GrainGenes, the Triticeae Genome Database

David E. Matthews, Victoria Carollo Blake, Gerard R. Lazo, David L. Hane, John P. Lee, and Olin D. Anderson

ITMI-COST Workshop
3 September, 2009

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First presentation of GrainGenes

- Third ITMI Public Workshop, September 1992, CIMMYT, Mexico
- Before there was an Internet or laptops

First presentation of GrainGenes

- Third ITMI Public Workshop, September 1992, CIMMYT, Mexico
- Before there was an Internet or laptops
- Met Philippe Leroy, INRA
  - Proposing a wheat genome database

INRA support for GrainGenes

- “FBA” and “FBB” RFLP probes
- Many additional probes subsequently
- GrainGenes mirror site at Jouy-en-Josas, France, since 1996
- See presentations later today on TriAnnot, GnpIS

GrainGenes Functions

- GrainGenes website
  - Communications, publicity
  - Data sharing, e.g. TREP
- GrainGenes database
  - 200 Maps
  - 40,000 Markers
  - 1,600 QTLs
  - Phenotypes
  - Genotypes

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Address http://wheat.pw.usda.gov/GG2/index.shtml Go Links CU WebMail Google Library Catalog

GrainGenes: A Database for Triticeae and *Avena*

Home

Search Database Search Website

GrainGenes Tools

- Browse GrainGenes
- Quick Queries
- Advanced Queries
- GrainGenes Classic
- BLAST
- CMap
- GBrowse

Query Data Types

- Maps
- Genetic Markers
- Sequences
- QTLs
- Gene Expression
- Colleagues

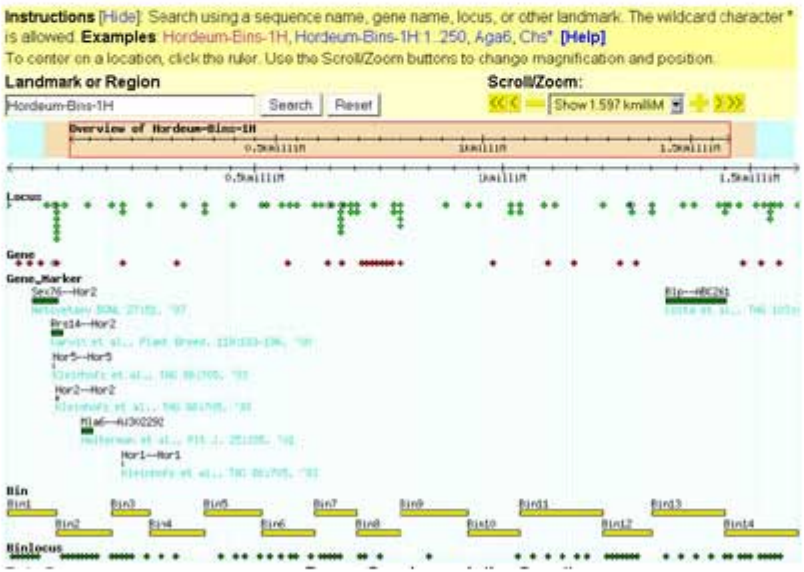
Web Resources

- Genomics
- Mapping

Featured Tool on GrainGenes

Barley Bin Map

Showing 1.597 kmilliM from Hordeum-Bins-1H, positions 0 to 1,596



GBrowse. GBrowse, developed by the GMOD group, is a Genome Browser that provides a wealth of genome annotation for maps in

Hot Topics

- Barley CAP Newsletter, September
- CIMMYT International Nursery Data
- Jorge Dubcovsky re rust (.mp3) © radioparallax.com
- EWAC, European Cereal Genetics Co-operative
- Stem rust (P. graminis) sequenced!
- Status of oat markers
- Brachypodium website
- Resistance to stem rust Ug99 -- 2006 nursery data
- International Barley Sequencing Consortium
- Avena Ave. -- portal to oat data
- Rye genetics -- genes, markers, linkages
- Barley SNP Database
- Global Rust Initiative - Ug99 threat
- ITMI Triticeae Genomics Vision
- European Triticeae Genomics Initiative
- Interactive Oregon Wolfe Barley Maps
- More...

