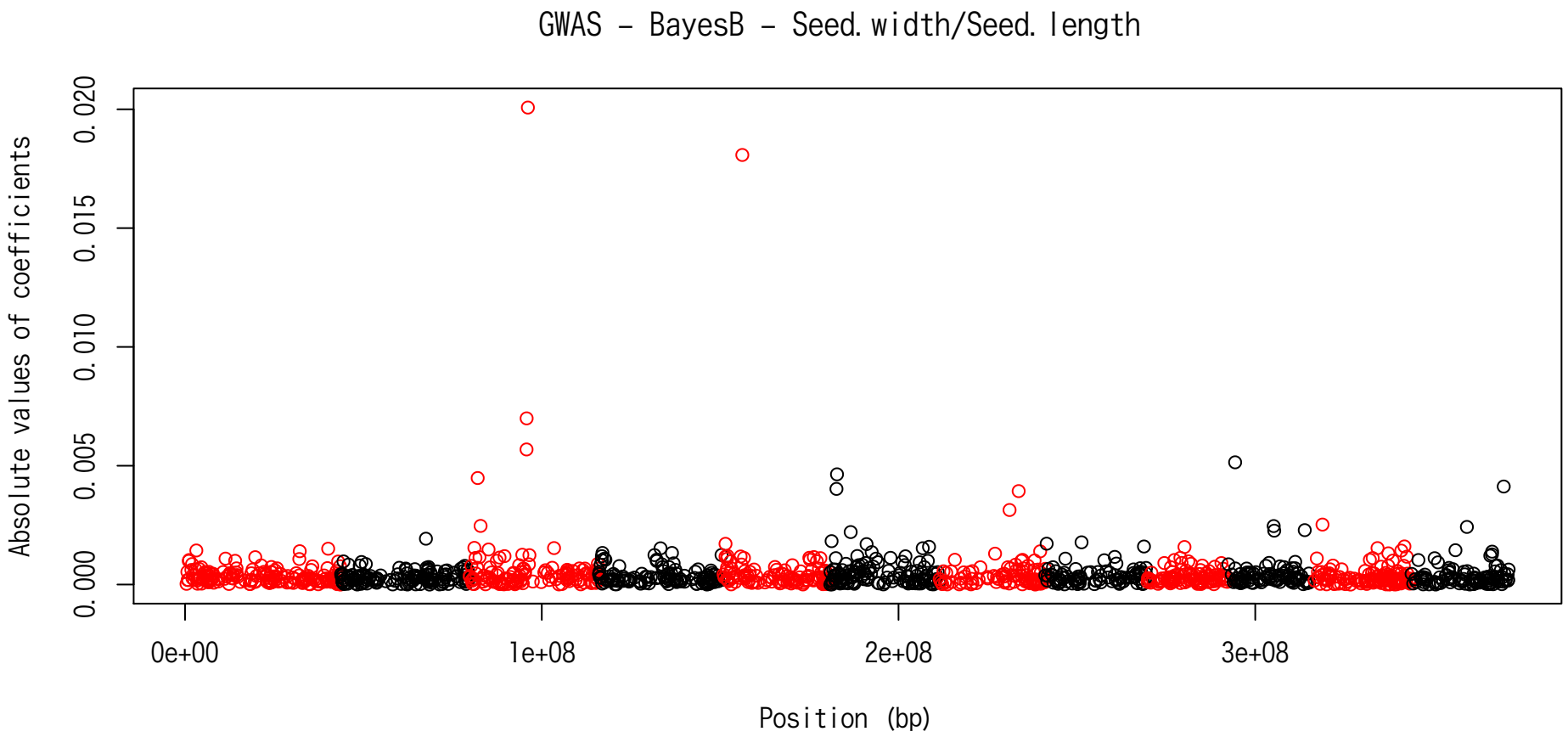
2017専門実習
課題

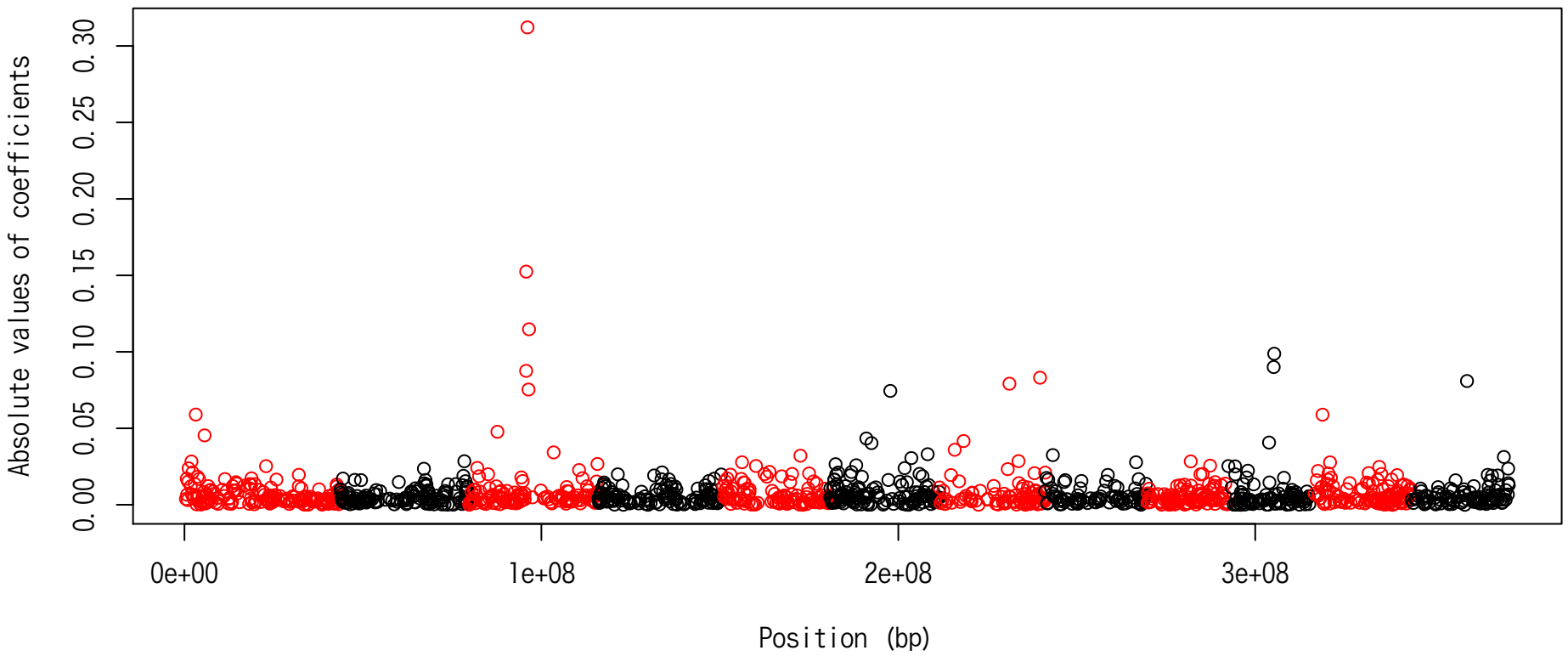
種子の縦横比・粒長・粒幅のGWASの結果について、
原因 遺伝子を探索を行い、
その遺伝子の役割について考察してください。

