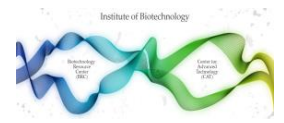




*Genomic Open-source Breeding
informatics initiative*



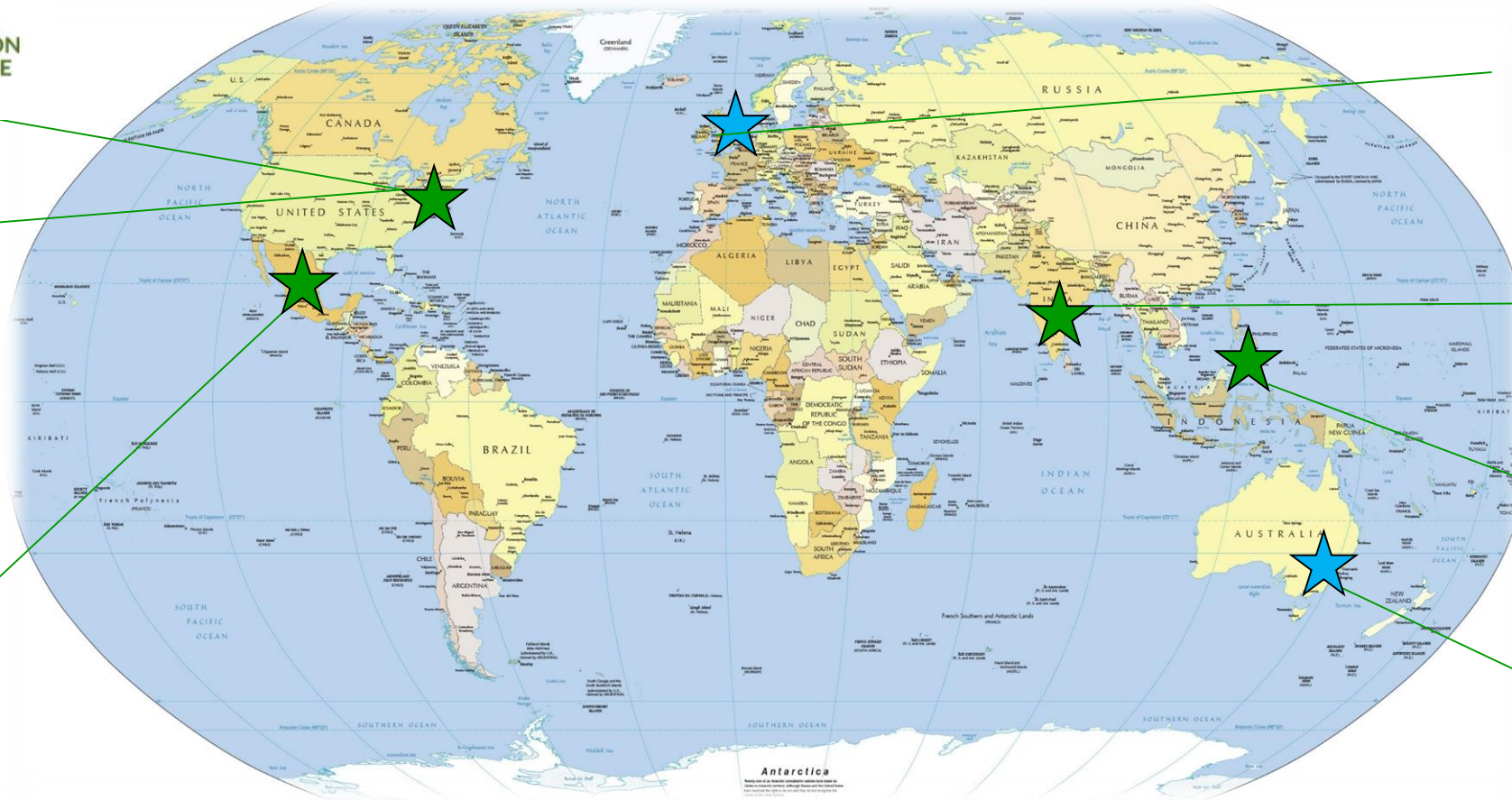
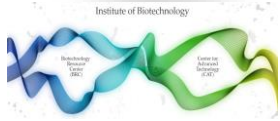
Genomic Open-source Breeding informatics initiative



