

Database Resources for Small **Fruit** Research

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*WA Small Fruit Washington Small Fruit Conference
Dec 4-6, 2019, Lynden, WA*



Vac**CAP**



Click on map to view US Public Plant Breeding Programs
[Add a Crop Breeding Program](#)

News and Events

- [WA Small Fruit Conference Dec 2019 - 12/04/19](#)
- [BIMS training at RosBREED participants meeting - 03/23/19](#)
- [BIMS Training at 2019 Cotton Beltwide Conference - 12/15/18](#)
- [NRSP10 Workshop at PAG 2019 - 09/30/18](#)

[more](#)

Databases



citrus



pulse crops



vaccinium



cotton



rosaceae

Tools and Resources

GenSAS



AgBioData

Tripal



DBTREES

Developed by Mainlab Bioinformatics at Washington State University | © 2014-2019
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MAINLAB
 BIOINFORMATICS

NIFA Hatch Funded: 2014-2024 (\$4.5 million)

USDA SCRI and NSF Funding: 2009-2023 (\$5 million)

Small Fruit Crop Databases

NRSP10 databases for small fruit research

The screenshot shows the GDR website with a green header. The main content area features a large box with the text "2.1 m pages accessed over 300,000 visits (2014-19)". Below this, there are two sections: "Major Genera Quick Start" and "Tools Quick Start". The "Major Genera Quick Start" section includes icons and names for Fragaria, Malus, Prunus, Pyrus, Rosa, and Rubus. The "Tools Quick Start" section includes links for Genomics, Genetics, and Breeding.

GDR Species • Data • Search • Tools • General • Help • Community • Login

2.1 m pages accessed over
300,000 visits (2014-19)

Major Genera Quick Start

Tools Quick Start

Genomics Genetics Breeding

View Genomes Browse Maps Search Phenotype
Find Sequences Search Markers Search Genotype
Search Genes Find QTLs Search Haplotype
BLAST Sequences Compare Maps Decision Tools

Fragaria Malus Prunus Pyrus Rosa Rubus

- Fragaria: strawberry
 - Rubus: red raspberry, black raspberry and blackberry
- SCRI GDR & RosBREED (20 M)**

The screenshot shows the GDV website with a blue header. The main content area features a large box with the text "100,000 pages accessed over 17,500 visits (2014-19)". Below this, there are four sections: "Genomics", "Genetics", "Breeding", and "General". Each section includes links to various tools and data resources. The "Genomics" section includes links for Find Sequences, Search Genes, BLAST Sequences, and Transcript Data. The "Genetics" section includes links for Browse Maps, Search Markers, Find QTLs, and Map/Viewer Info. The "Breeding" section includes links for Manage Breeding, Manage Data, Analyze Data, and Decision Tool. The "General" section includes links for Submit Data, Download Data, Work in Progress, and Contact Us.

GDV Crop • Data • Search • Tools • General • Help • Login Search

100,000 pages accessed over
17,500 visits (2014-19)

Genomics Genetics Breeding General

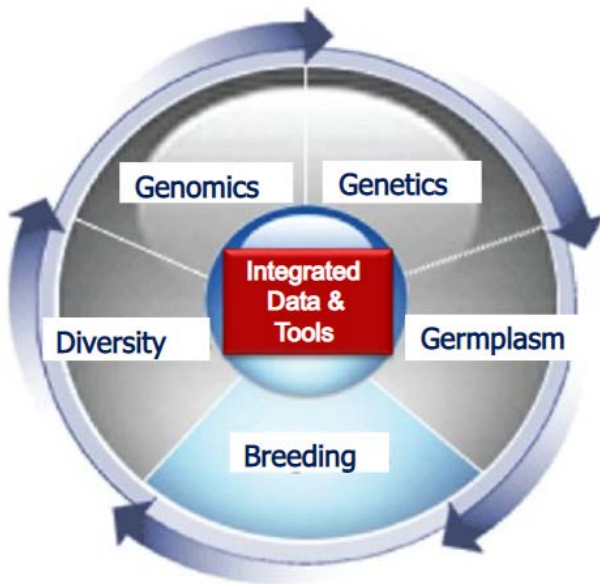
Find Sequences Browse Maps Manage Breeding Submit Data
Search Genes Search Markers Manage Data Download Data
BLAST Sequences Find QTLs Analyze Data Work in Progress
Transcript Data Map/Viewer Info Decision Tool Contact Us

blueberry cranberry bilberry lingonberry

- Blueberry and cranberry
- SCRI VacciniumCAP (6.5 M)**

Crop Community Databases

Recent advances in sequencing, genotyping, and phenotyping technologies have led to a paradigm shift in crop science research – “Big Data” driven