Meeting Announcements

- 11th International Wheat Genetics

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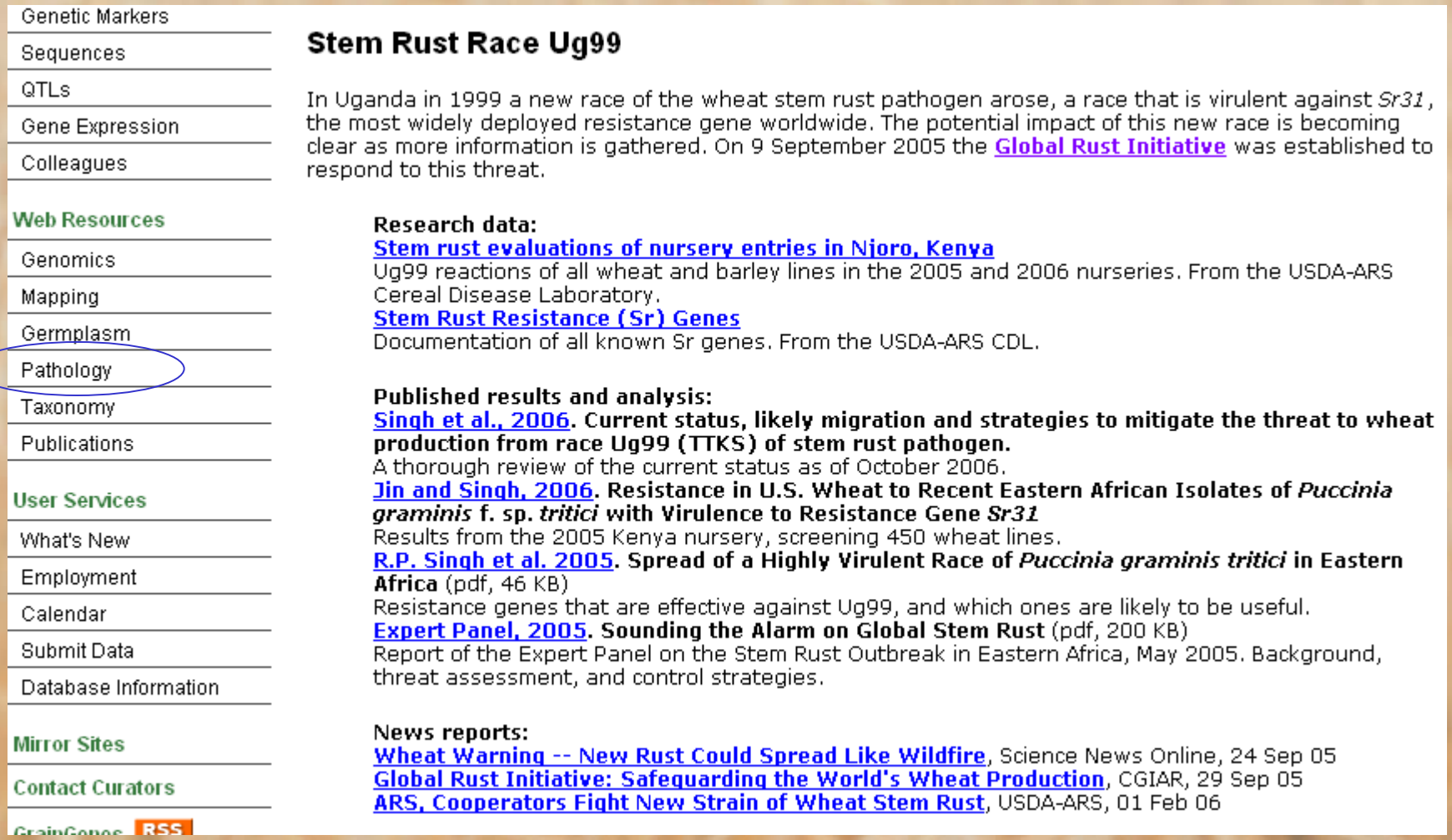
Stem Rust info on the Pathology page



Contents of the Publications page

Online Publications

In this page:

- Reviews, Articles, Monographs
- Journals and Newsletters
- Reports and Proceedings
- Mapping Publications
- Agronomy Publications
- Pathology Publications
- Miscellaneous

Reviews, Articles, Monographs

Catalogue of Gene Symbols for Wheat

By R.A. McIntosh et al.

- 2008 edition, from KOMUGI
  - Database search
  - MacGene download
- 2008 edition, data files on GrainGenes
- 1998 edition
- Annual supplements: 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008

Reserved Laboratory Designators for DNA Clones, Primers and Markers

From Katrien Devos and Jorge Dubcovsky.

Guidelines for Nomenclature of Biochemical Molecular Loci in Wheat and Related Species

From the *Catalogue of Gene Symbols for Wheat*, 1998.