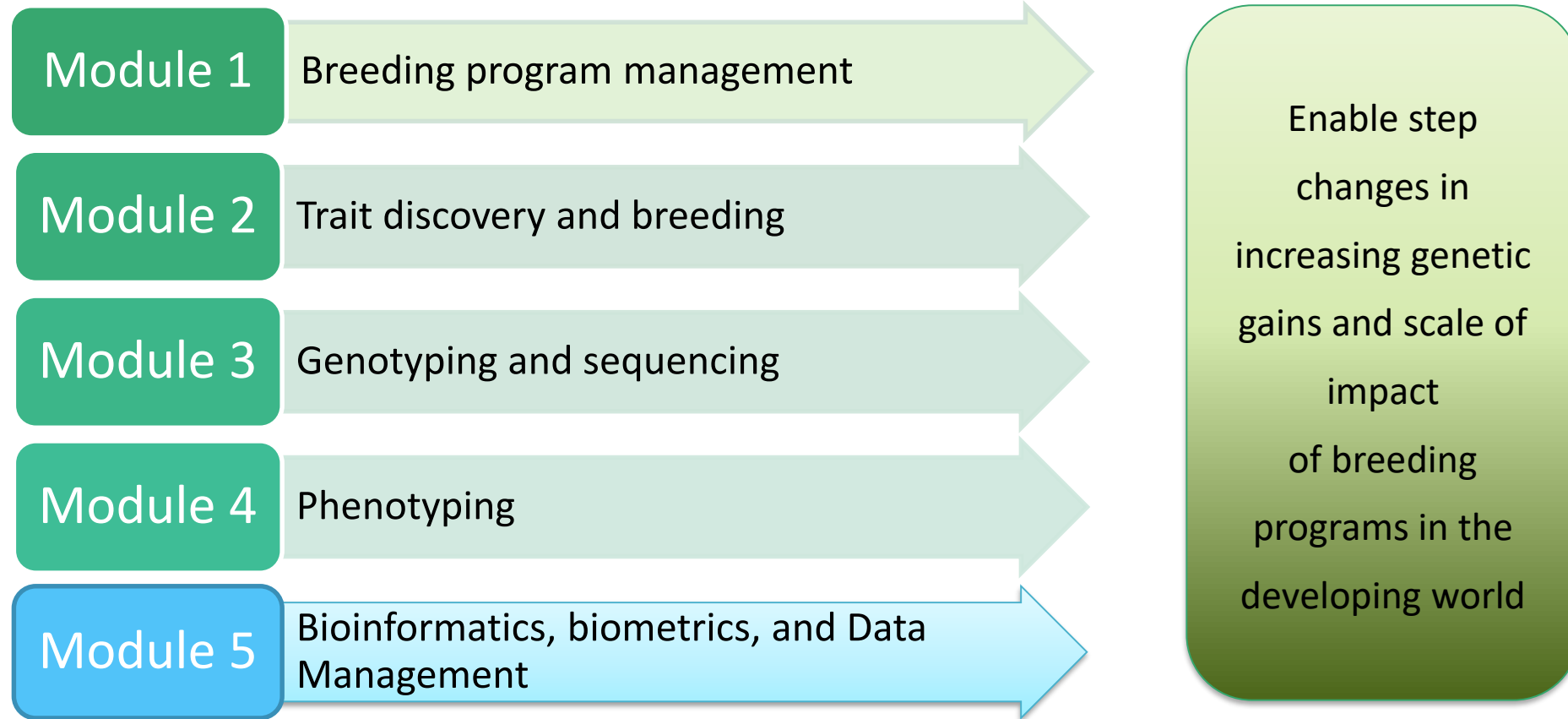
To transform breeding by enabling the implementation of **genomic and marker-assisted selection** as part of **routine** breeding programs in developing countries

- ✓ Build scalable databases for genomics and marker data management
- ✓ Connect to breeding management systems
- ✓ Build and connect tools and analysis pipelines

GOBii A Global Community



Excellence in Breeding Platform



Enterprise Breeding System (EBS)



Core Breeding (**B4R**)

- Breeding Program Planning
- Inventory Management
- Find Germplasm
- Nursery Creation
- Trial Design
- Crossing
- Harvest Manager
- Services
- Shipment

Field mapping, Phenotyping, QC (KDX)

Sample Manager

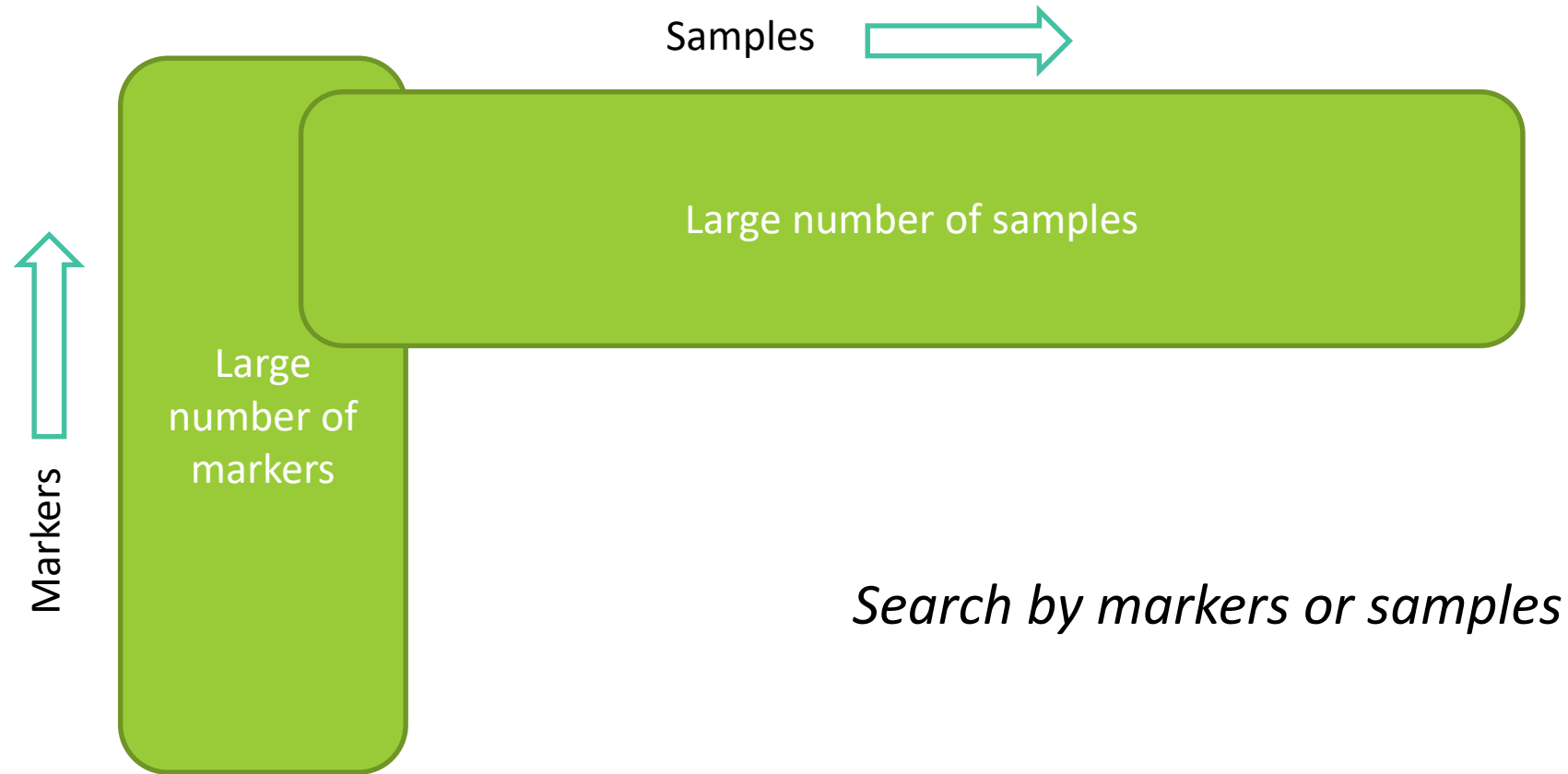
Genotype Management (**GOBii**)