1. Collect, curate and distill data
2. Integrate data and tools
3. Facilitate research discovery
4. Facilitate translation and application in crop improvement
5. Build research communities

GDR Data

Data Type	Numbers by Year		
	2008	2013	2019
Genome Assembly	0	5	30
Gene	0	236,191	1,125,860
mRNA	0	0	1,164,245
Unigenes	90,337	200467	1,412,519
Reference transcriptome	0	0	1,065,226
Marker	1,700	2,229,311	3,421,788
Genetic map	37	84	338
QTL/MTL	27	1,247	3,951
Species	<100	516	1,967
Germplasm	0	8,613	14,452
Phenotype	0	578,568	878,426
Genotype	0	28,296	10,799,990
Publication	2447	5,182	7,902

Billions of data points condensed into re-useable, integrated data with added value

If you use GDR please cite: Jung, S. et al. (2019) [15 years of GDR: New data and functionality in the Genome Database for Rosaceae](#). Nucleic Acids Res. 47, D1137-D1145

GENOME DATABASE FOR ROSACEAE



Resources for Rosaceae Research Discovery and Crop Improvement

News and Events

- New Cyc available for apple, strawberry, peach, black raspberry (11/19)
- New QTL, marker and genetic map data (11/19)
- *Fragaria iinumae* Genome v1.0 available (11/19)
- *Pyrus betulifolia* Genome v1.0 available (9/19)

[more](#)

Major Genera Quick Start



Fragaria



Malus



Prunus



Pyrus



Rosa



Rubus

Tools Quick Start

Genomics

[View Genomes](#)
[Find Sequences](#)
[Search Genes](#)
[BLAST Sequences](#)

Genetics

[Browse Maps](#)
[Search Markers](#)
[Find QTLs](#)
[Compare Maps](#)

Breeding

[Search Phenotype](#)
[Search Genotype](#)
[Search Haplotype](#)
[Decision Tools](#)

Fragaria all species

Data

- [Overview](#)
- [Description](#)
- [Genes](#)
- [Genetic Maps](#)
- [Genomes](#)
- [Links](#)
- [Markers](#)
- [Publications](#)
- [Sequences](#)
- [SNP array](#)
- [Trait Loci](#)
- [Transcripts](#)

Tools

- [BLAST](#)
- [GBrowse_Syn](#)
- [JBrowse](#)
- [PathwayCyc](#)
- [Synteny Viewer](#)
- [Sequence Retrieval](#)

Overview

Genus	<i>Fragaria</i>
Species	<i>all species</i>
Common Name	Strawberry
Abbreviation	<i>Fragaria (all species)</i>
Ploidy	varies by species
Chromosome Number	varies by species
Genome Size	varies by species
Available Markers	171,115
Available Maps	39
Available QTLs	505
Available MTLs	5
Available Phenotype Data	116,970 measurements
Available Genotype Data	RosBREED data coming soon
Genome Assemblies	13





GDR

[Species ▾](#)[Data ▾](#)[Search ▾](#)[Tools ▾](#)[General](#)

If you use GDR please cite: Jung, S. et al. (2019) [15 years of GDR](#)

GENOME DATABASE

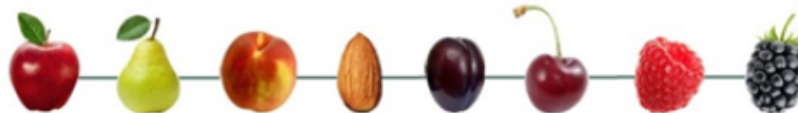
[Search Genes and Transcripts](#)[Search Genotype](#)[Search Germplasm Images](#)[Search Haplotype Block](#)[Search Maps](#)[Search Markers](#)

GDR

[Species ▾](#)[Data ▾](#)[Search ▾](#)[Tools ▾](#)[General](#)