Portal to barley data

'Boulevard Montmartre at Night'
Camille Pissarro, 1897

Barley Boulevard

A Shortcut to Barley Information in GrainGenes and Elsewhere

Quick Barley Queries in GrainGenes

GrainGenes Interactive Maps	Barley Markers Derived from Barley	Barley Markers Mapped on Barley	Germplasm
List all barley map sets.	SNPs	Mapped SNPs	All barley germplasm records
	SSRs	Mapped SSRs	Mapping parents
	RFLPs	Mapped RFLPs	

Barley Web Resources

Barley CAP Barley Coordinated Agricultural Project, USDA-ARS
BarleyDB full-length cDNAs, E STs, images from Okayama University

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ITMI Website

I·T·M·I

International • Triticeae • Mapping • Initiative

MANAGEMENT OFFICE:
INRA Clermont-Ferrand
234, Avenue du Brezet
63100 Clermont-Ferrand, France
Tel: 33 4 73 62 46 84
Fax: 33 4 73 62 44 53
Email: catherine.feuillet@clermont.inra.fr

Next ITMI Summer Workshop: Clermont-Ferrand, Aug 31 - Sep 4, 2009

About ITMI

- Objectives, coordination areas, and Coordinators
- **Triticeae Genomics Vision** - Towards coordinating genomics efforts in wheat and barley
  Views from the ITMI Management group, Feb 2006
- **The International Triticeae Mapping Initiative: 15 Years of Evolution**
  Presentation by Mark Sorrells to the International Cotton Genome Initiative, PAG-XIII, Jan 2005
  - Abstract
  - Powerpoint presentation
- A brief history

Previous ITMI workshops

- Report, Business meeting, IWGSC Brisbane, August 2008 *New, January 2009*
- Presentations from the January 2008 Workshop, PAG-XVI, San Diego CA

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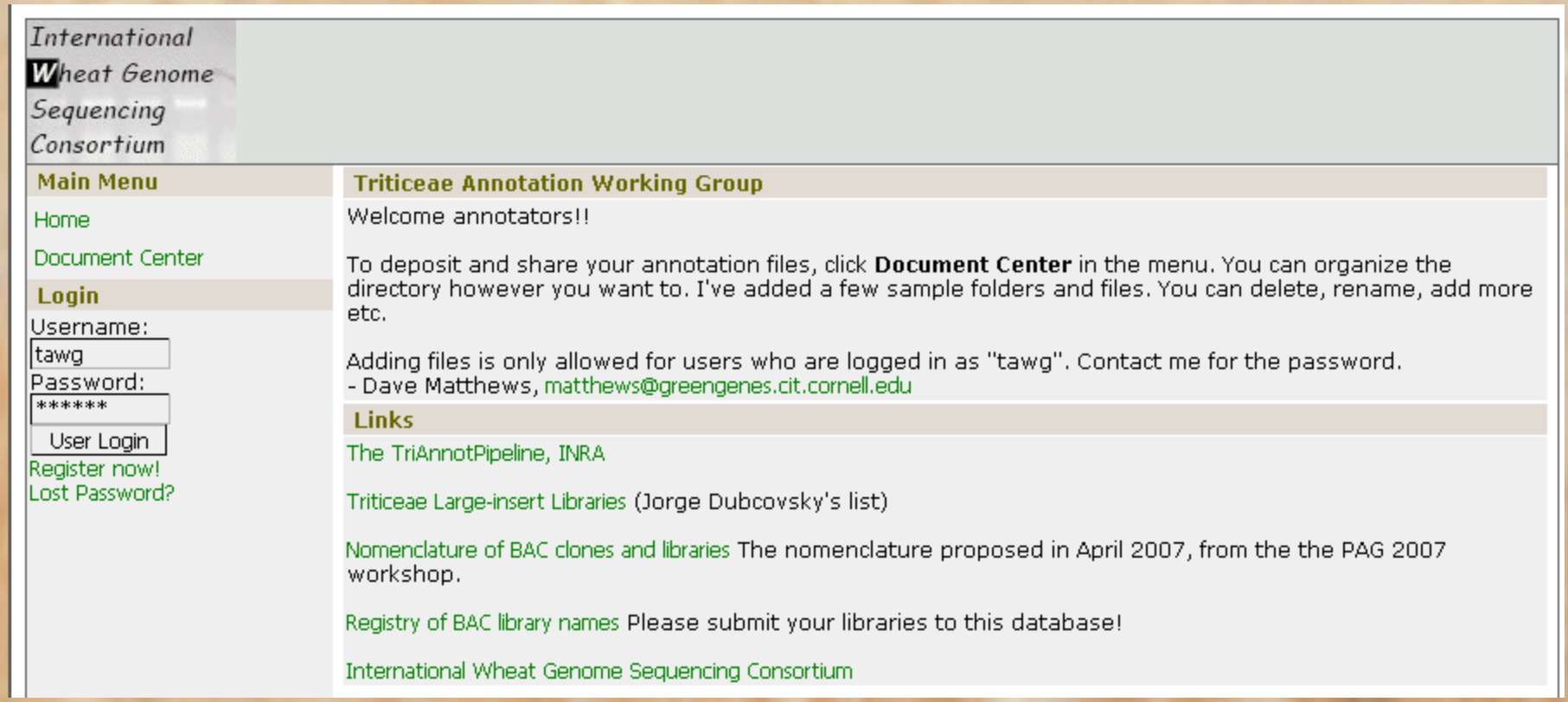
Triticeae Annotation Working Group