- Loader
- Extractor
- QC (KDC)
- MAS (Ped Ver, MABC, FB) (Flapjack)
- GWAS (Galaxy)
- Genomic Selection (Galaxy)

Trial Analytics

Advancement Decision

Genotyping Data Management – Dimensionality Issues



GOBii Genomic Data Management

Designed with extract performance in mind



LOAD

LOAD

IUPAC, SNP, Indel,
diploid, tetraploid,
codominant,
dominant, SSRs,
Vcf, .txt, .csv, .hmp



EXTRACT

EXTRACT

Flapjack
Hapmap



Web services
APIs

The BrAPI logo, consisting of three colored squares (green, blue, red) followed by the text "BrAPI" in green.

(Gears icon)

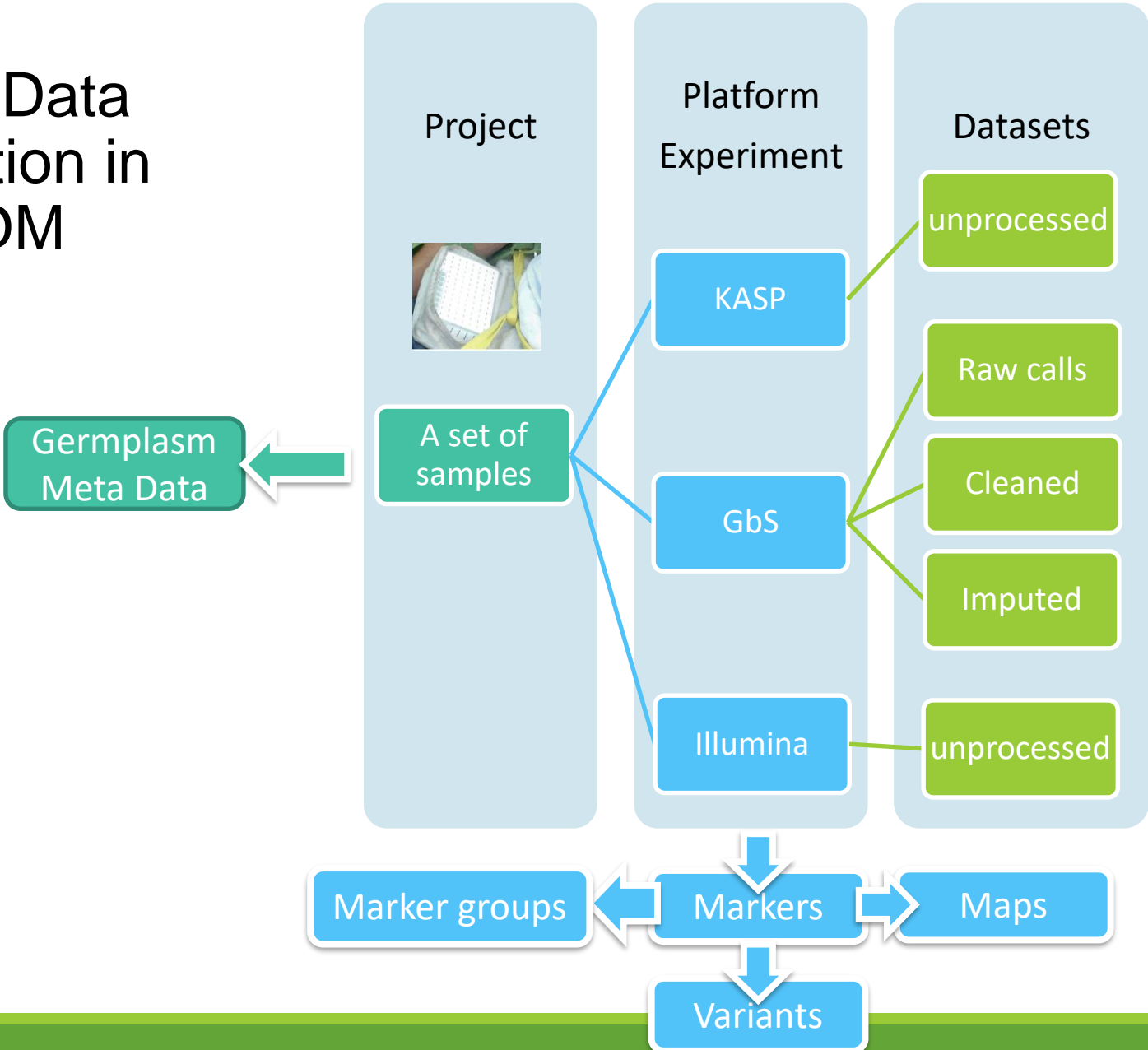
Database

A blue database cylinder icon with a white elephant logo inside.

(SQL-like symbols)



Levels of Data Organization in GOBii-GDM



GOBii Germplasm levels



- Germplasm name (accession, common name)
 - External code (eg plot ID)
 - **Sample name (name sent to vendor)**
 - **Sample UUID (Universal unique identifier)**
 - **Sample number**
 - DNA run name (name from vendor)

GOBii-GDM Data Loader



- Define projects
- Map markers to multiple maps
- Define marker groups
- Define entities to support data eg platform, analyses, maps etc

The screenshot shows the GOBii Data Loader interface. On the left is a navigation menu with categories: 'Menu Explorer', 'Define', and 'Wizards'. The 'Projects' option is highlighted with a green circle and an arrow pointing to the first bullet point in the list. The main area is titled 'GOBII Data Load' and contains a form for defining a project. The form includes fields for 'Project Name', 'Code', 'Project Description', and '*PI contact'. Below these is a table for 'Properties' with columns for 'Property' and 'Value'. At the bottom are buttons for 'Add New', 'Update', 'Clear Fields', 'Add Experiment', and 'DNA Sample Wizard'. A table of existing projects is also visible, with 'test marker groups' selected.