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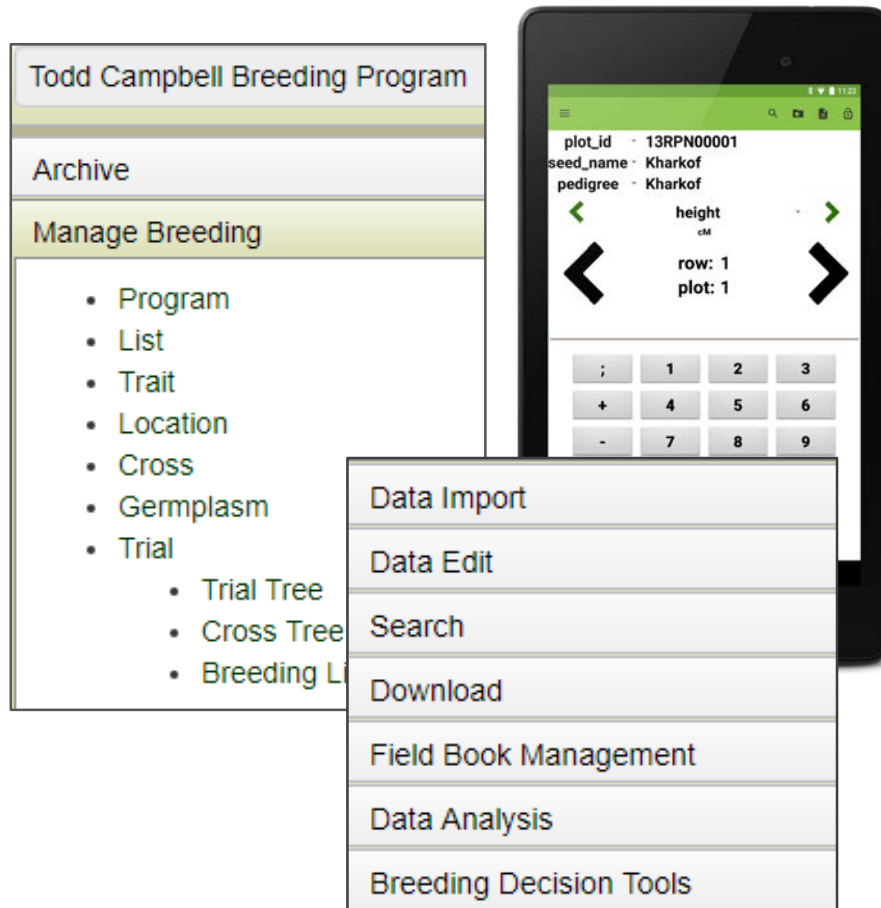
GENOME DATABASE FOR RO



Resources for Rosaceae Research Discovery and C

[BIMS](#)[BLAST+](#)[Breeders Toolbox](#)[GDR Cyc](#)[JBrowse](#)[MapView](#)[Pathway Inspector](#)[Primer3](#)[Sequence Retrieval](#)[Synteny Viewer](#)

Breeding Information Management



BIMS and Field Book

- Archive
- Manage Breeding
- Data Import
- Data Edit
- Search and Download
- Field Book App Management
- Data Analysis Tools
- Breeding Decision Tools

Search/Filter/Analyze

About BIMS

Help

Archive

Manage Breeding

Data Import

Search

• Phenotype

• SNP Genotype

• SSR Genotype

• Haplotype Genotype

Search Results

• Saved Results

Field Book Management

Search by Phenotype

Properties

Name

Trial

Location

Cross

Parent

Data Year

Traits

Bloom_Date

Bloom_Days

Bloom_Time

Bulked_Fruit_Firmness

Bulked_Fruit_SSC

Bulked_Fruit_Wt

Firmness_1

Flesh_C

Foliar_PM

FreeStone

Fruit_Dim

Fruit_L

Reset

You have chosen :

Filtered By	Values
Name	Name(s) [start] : Fam35
Firmness_1	numeric : [MIN] 300 - 387.20 [MAX]

Below shows the properties or trait statistics for the filtered dataset (e.g. trait statistics of the phenotyping samples filtered so far).

Name	Bulked_Fruit_SSC
Format	numeric
# Data	20
Max	26.80
Min	14.80
Mean	19.51
STD	2.55

2

1

Minimum

14.80

Please specify the minimum value of the trait.

Maximum

26.80

Please specify the maximum value of the trait.

Add

Filtered By

▶ Name : matched 66 phenotypic meas.

▶ Firmness_1 : matched 44 phenotypic meas.

Remove

View

Analyze

If you click 'View', you can see the list of accessions along with the properties and trait values you chose. From that page you can view/download phenotypic data for only the filtered phenotyping samples as well as all the phenotypic measurements from the filtered accession.

Acknowledgements

- The Bioinformatics Team and CoPI's (all are co-authors)
- The Rosaceae and Vaccinium Community for their support and data 😊
- The Bioinformatics community for open-source software
- Funding Sources Thank you for your attention 😊