チュートリアルであつかったGWAS 縦横比



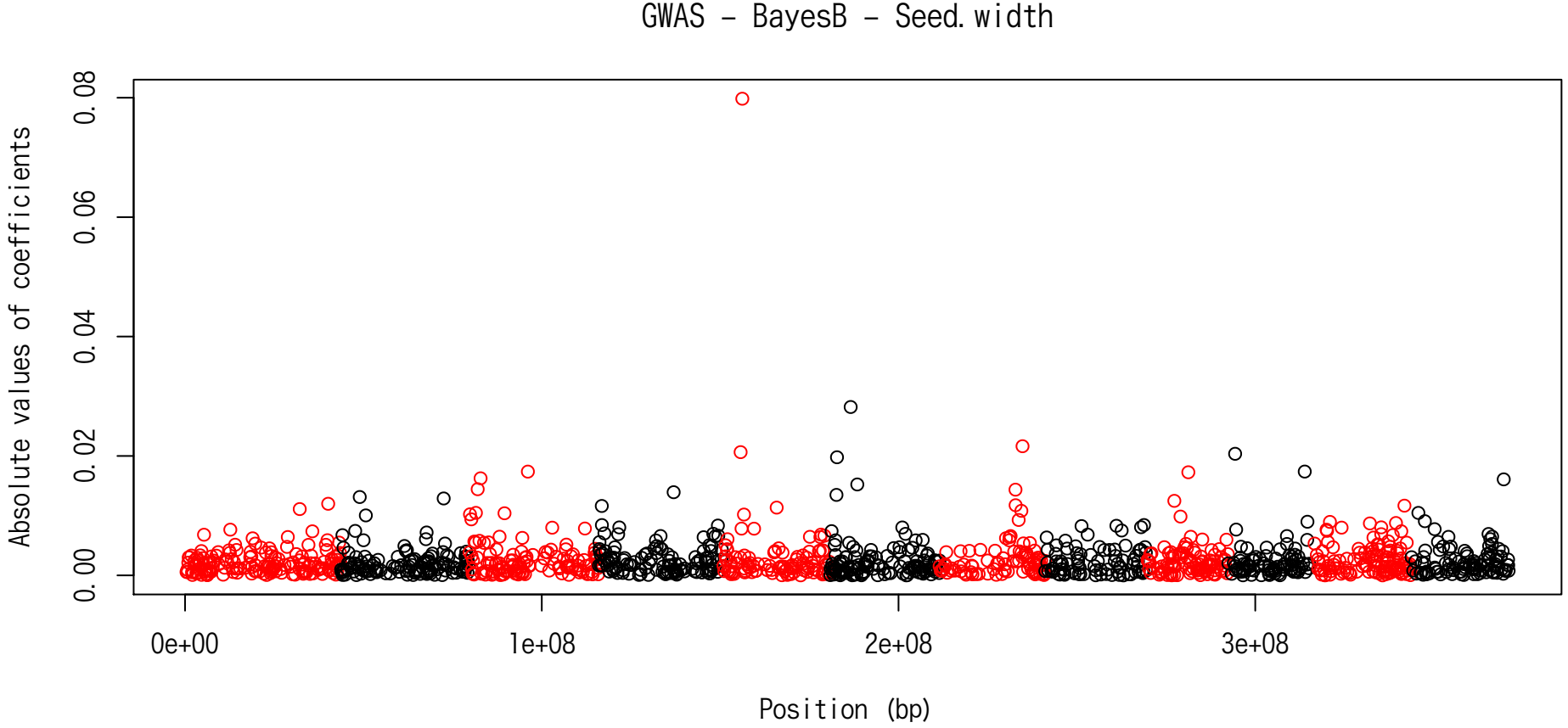
marker	chr	pos	abs.fmBB.ETA.MRK.b.
id3008333	3	16,621,452	0.020073506
id5002699	5	5,273,692	0.0180782
id3008139	3	16,272,206	0.006993685
id3008127	3	16,247,306	0.005685386
id10000498	10	2,043,939	0.00514448
id6001632	6	2,160,757	0.004639277

GWAS Seed length



marker	chr	pos	abs.fmBB.ETA.MRK.b.
id3008333	3	16,621,452	0.31211751
id3008139	3	16,272,206	0.15244834
id3008459	3	17,047,630	0.11475756
id10003501	10	13,008,071	0.09877811
id10003462	10	12,850,534	0.09005561
id3008127	3	16,247,306	0.08758173

GWAS Seed width



marker	chr	pos	abs.fmBB.ETA.MRK.b.
id5002699	5	5,273,692	0.07983603
id6003829	6	5,994,007	0.02820405
id7004106	7	23,250,996	0.02163568
id5002528	5	4,797,494	0.02064282
id10000498	10	2,043,939	0.02036695
id6001632	6	2,160,757	0.01978717