Property	Value
date_sampled	feb
division	last
genotyping_purpose	mabc
study_name	

Projects:	
test marker groups	
testqcwithcodinat	

GOBii-GDM Data Loader



- Define projects
- Map markers to multiple maps
- Define marker groups
- Define entities to support data eg platform, analyses, maps etc

GOBii

dev Clear All Forms

Menu Explorer

Create

- Projects
- Experiments
- Datasets
- Mapsets
- Marker Groups

Define

- Analyses
- Platforms
- Protocols
- Controlled Vocabulary
- Organizations
- Contacts
- References
- Manifests

Wizards

- Marker Wizard
- DNA Sample Wizard
- Dataset Wizard

GOBii Data Load

Projects Mapsets

Mapset Types:

Genetic

Mapsets:

Mapset Name	Mapset Type
codominant_test	Genetic
Deb_Genetic	Genetic

*Mapset Name: codominant_test

Code: Genetic_codominant_test

Mapset Description:

Reference:

*Map type: Genetic

Property	Value

Properties:

Add New

Update

Clear Fields

Export

GOBii-GDM Data Loader



- Define projects
- Map markers to multiple maps
- Define marker groups
- Define entities to support data eg platform, analyses, maps etc

The screenshot displays the GOBii Data Loader interface. On the left is a navigation menu with sections: 'Create' (Projects, Experiments, Datasets, Marker Groups), 'Define' (Analyses, Platforms, Protocols, Controlled Vocabulary, Organizations, Contacts, References, Manifests), and 'Wizards' (Marker Wizard, DNA Sample Wizard, Dataset Wizard). The 'Marker Groups' menu item is circled in green, with an arrow pointing to the main content area. The main content area has tabs for 'Projects', 'Mapsets', and 'Marker Groups'. The 'Marker Groups' tab is active, showing a table with the following data:

Marker Groups:		
Disease resistance SS		
Disease resistance1		
test		

Below the table are 'Export' and 'Refresh' buttons. To the right of the table is a form for editing a marker group:

*Marker Group Name: Disease resistance SS
Code: Disease resistance SS_Stiff stalk
Germplasm group: Stiff stalk

Markers	Platform	Favorable all...
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	1
codom...	SSR_S...	2
codom...	SSR_S...	2
codom...	SSR_S...	2

Below the table are buttons for 'Import Markers', 'Export Markers', 'Add New MarkerGroup', 'Update MarkerGroup', and 'Clear Fields'.

GOBII Data Load

GOBii-GDM Data Loader



- Define projects
- Map markers to multiple maps
- Define marker groups
- Define entities to support data eg platform, analyses, maps etc

The screenshot displays the GOBii Data Load interface. On the left, a sidebar menu is visible with a 'Define' section highlighted in green. This section includes options for 'Analyses', 'Platforms', 'Protocols', 'Controlled Vocabulary', 'Organizations', 'Contacts', 'References', and 'Manifests'. A green arrow points from the text 'Define entities to support data eg platform, analyses, maps etc' to the 'Define' menu. The main interface shows the 'Mapsets' configuration page. The 'Mapset Types' dropdown is set to 'Genetic'. The 'Mapsets' table lists 'codominant_test' and 'Deb_Genetic', with 'codominant_test' selected. The right-hand side of the interface contains form fields for '*Mapset Name:' (codominant_test), 'Code:' (Genetic_codominant_test), 'Mapset Description:', 'Reference:', and '*Map type:' (Genetic). Below these fields is a 'Properties' table with columns for 'Property' and 'Value'. At the bottom of the interface, there are buttons for 'Add New', 'Update', and 'Clear Fields', along with an 'Export' button at the very bottom.

GOBII Data Load

GOBii-GDM Data Loader



- Map fields in dataset to database fields



The screenshot shows the GOBii Data Loader interface. On the left is a sidebar with a menu. The 'Wizards' section is highlighted with a green box, and the 'Dataset Wizard' button is selected. A green arrow points from the list item 'Map fields in dataset to database fields' to this button. The main area is titled 'GOBII Data Load' and contains a form for creating or editing a project. The form includes fields for Project Name, Code, Project Description, and PI contact. Below these is a table for Properties with columns for Property and Value. At the bottom are buttons for Export, Refresh, Add New, Update, Clear Fields, Add Experiment, and DNA Sample Wizard.

Property	Value
date_sampled	feb
division	last
genotyping_purpose	mabc
study_name	

GOBii-GDM Data Loader



- Upload data from local machine or remote server
- Preview data
- Map fields in dataset to database fields
- Apply templates

New Wizard

Wizard :: Dataset Information

Wizard to load dataset information

Information

PI: Jones, Liz

Project: TEST_TEST

Experiment: TEST_TEST_E1

Dataset: TEST_TEST_E1_none

Dataset Type: Nucleotide_2_Letter

Platform: Illumina_infinium

Mapset: B73v3

Remote path:

Local files: /Users/yn259/programs/CGda

Remove Selected File(s)

Saved template:

File format: GENERIC (txt)

Preview Data

Marker Position: LEFT

DNA sample Position: TOP

First Data coordinate: 1 1

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
mark...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...	dnar...
m3111	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
m3112	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
m3113	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3114	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3115	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3116	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
m3117	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m3118	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3119	GG	AA	AA	AA	GG	AA	AA	AA	AA	AA	AA	AA	GG	GG	AA	AA	AA	AA	AA
m3120	TT	CC	CC	TT	TT	CC	TC	CC	CC	CC	CC	NN	TT	TT	TT	TT	CC	CC	TT
m3121	TT	CC	CC	TT	TT	CC	TC	CC	CC	CC	CC	NN	TT	TT	TT	TT	CC	CC	TT
m317	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	AA
m3122	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m318	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m3123	AA	NN	NN	NN	AA	NN	AA	NN	NN	NN	AA	AA	AA	AA	AA	NN	NN	NN	AA
m3124	TT	CC	CC	CC	TT	CC	CC	CC	CC	CC	CC	CC	CC	TT	CC	CC	CC	CC	CC
m319	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3126	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m3127	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3130	CC	CC	CC	CC	CC	CC	TC	CC	TT	TT	NN	CC	CC	TC	CC	TT	TT	CC	TT
m3131	TT	TT	TT	TT	TT	TT	TC	TT	CC	CC	CC	TT	TT	TC	TT	CC	CC	CC	TT
m320	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m321	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
m3132	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m3133	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m322	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
m3134	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
m3135	CC	CC	TT	CC	CC	TT	TT	TT	TT	TT	TT	TT	CC	CC	CC	CC	TT	TT	CC
m3136	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
m3137	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
m3138	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG

< Back Next > Cancel Finish

<http://gdm-demo.gobii.org:8081/gobii-portal/>

GOBii Marker Portal





GOBii Marker Portal


Documentation


- GDM
- Timescope
- File Browser
- GDM Data QC
- GS Pipeline
- Galaxy Documentation
- Flapjack
- TASSEL 5


Web Apps Desktop Apps Links

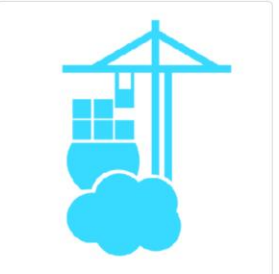
 EXTRACT
dev

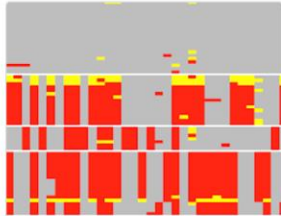
 TIMESCOPE
Timescope

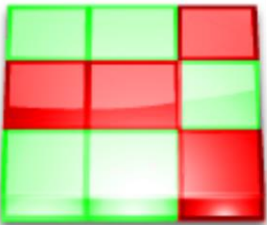
 owncloud
File Browser


 KDCCompute
Data Analysis
KDCCompute

 Galaxy
EIB GS pipeline Demo

 Portainer

 Haplo Tool

 Flapjack Bytz

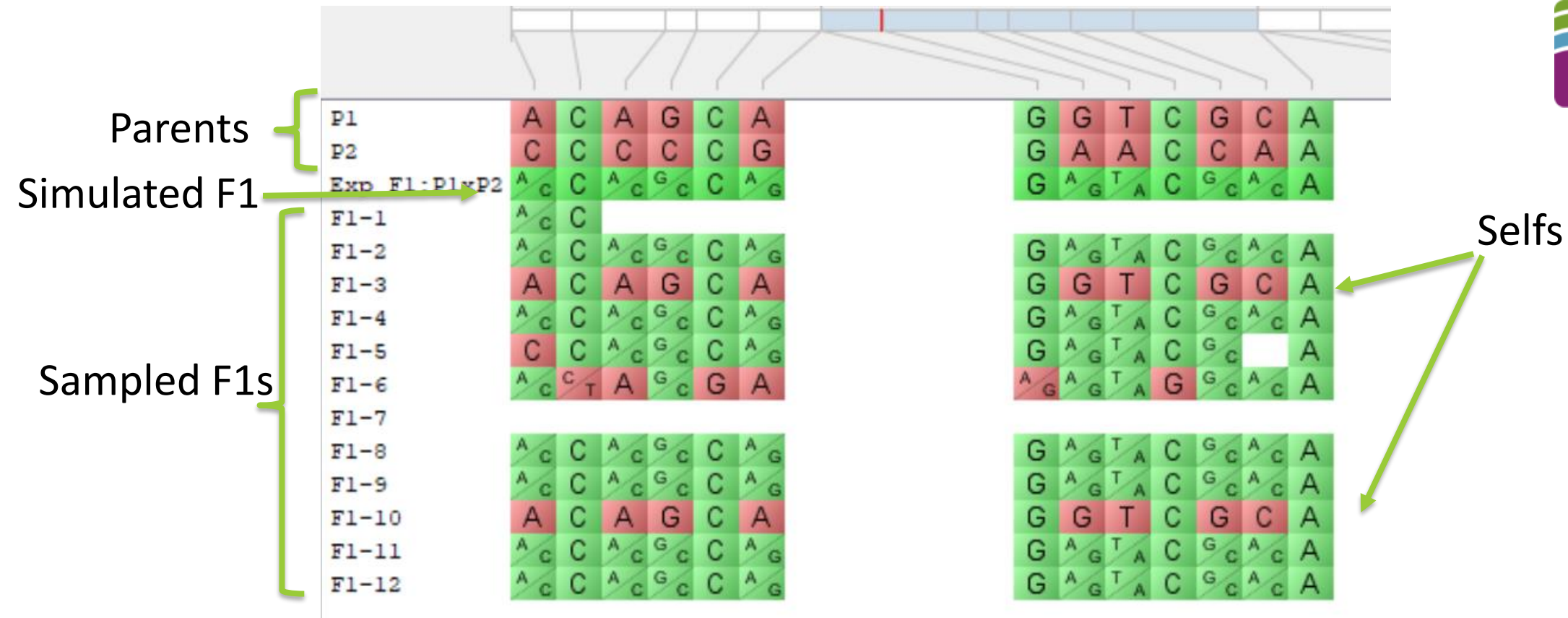
 F1 PED VER
PedVer

Open-source



- Request access to a demo <http://cbsugobii05.biohpc.cornell.edu/wordpress/index.php/gdm-access/>
- Public documentation <https://gobiiproject.atlassian.net/wiki/spaces/GD/overview>
- Code to Genomics Data Manager <http://gobiin1.bti.cornell.edu>
- Flapjack <https://ics.hutton.ac.uk/flapjack/download-flapjack/>
- Galaxy GS pipeline <http://galaxy-demo.excellenceinbreeding.org>
 - **New:** <http://cropgalaxy.excellenceinbreeding.org/>
- DArTView: <https://software.kddart.com/kdexplore/dartview/>

GOBii Tools: Pedigree Verification in Flapjack



- The ability to use higher quality seed can improve yields by two to three times

Gary Vaughan-Smith 2017

What hinders tool adoption?