www.tritgenome.org/tawg

password: angela

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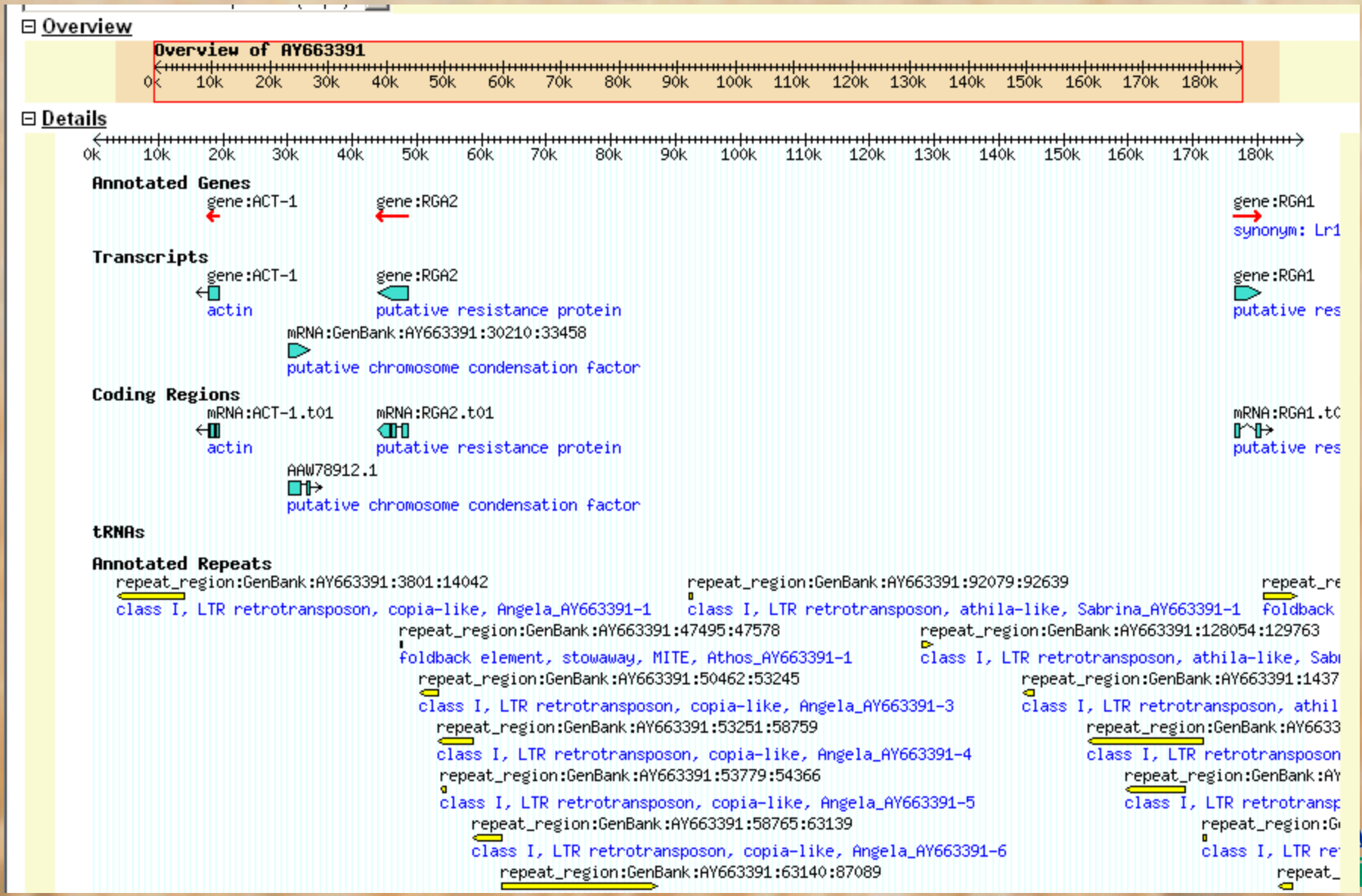
GBrowse display



Map Summary

Interactive Maps on GrainGenes

The Short List to explore first!

