



Welcome to the 4th issue of the CottonGen newsletter in 2022. This newsletter is issued to inform users about **new or updated data and tools in CottonGen**. In addition to new and updated data, each issue will provide more information on data or tools on the **featured tools/data** section.

New Genome Data/Functional Analysis

Data from **3 whole genome assemblies**:

[G. hirsutum \(AD1\) 'ZM2' genome CAAS v1 \(2022, ncbi\)](#)

[G. stocksii \(E1\) genome ZSTU v1. \(Yu et al., 2021\)](#)

[G. bickii \(G1\) genome JZU v1. \(in press\)](#)

CottonGen Functional Analysis (InterProScan and KEGG, Protein Homologies, CottonGen Marker and RefTran Alignments, etc.) **added to the genome**:

[G. anomalum \(B1\) genome JAAS v1.2 a1.1 \(Xu 2022\)](#)

Other New Data

- RBTN data from 2021 trials, which includes 4,676 phenotype data of 17 fiber quality or yield traits from of 12 difference locations ([RBTN 2021](#)).
- Fiber quality, yield, and morphological traits QTLs, phenotypes and genetic map data ([Gowda, 2022](#))
- Publications of GRIN new cultivar and germplasm registrations
- Standardize names of Linkage Groups and Chromosomes to enhance data queries

Below is an example of how those standardized Linkage Group Names assist users to find all markers associated with 'Seed cotton yield' and their genetic location on a specific linkage group on all AD maps.

In the interface of [MageSearch Marker](#), fill in information of the specific chromosome and select the field you want to see or download

Here is the search results in a 'CSV' download format.

#	A	B	C	D	E	F	G
1	Marker Name	Marker Type	Map	Linkage Group	Standardized Linkage Group	Trait	
2	1 BNLO836	SSR	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
3	2 BNLO836	SSR	Palmeri x K-101, F2 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
4	3 BNLO441	SSR	CCRI-36 x Hai-7124, F2 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
5	4 BNLO441	SSR	DH962 x Jimian-5, F2 (2015)	chr07-2	AD_ch07_A1.07	seed cotton yield	
6	5 BNLO441	SSR	DH962 x Jimian-6, F2 (2009)	chr07	AD_ch07_A1.07	seed cotton yield	
7	6 BNLO441	SSR	DH962 x Jimian-6, F2 (2009)	chr07/G17	AD_ch07_A1.07	seed cotton yield	
8	7 BNLO441	SSR	SG 747 x Giza 75, BIL (2013)	chr07	AD_ch07_A1.07	seed cotton yield	
9	8 BNLO871	SSR	CCRI-36 x Hai-7124, F2 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
10	9 BNLO871	SSR	Erlian-22 x 3-79, BCI (2011)	chr07	AD_ch07_A1.07	seed cotton yield	
11	10 BNLO871	SSR	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
12	11 BNLO871	SSR	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
13	12 nh2-450	SNP	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
14	13 nh35-580	SRAP	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
15	14 MGHE50010	SSR	Handan-208 x Pima-90, F2:3 (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
16	15 NAUJ3562	SSR	(YM1 x CCR155) x (YM1 x Z235), 4WC (2012)	chr07-2	AD_ch07_A1.07	seed cotton yield	
17	16 NAUJ3562	SSR	Yumian-1 x Z235, RIL (2015)	chr07	AD_ch07_A1.07	seed cotton yield	
18	17 NAUJ3562	SSR	Yumian-1 x T586, RIL (2006)	chr07-2	AD_ch07_A1.07	seed cotton yield	
19	18 NAUJ3562	SSR	Yumian-1 x T586, RIL (2015)	chr07	AD_ch07_A1.07	seed cotton yield	
20	19 NAUJ3564	SSR	SG 747 x Giza 75, BIL (2013)	chr07	AD_ch07_A1.07	seed cotton yield	
21	20 NAUJ3564	SSR	TM-1 x Hai-7124, BCI (2007)	chr07	AD_ch07_A1.07	seed cotton yield	
22	21 NAUJ3564	SSR	TM-1 x Hai-7124, BCI (2008)	chr07/A7	AD_ch07_A1.07	seed cotton yield	
23	22 NAUJ3564	SSR	TM-1 x (TX-0556 x TX-1046), CSL (2016)	chr07	AD_ch07_A1.07	seed cotton yield	
24	23 NAUJ3564	SSR	(YM1 x CCR155) x (YM1 x Z235), 4WC (2012)	chr07-2	AD_ch07_A1.07	seed cotton yield	
25	24 NAUJ3564	SSR	Yumian-1 x Z235, RIL (2015)	chr07	AD_ch07_A1.07	seed cotton yield	
26	25 TAMU_GH_03179_022646	SNP	3-79 x TM-1, F2 (2015 SNP)	chr07	AD_ch07_A1.07	seed cotton yield	
27	26 TAMU_GH_03179_022646	SNP	DS-28 x SBYF-425, RIL (2022)	AD_ch07	AD_ch07_A1.07	seed cotton yield	
28	27 TAMU_GH_TB06112-297	SNP	3-79 x TM-1, F2 (2015 SNP)	chr07	AD_ch07_A1.07	seed cotton yield	
29	28 TAMU_GH_TB06112-297	SNP	DS-28 x SBYF-425, RIL (2022)	AD_ch07	AD_ch07_A1.07	seed cotton yield	
30	29 TAMU_GH_TB06112-297	SNP	Phytogen 72 x Stoneville 474, combin (2017)	chr07	AD_ch07_A1.07	seed cotton yield	
31	30 TAMU_GH_TB06112-297	SNP	Phytogen 72 x Stoneville 474, F2 (2015 SNP)	chr07	AD_ch07_A1.07	seed cotton yield	