- **Integration: easily importing data into application**
- **Formatting data**
 - Genotyping projects contain multiple populations that have to be split
 - Genotyping projects contain multiple replicates of parents that need consensus calling
 - Populations and parents across different genotyping datasets

Import GOBii data into Flapjack using BrAPI



File Edit View Visualization Analysis Data Help

Import Data Find Genotypes Chromosomes

Chromosome: 1 1,194 lines, 97 markers, length: 96

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

1	AA	GG	AA	AA	CC	TT	CC	CC	GG	TT	CC	CC	GG	CC	TT	CC	TT	CC	GG	CC	GG	GG	TT	TT	AA	AA	GG	CC	AA	AA	TT	AA	AA	GG	AA	AA	AA	TT	
2	AA	TT	AA	NN	CC	AA	CC	CC	GG	NN	GG	AA	GG	TT	CC	TT	TT	CC	GG	GG	AA	AA	TT	TT	GG	AA	AA	CC	AA	GG	TA	GG	AA	CC	AA	GG	CC	TT	
3	AA	TT	AA	CC	CC	AA	CC	CC	GG	TC	GG	AA	GG	TT	CC	NN	TT	CC	GG	GG	AA	AA	TT	NN	GG	AA	AA	NN	AA	GG	TA	GG	AA	CC	AA	GG	CC	TT	
4	AA	TG	AA	CA	CC	TA	CC	CC	GG	NN	GC	CA	GG	TC	TC	TC	TC	TT	CC	GG	GC	GA	NN	TT	TT	GA	AA	GA	CC	AA	GA	NN	GA	AA	NN	AA	GA	CA	TT
5	AA	TT	CC	CC	CC	AA	TT	TT	AA	TT	GG	AA	GG	CC	CC	TT	TT	CC	GG	CC	GG	GG	GG	CC	AA	AA	AA	GG	AA	GG	TT	GG	CC	CC	AA	AA	AA	TT	
6	AA	TT	CC	CC	CC	AA	TT	TT	AA	TT	GG	AA	GG	CC	CC	TT	TT	CC	GG	NN	GG	GG	GG	CC	AA	AA	AA	GG	AA	GG	TT	GG	CC	CC	AA	NN	AA	TT	
7	AA	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
8	NN	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
9	NN	TG	CC	CC	GA	AA	TC	TC	NN	TC	GC	AA	GA	CC	TC	TC	TT	CC	GG	GC	GA	NN	TG	CC	GA	GA	GA	GG	AA	GG	TT	GG	CA	CC	NN	GA	NN	TT	
10	AA	TT	CC	CC	CC	AA	TT	TT	AA	TT	GG	AA	GG	CC	CC	TT	TT	CC	GG	CC	GG	GG	GG	CC	AA	AA	AA	GG	AA	GG	TT	GG	CC	CC	AA	AA	AA	TT	
11	AA	TT	CC	CC	CC	AA	TT	TT	AA	TT	GG	AA	GG	CC	CC	TT	TT	CC	GG	NN	GG	GG	GG	CC	AA	AA	AA	GG	AA	GG	TT	GG	CC	CC	AA	NN	AA	TT	
12	AA	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
13	NN	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
14	AA	TG	CC	CC	CA	AA	TC	TC	GA	TC	GC	AA	GA	CC	TC	TC	TT	CC	GG	GC	GA	NN	TG	CC	GA	GA	GA	GG	AA	GG	TT	GG	CA	CC	CA	GA	CA	TT	
15	AA	TT	AA	AA	AA	TT	TT	TT	GG	TT	CC	CC	AA	TT	TT	CC	TT	CC	AA	CC	AA	NN	GG	CC	GG	AA	AA	NN	GG	NN	TT	AA	AA	CC	CC	GG	CC	TT	
2019QC_16	AA	TT	AA	AA	AA	TT	TT	TT	GG	TT	CC	CC	AA	TT	TT	CC	TT	CC	AA	CC	AA	AA	GG	CC	GG	AA	AA	NN	GG	GA	TT	AA	AA	CC	CC	GG	CC	TT	
2019QC_17	AA	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
2019QC_18	NN	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	
2019QC_19	NN	TG	CA	CA	AA	TA	TC	TC	NN	TC	NN	CA	AA	TC	TT	CC	TT	CC	GA	GC	AA	AA	TG	NN	GG	GA	GA	NN	GA	GG	TT	GA	AA	CC	CC	GG	NN	TT	
2019QC_20	AA	TT	AA	AA	AA	TT	TT	TT	GG	TT	CC	CC	AA	TT	TT	CC	TT	CC	AA	CC	AA	NN	GG	CC	GG	AA	AA	NN	GG	NN	TT	AA	AA	CC	CC	GG	CC	TT	
2019QC_21	AA	TT	AA	AA	AA	TT	TT	TT	GG	TT	CC	CC	AA	TT	TT	CC	TT	CC	AA	CC	AA	AA	GG	CC	GG	AA	AA	NN	GG	GA	TT	AA	AA	CC	CC	GG	CC	TT	
2019QC_22	AA	GG	CC	CC	AA	AA	CC	CC	GA	CC	GC	AA	AA	CC	TT	CC	TT	CC	GG	GG	AA	AA	TT	CC	GG	GG	GG	GG	AA	GG	TT	GG	AA	CC	CC	GG	CA	TT	

Trait Data
Default View

Overview

Consensus calling and splitting tool



BrAPI

Get data and metadata



Consensus calling for replicated samples



Split populations



Create Flapjack file

	Count	% Data	Het Count	% Hets
20	100	0	0	0
20	100	0	0	0
20	100	12	60	60
9	45	0	0	0
20	100	0	0	60
20	100	0	0	60
20	100	0	0	60
19	95	0	0	60
20	100	0	0	60
2	10	0	0	60
20	100	0	0	0
20	100	0	0	0
20	100	0	0	0
20	100	0	0	0
20	100	0	0	0
20	100	0	0	0

Analyze in Flapjack



<http://gdm-demo.gobii.org:8081/gobii-portal/>

GOBii Tools: Batch Analysis, Flapjack



Batch analysis of four pops

File Edit View Visualization Analysis Data Help

New Project Open Project Import Data Find Genotypes Chromosomes

Data Sets (5)