The Complete List

Link	Map_Data Name Wheat Maps - Diploid	Date	Parent	Parent	Markers #	Type
Link	T. boeoticum x monococcum	2007	T. boeoticum pau5088	T. monococcum pau14087	190	EST, SSR
Link	T. monococcum, DV92 x G3116	1996	T. monococcum ssp. monococcum DV92	T. monococcum ssp. aegilopoides G3116	357	RFLP
Link	T.tauschii	1991	Triticum tauschii TA1691	Triticum tauschii TA1704	291	RFLP

Link	Wheat Maps - Tetraploid	Date	Parent	Parent	#	Type
Link	Durum wheat, Kofa x UC1113	2008	Kofa	UC1113	269	QTL, SSR, SNP
Link	T. turgidum, JK x Cham1, 2	2001	Jennah Khetifa (Tamgurt)	Cham1 IC71	470	AFLP, RFLP, SSR
Link	T. turgidum, Messapia x dicoccoides, SSR	1999	MESSAPIA	MG4343	294	RFLP, SSR
Link	T. turgidum, Omrabi5 x dicoccoides, QTL	2004	Omrabi5	T. dicoccoides 600545	295	QTL, AFLP, SSR

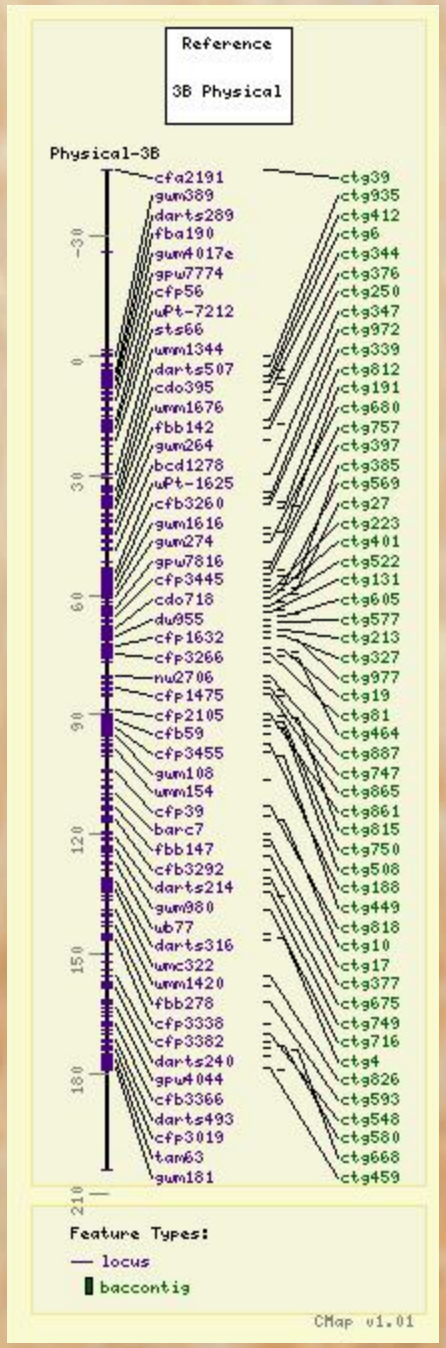
Link	Wheat Maps - Hexaploid	Date	Parent	Parent	#	Type
Link	3B Physical	2008	Composite, 13 mapping studies		849	SSR, STS, DArT
Link	Wheat, Arina x Forno	2003	Forno	Arina	401	SSR, RFLP
Link	Wheat, Chinese Spring x SQ1	2005	Chinese Spring	SQ1	640	SSR, RFLP, AFLP
Link	Wheat, Composite, 2004	2004	Composite, 11 mapping studies		3741	RFLP, SSR, AFLP,
Link	Wheat, Consensus SSR, 2004	2004	Composite, 4 mapping studies		1249	SSR, Genes
Link	Wheat, Gale	1995	Consensus		1028	Genes, RFLP