Ortholog/Paralog Search

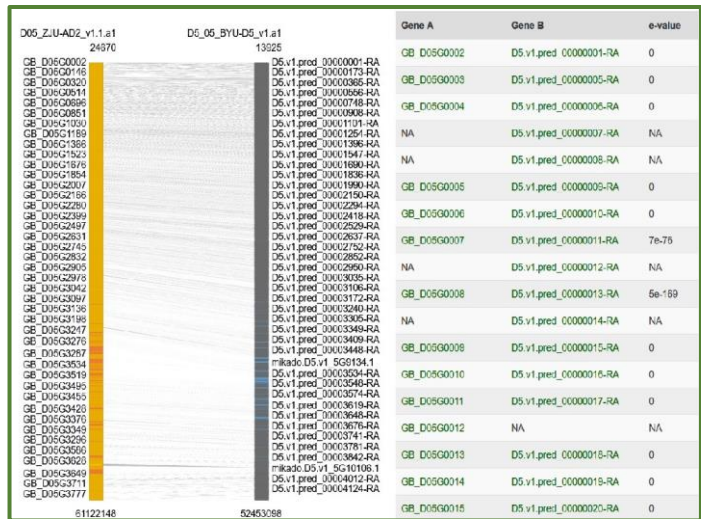
This search is a tool to retrieve orthologs/paralogs that are detected using MCSanX (Wang et al. 2012) and its default settings. Sequences in ortholog/paralog columns between different assemblies/annotations of the same species represents potentially the same genes. **To start**, go to [Orthologs/paralogs in MegaSearch](#), then choose data fields to view and download.

You can visit gene pages to see orthologs/paralogs and syntenic blocks in all other genomes by clicking name from the result list (exp, the first one), you will see the gene page at below and see syntenic block by clicking on a block name.

D5.v1.pred_00000001-RA, D5.v1.pred_00000001-RA_BYU-D5_v1.a1 (mRNA) *Gossypium raimondii*

Feature Name	Unique Name	Species	Type
D5.v1.pred_00000001	D5.v1.pred_00000001_BYU-D5_v1.a1	<i>Gossypium raimondii</i>	gene

Feature Name	Unique Name	Species	Type
gbgtr1035	gbgtr1035	<i>Gossypium raimondii</i>	syntenic_region
abgtr1773	abgtr1773	<i>Gossypium raimondii</i>	syntenic_region
gbgtr1011	gbgtr1011	<i>Gossypium raimondii</i>	syntenic_region



Click the 'View' button from 'Downloadable Fields', the search results will display as below.

5625 records were returned

#	Genome1	Chromosome1	Ortholog1	Genome2	Chromosome2	Ortholog2	Associated Gene
1	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000005-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0002	Goa05G00002
2	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000006-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0003	Goa05G00003
3	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000009-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0004	Goa05G00004
4	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000010-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0005	Goa05G00005
5	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000011-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0006	Goa05G00006
6	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000013-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0007	Goa05G00007
7	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000014-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0008	Goa05G00008
8	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000015-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0009	Goa05G00009
9	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000016-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0010	Goa05G00010
10	<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000018-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0011	Goa05G00011

You can also use this tool to generate a list of matching genes (and true paralogs) between two genome assemblies of the same species by clicking on the 'CSV' (comma-separated values) or 'TSV' (tab-separated values) buttons.

A	B	C	D	E	F	G	H
Genome1	Chromosome1	Ortholog1	Genome2	Chromosome2	Ortholog2	Associated Gene	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000005-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0002	Goa05G00002	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000006-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0003	Goa05G00003	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000009-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0004	Goa05G00004	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000010-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0005	Goa05G00005	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000011-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0006	Goa05G00006	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000013-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0007	Goa05G00007	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000014-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0008	Goa05G00008	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000015-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0009	Goa05G00009	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000016-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0010	Goa05G00010	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000018-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0011	Goa05G00011	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000020-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0013	Goa05G00013	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000021-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0014	Goa05G00014	
<i>Gossypium raimondii</i> (D5) D5-4 genome NSF_v1	D6_05	D5.v1.pred_00000023-RA	<i>Gossypium anomalum</i> (B1) genome JAAS_v1.2_a1.1	Chr05	evm.model.Goa05G0015	Goa05G00015	

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