- output 74x9
 - Trait Data
 - Default View
 - PedVer F1s View 1
 - PedVerF1s Results
- 3 10x9
 - Trait Data
 - Default View
 - PedVer F1s View 1
 - PedVerF1s Results
- 4 10x9
 - Trait Data
 - Default View
 - PedVer F1s View 1**
 - PedVerF1s Results
- 1 10x9
 - Trait Data
 - Default View
 - PedVer F1s View 1
 - PedVerF1s Results
- 2 10x9
 - Trait Data
 - Default View
 - PedVer F1s View 1
 - PedVerF1s Results


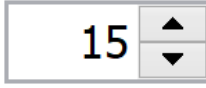
Chromosome: All Chromosomes 11 lines, 9 markers, length: 8


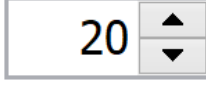
IR12A282*			100	33.33	Parent 1	C	G	C	G	T	G	G	G	A						
IR08A176*			100	33.33	Parent 2	T	G	T	A	G	G	C	G	T						
Exp F1:IR12A282*xIR08A176*			100	100	Expecte...	C	T	G	C	T	A	G	G	T	G	C	G	G	A	T
A2018DSC48_1_2101			100	100	True F1	C	T	G	C	T	A	G	G	T	G	C	G	G	A	T
A2018DSC48_2_2102			100	44.44	No deci...	C	G	C	G	T	G	C	G	G	A					
A2018DSC48_3_2103			100	77.78	True F1	C	T	G	C	T	A	G	G	G	G	G	A	T		
A2018DSC48_4_2104			100	100	True F1	C	T	G	C	T	A	G	G	T	G	C	G	G	A	T
A2018DSC48_5_2105			100	100	True F1	C	T	G	C	T	A	G	G	T	G	C	G	G	A	T
A2018DSC48_6_2106			88.89	37.5	No deci...	C	G	C	G	T	G	G	G							
A2018DSC48_7_2107			100	100	True F1	C	T	G	C	T	A	G	G	T	G	C	G	G	A	T
A2018DSC48_8_2108			22.22	100	True F1						C	T	G	T						


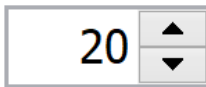
GOBii Tools: Threshold Setting, Flapjack


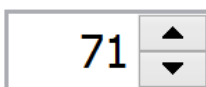


Threshold Settings ×

Percent Parental Heterozygosity:  15 

Percent F1 Heterozygosity:  20 

Percent Heterozygosity:  20 

Percent Match to F1:  71 

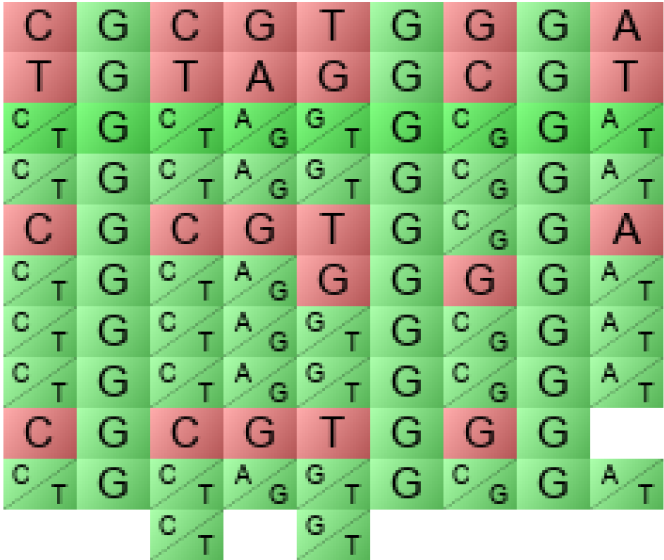
OK Cancel Help

GOBii Tools: Pedigree Verification, Flapjack



Parents	IR12A282*	100	33.33	Parent 1
	IR08A176*	100	33.33	Parent 2
Simulated F1	Exp F1:IR12A282*xIR08A176*	100	100	Expecte...
Sampled F1s	A2018DSC48_1_2101	100	100	True F1
	A2018DSC48_2_2102	100	44.44	No deci...
	A2018DSC48_3_2103	100	77.78	True F1
	A2018DSC48_4_2104	100	100	True F1
	A2018DSC48_5_2105	100	100	True F1
	A2018DSC48_6_2106	88.89	37.5	No deci...
	A2018DSC48_7_2107	100	100	True F1
	A2018DSC48_8_2108	22.22	100	True F1