3B physical map

GrainGenes Map Data Report: 3B Physical

[Printable Version] [Submit comment/correction]

Map Data	3B Physical
Map	Physical-3B
Species	Triticum aestivum
Type	Genetic Physical
Map Units	cM
Reference	**Paux E** et al. (2008) A Physical Map of the 1-Gigabase Bread Wheat Chromosome 3B **Science** 322:101-104.
Contact	Feuillet, Catherine
Remarks	The genetic map was integrated from thirteen mapping populations.
Locus	abc174 [*Show all 849*]



3B physical map

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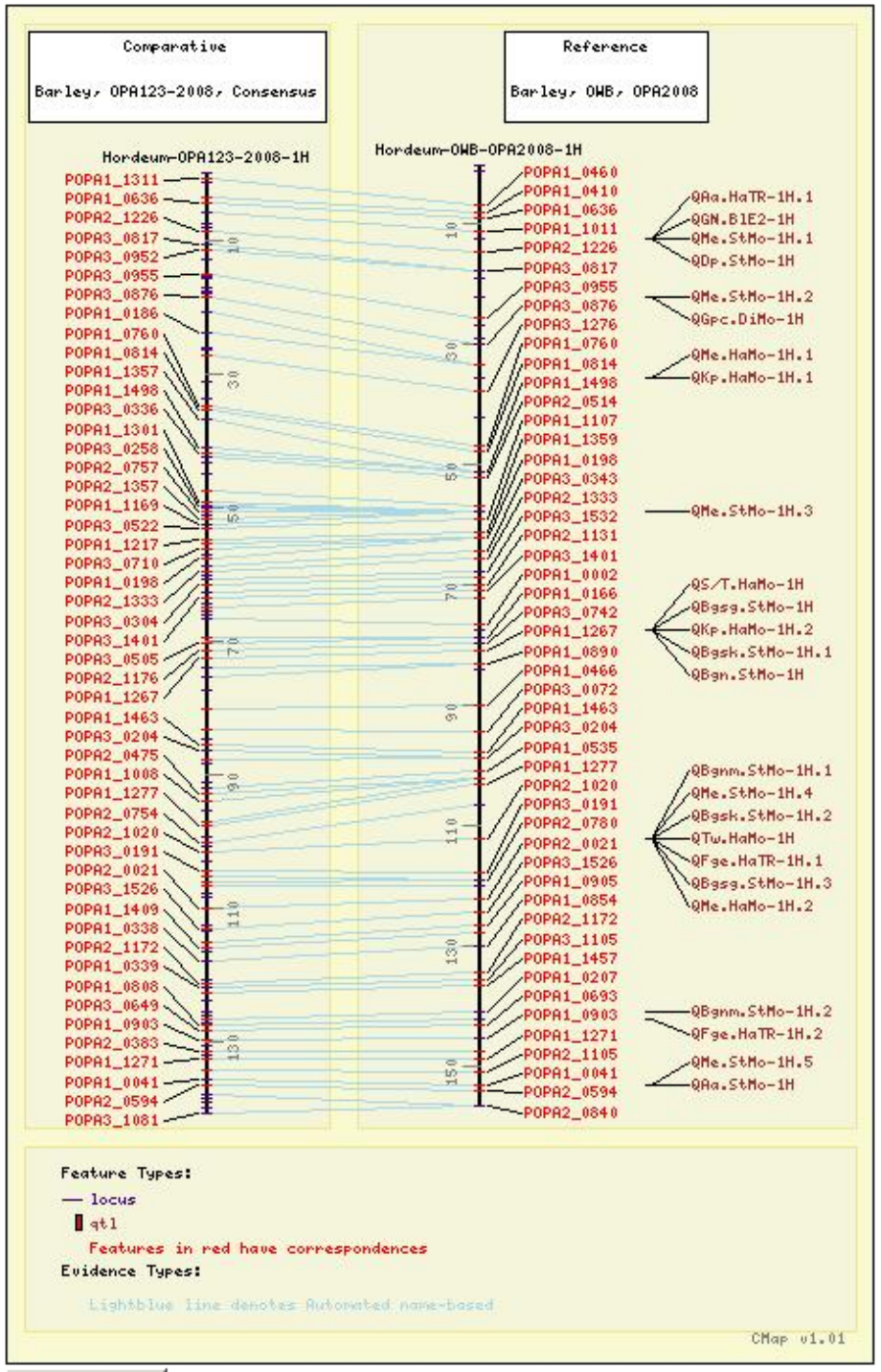

Comparing two maps

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Quick Queries for markers

Quick Queries

Expedited access to GrainGenes' most Frequently Asked Queries.
If you have a GrainGenes question you want to ask, please let me know.
Somebody else probably has the same question.
- Dave, *matthews@greengenes.cit.cornell.edu*

Categories

- Microsatellites and STS's
- Markers and Mapped Genes
- Mapped Sequences
- Sequences
- QTLs
- Genes
- Polymorphisms
- References
- Address Book
- Germplasm

Microsatellites and STS's

- **SSR primers and corresponding mapped loci.**
  Improvements suggested by Christie Williams, Simon Berry and Tim Langdon.

