.or.jp/rhizobase/>)

- Genes, maps, Annotated genome, Annotated KEGG pathways,
- Gene finding (Framed), BLAST, PatScan

pEXO megaplasmid (<http://life.biology.mcmaster.ca/brian/Rhizobium/pEXO.html>)

- Physical map, Sequence and annotation of Rhizobium meliloti

R. etli DataBase (<http://www.cifn.unam.mx/retlidb/>)

- regulatory signals of transcription initiation, promoters, regulatory binding sites and terminators, as well as information on genes clustered in operons.

Other web-enabled Legume Information Resources

Noble - Center for Medicago Genomics

Medicago Genomics Group - Wageningen University Plant Sciences

Integrated structural, functional and comparative genomics of the model legume

Medicago truncatula

Medicago truncatula Gene Nomenclature

Medicago Genetics Group at the Institute of Genetics Biological Research Center,

SoyCAP: Soybean Coordinated Agricultural Project

Soybean Genomics and Improvement Laboratory (SGIL),

National Center for Soybean Biotechnology

Soybean Genetics Newsletter: Home Page

Agricultural Network Information Center (AgNic) Soybean Information

Soybean Genetics - Keim genetics lab

Hymowitz's Soybean Genetics Lab University of Illinois at Urbana-Champaign

North Central Soybean Research Program

UW Soybean Research and Extension

Soybean Sudden Death Syndrome and Cyst Nematode Research

Agriculture and Agri-Food Canada Research Program - Soybean Genomics

Agricultural Network Information Center (AgNic) Soybean Information

United Soybean Board

Soybean/Maize Germplasm, Pathology, and Genetics Research Unit

NSRL : National Soybean Research Laboratory

The Shoemaker Lab

International Consortium to Sequence the Soybean Genome

Comparative Analysis of Legume Genome Evolution

USDA ARS Rhizobium Germplasm Resource Center