イネの粒長、粒重、形に関与する遺伝子

Locus / Gene	RAP ID	Chr	start	end	reference
DWARF61 / OsBRI1	Os01g0718300	chr01	29,927,587	29,931,452	Zhao et al 2013 Plant Science
GW2	Os02g0244100	chr02	8,115,223	8,121,651	Song et al 2007 Nat Gen
GS2	Os02g0701300	chr02	28,863,274	28,866,997	Zhang et al 2013 Crop Journal
PGL2	Os02g0747900	chr02	31,423,973	31,424,983	Heang and Sassa 2012 Breeding Sci
smg1 / OsMKK4	Os02g0787300	chr02	33,442,070	33,443,948	Duan et al 2014 Plant J
PGL1	Os03g0171300	chr03	3,814,378	3,823,216	Heang and Sassa 2012 PLoS One
GS3	Os03g0407400	chr03	16,729,501	16,735,109	Fan et al 2006 TAG; Mao et al 2010 PNAS
qGL3 / OsPPKL1	Os03g0646900	chr03	25,042,427	25,045,410	Hu et al 2012 JIPB
GIF1	Os04g0413500	chr04	20,422,171	20,426,921	Wang et al 2008 Nat Gen
DWARF11	Os04g0469800	chr04	23,467,167	23,471,592	Tanabe et al 2005 Plant Cell
APG	Os05g0139100	chr05	2,246,835	2,248,876	Heang and Sassa 2012 PLoS One
SGL / SRS3	Os05g0154700	chr05	3,207,517	3,210,183	Wu et al 2014 Plant Cell Rep
GS5	Os05g0158500	chr05	3,439,304	3,443,769	Li et al 2011 Nat Genet
GW5	Os05g0187500	chr05	5,365,121	5,366,701	Shomura et al 2008 Nat Genet
D1 / RGA1	Os05g0333200	chr05	15,609,569	15,613,588	Ashikari et al 1999 PNAS
BU1	Os06g0226500	chr06	6,556,697	6,557,748	Tanaka et al 2009 Plant Phys
GW6/OsglHAT1/ GW6a	Os06g0650300	chr06	26,591,905	26,593,464	Song et al 2015 PNAS
GL7 / GW7 / qSS7 / GS7	Os07g0603300	chr07	24,664,328	24,669,321	Shao et al 2012 TAG; Wang Y et al 2015 Nat Gen; Wang S et al 2015 Nat Gen
SRS1/DEP2	Os07g0616000	chr07	25,381,698	25,389,532	Abe et al 2010 Genes Genet Syst
OsFIE1	Os08g0137250	chr08	2,095,644	2,100,604	Folsom et al 2014 Plant Phys
GW8 / OsSPL16	Os08g0531600	chr08	26,501,167	26,506,198	Wang et al 2012 Nat Gen
DEP1	Os09g0441900	chr09	16,411,151	16,415,851	Huang et al 2009 Nat Gen
SG1	Os09g0459200	chr09	17,350,940	17,352,413	Nakagawa 2012 Plant Phys
SRS5	Os11g0247300	chr11	7,960,531	7,963,375	Segami et al 2012 Rice

GW5について調べる

https://shigen.nig.ac.jp/rice/oryzabase/gene/advanced/search

GW5の情報が表示される

RAP-DBでもGW5について調べる

http://rapdb.dna.affrc.go.jp/index.html

Os05t0187500-01の詳細を調べる

Os05t0187500-01

GBrowse TASUKE Genome Browser

Locus

Os05g0187500

Description

IQ calmodulin-binding motif family protein, Positive regulator of brassinosteroid signalling, Re
and weight

RAP-DB Gene Symbol Synonym(s)

GW5, qSW5/GW5

RAP-DB Gene Name Synonym(s)

GRAIN WIDTH 5

Literature
PMID: 28394310

GW5の文献情報を入手

PubMed

Format: Abstract

Full text links

nature plants

Nat Plants. 2017 Apr 10;3:17043. doi: 10.1038/nplants.2017.43.

GW5 acts in the brassinosteroid signalling pathway to regulate grain width and weight in rice.

Liu J[1], Chen J[1], Zheng X[1], Wu F[1], Lin Q[1], Heng Y[1], Tian P[1], Cheng Z[1], Yu X[2], Zhou K[2], Zhang X[1], Guo X[1], Wang J[1], Wang H[1], Wan J[1,2].

Author information

Abstract

Grain size is a major determinant of grain yield in cereal crops. qSW5/GW5, which exerts the greatest effect on rice grain width and weight, was fine-mapped to a 2,263-bp/21-kb genomic region containing a 1,212-bp deletion, respectively. Here, we show that a gene encoding a calmodulin binding protein, located ~5 kb downstream of the 1,212-bp deletion, corresponds to qSW5/GW5. GW5 is expressed in various rice organs, with highest expression level detected in young panicles. We provide evidence that the 1,212-bp deletion affects grain width most likely through influencing the expression levels of GW5. GW5 protein is localized to the plasma

文献検索の方法

- PubMed

https://www.ncbi.nlm.nih.gov/pubmed

TOGO TV

PMC (PubMedCentral) の使い方 2017

http://togotv.dbcls.jp/20171209.html

- Google Scholar

https://scholar.google.co.jp

TOGO TV

研究者のためのGoogle活用術

～Google Scholarを中心に～ 2017

http://togotv.dbcls.jp/20170605.html