  CFE* **SSR set** (* for all) Search

  - (•) **Primers**
  - ( ) **Map locations** on chromosome 1D (* for all)
  - ( ) **Mapping data**: segregation scores for these SSRs in all populations for which we have the data.

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Quick Queries for markers

Premade Queries: -- select one --

SQL query:

```
-- Microsatellite (SSR) Primers
select
  distinct
  probe.name as SSR,
  pr.primeronesequence as Primer_1,
  pr.primertwosequence as Primer_2,
```

Submit **Schema:** Diagrams | Table definitions

download text

[TOP | <<250 | <<25 | **1** - **25** of **301** | >>25 | >>250 | BOTTOM]

Showing records **1** through **25** of **301** records

SSR	Primer_1	Primer_2	Conditions	SSR_Size
CFE1	Left CGTGACGAGCATGAGCAC	Right GACAGGAGGGGGAAGAAATC	Annealing temperature 60	150 theoretical; 165 observed
CFE10	Left TCGCGTAGTCCATGCAGTC	Right ATGGCTATCTATAAACACCGGC	Annealing temperature 60	324 theoretical; 315, 326, 341 observed
CFE100	Left GCAGTTCTTCCAGTTCAGAGG	Right AGGGACAACAGTTACGTGGC	Annealing temperature 60	234 theoretical; 249, 254, 271 observed
CFE101	Left GAACATGCAAGACACGAGTAGC	Right TACTTCAGCCAGGGCCAG	Annealing temperature 60	286 theoretical; 135, 175 observed

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“grains” mailgroup

Greetings!

Welcome to the mailgroup "grains", a forum for open discussion and announcements related to the International Triticeae Mapping Initiative.

Topics of interest:

- Genome mapping of wheat, barley, oats, rye, sugarcane, and related species
- GrainGenes, the Triticeae Genome Database
- Anything else you might want to say to this particular group of people in a public place

WHAT IS A MAILGROUP?

A mailgroup is a bulletin board that is implemented via electronic mail. To post a message to everyone in the group, you simply mail it to the following address:

grains@greengenes.cit.cornell.edu

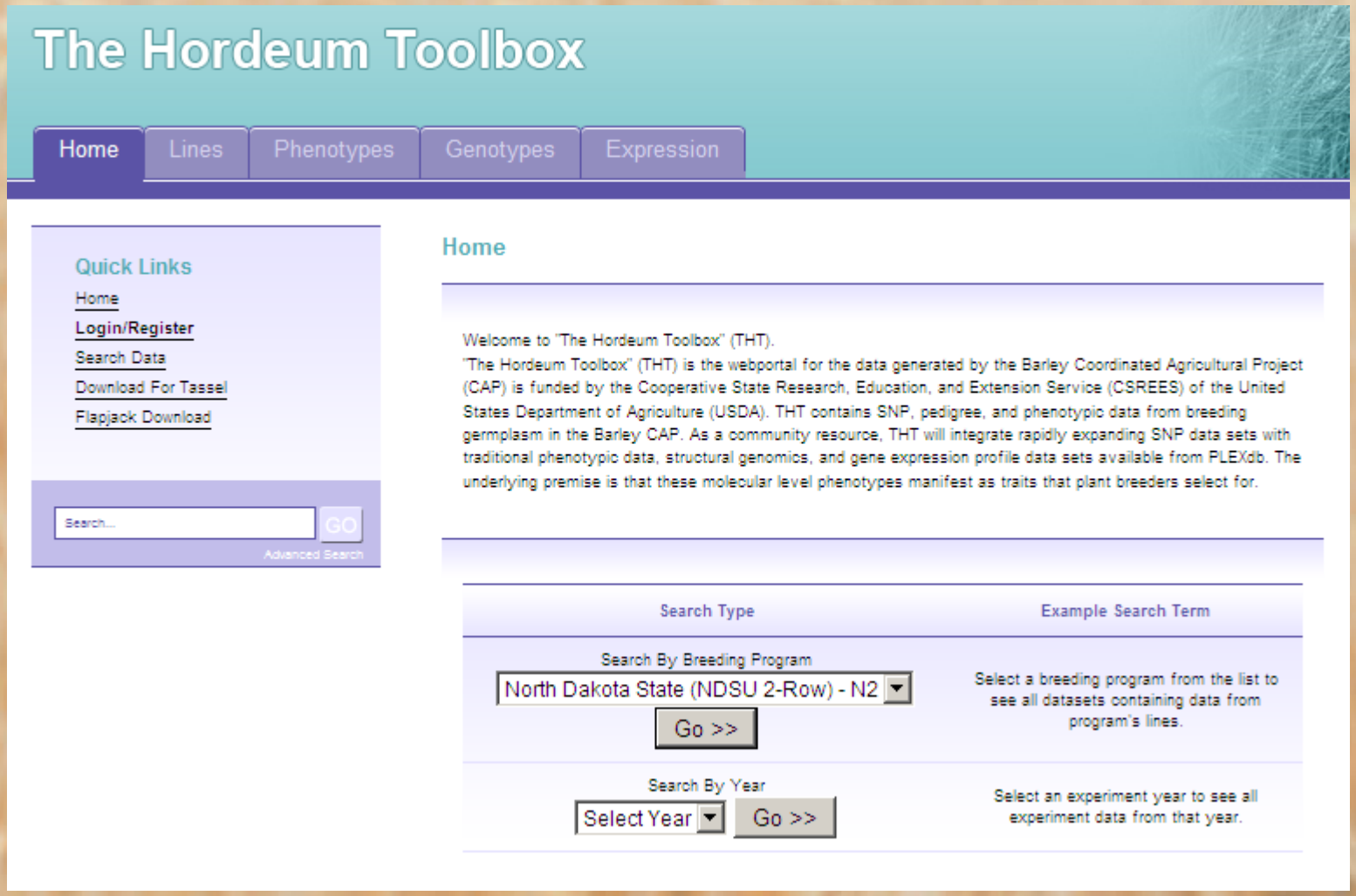
The message is then automatically forwarded in a few minutes to every member of the group. That's all there is to it. The complete list of members is given below.

JOINING, UNJOINING, AND PUBLISHING YOUR ADDRESS INFORMATION

I have volunteered to administer the mailgroup. Anyone can request to be added to the group or removed from it at any time by contacting me, at:

matthews@greengenes.cit.cornell.edu

The Hordeum Toolbox



Barley CAP project

- 960 barley lines
- 1536 SNP markers
- 30 traits
- Starting year 4 of 4

The Hordeum Toolbox

- Phenotype, genotype and pedigree data
- For association mapping
- Extract datasets for analytical software
  - TASSEL
  - Flapjack
- Creator Julie Dickerson, Iowa State U.
- Curator Jennifer Kling, Oregon State U.

The Hordeum Toolbox

Expt12_2006_Carrington

Location (Latitude/Longitude)	Carrington, ND
Planting Date	19 April 2006
Harvest Date	
Seeding Rate	2.47 million seed/ha
Experiment Design	6x6 square lattice
Plot Size	35 sq ft
Harvest Area	35 sq ft
Irrigation	yes
Number of Replications	3
Comments	None

1-34 / 34

Line Name	BP Code	Grain Yield (kg ha -1)	Plant Height (centimeter)	Heading Date (days from planting)	Lodging (percent)	Plump Grain (% by wt on 6/64" sieve)	Grain Protein (kg ha -1)	Kernel Weight (milligram)	Barley Color (° asbc)	Malt Extract (percent)	Wort Color (asbc)	Wort Protein (percent)
ND20798-12	N2	5,310.06	45.1	58	16.00	92.4	13.97	41.18	29.0	78.05	2.38	5.77
ND21089-3	N2	4,250.20	43.9	56	16.00	89.6	14.54	41.18	30.0	78.95	2.54	6.28
ND21863-2	N2	5,277.78	53.2	61	27.00	90.3	13.70	42.01	33.0	79.20	2.05	5.42
ND21865-6	N2	5,729.70	54.1	63	23.00	90.5	13.26	43.60	30.0	80.11	2.40	5.97

Acknowledgments

- Curators
  - Dave Matthews
  - Victoria Blake
  - Gerry Lazo
- Programmers
  - Dave Hane
  - John Lee
- Director
  - Olin Anderson