Decision on selection



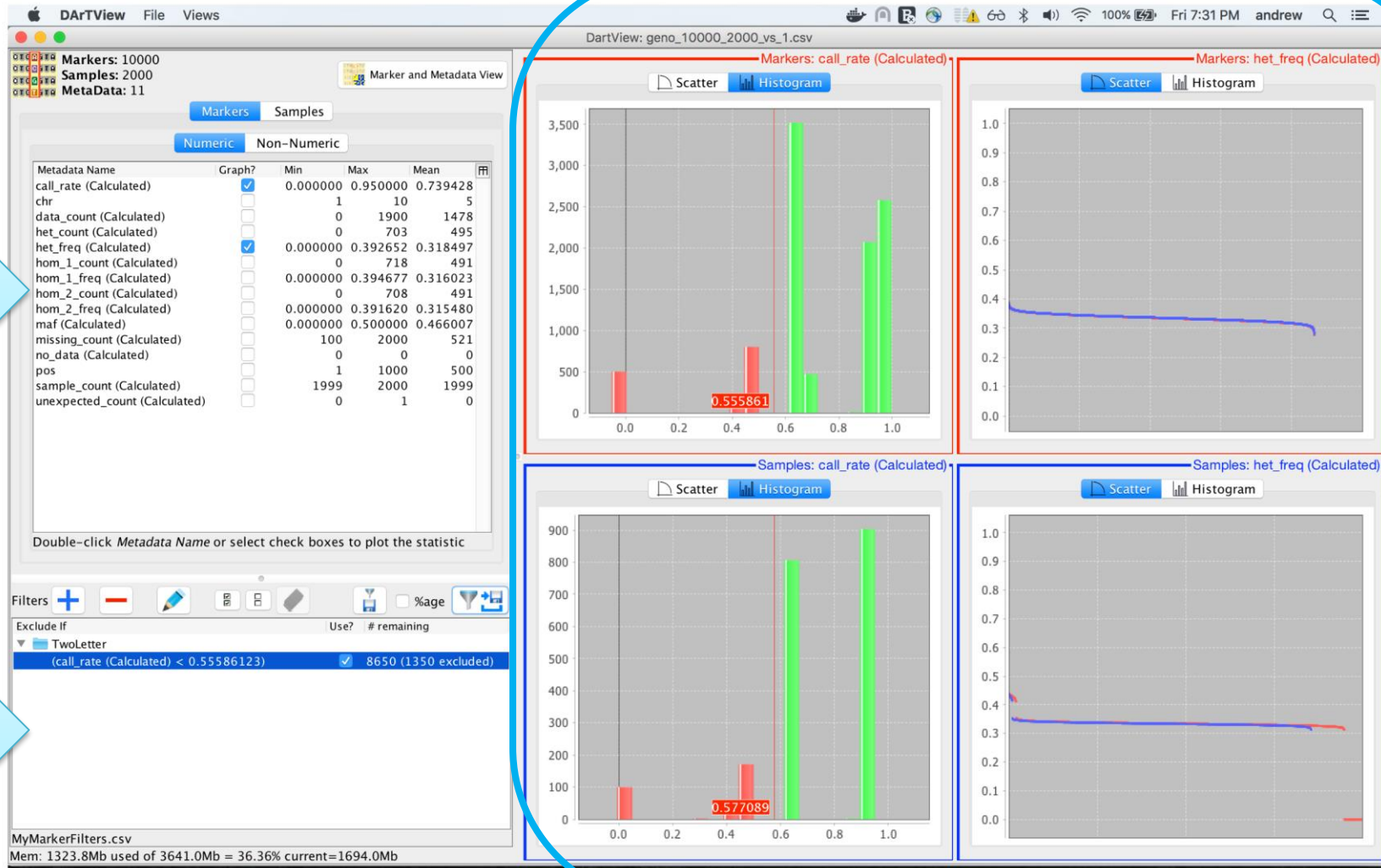
Selfs

GOBii Genotyping Data QC



Select traits to view

Filter data

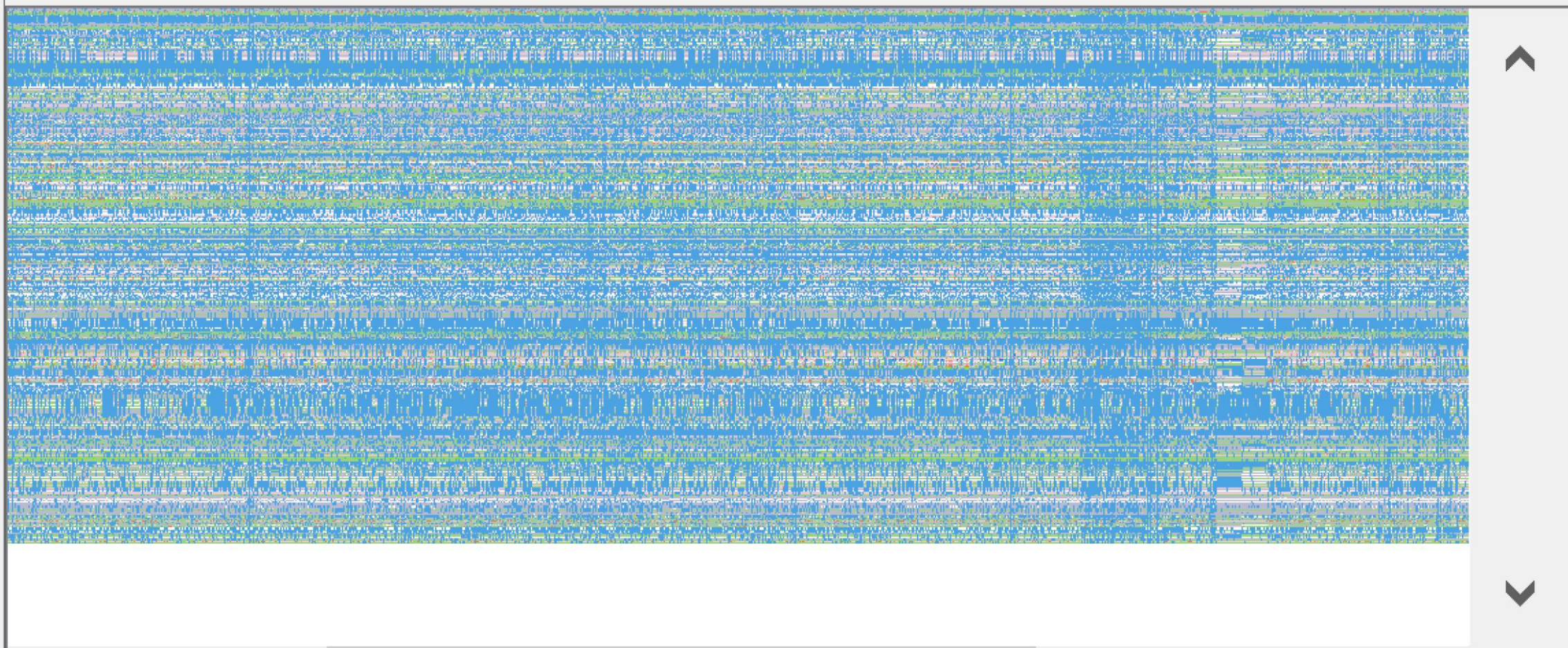


View distributions for selected traits as scatter plots or histograms

Metadata Filters:

Color selection tool (rainbow wheel) and search icon (magnifying glass).

Vertical navigation and zoom controls. Includes a zoom slider, a vertical axis labeled 'pos', a red waveform plot, and a label 'call_rate (Calculated)'. Navigation arrows and a trash icon are at the bottom.



Sample: SEEDGWAS2451:MRG:4:250070060
 Not over a Sample