

Supplemental Table 1. Maize markers for QTL mapping

Name	Bin	Alias	Forward primer 5' -> 3'	Reverse primer 5' -> 3'
umc1566	1.01		ATCTCGTCTACCTAACCCACCCTC	CAGGTGAAGAATCTGGTGAGGTC
umc1292	1.00		GAAGTGGGGAACATGGTTAATGTC	TCACGGTTCAGACAGATACAGCTC
umc1106	1.00		CATCCAGTCATCGGTAATACGACA	AACTGTTGCCTTCTTTTTCCCTTC
bmc1014	1.01	bnlg1014	CACGCTGTTTCAGACAGGAA	CGCCTGTGATTGCACTACAC
bmc1627	1.02	bnlg1627	CGGACGGGGTTATTTAAAAT	TGTGTTTCGAGAATCTCTCG
umc2397	1.03		CGCATATATACTTGTGCGCACTTT	TATGTATGTTTCGTGTGCCTGTGTG
bmc1866	1.03	bnlg1866	CCCAGCGCATGTCAACTCT	CCCCGGTAATTCAGTGGATA
bmc2238	1.04	bnlg2238	TGCCACTCAAGCCTTCTTTT	TTCTGATTGCAGTGCAGACC
umc2227	1.04		ACCTTGAGCGTGGAGTCGGT	AGCTGAGCCTTCTCTTCTGGCT
umc1144	1.04		ATGGCCCACTCATATATCTCTGT	TGTGTTGATTAGCAGCGGATAAAA
umc1452	1.03		GATCCTAGCCTTGAAGGGGA	AAGAGGAACCATCTGCTATCGTG
umc1035	1.06		CTGGCATGATCACGCTATGTATG	TAACATCAGCAGGTTTGCTCATT
umc1122	1.06		CACAACTCCATCAGAGGACAGAGA	CTGCTACGACATACGCAAGGC
bmc1025	1.07	bnlg1025	TGGTGAAGGGGAAGATGAAG	CCGAGACGTGACTCCTAAGC
umc1128	1.07		TCAATTTGAGCTATCACTTCCG	ATTGGTTCATTGGTTTTGTTGAT
umc1991	1.08		GAAATTGATGCAATTCACCCTGAT	ATTGAATTGCGTGATGCAAGAGTA
umc1306	1.09		CGAAACAAAACACCCAGCAGTAGT	CCAGGATGAATAAATCGTATTGCC
umc2149	1.10		TACATGCAAAGCTAGCTAGTCGGA	AGCAGCACCATCGTAATAAGCAC
umc2241	1.11		CGTGATCGACATGGACCACTT	CACCATCACATTCACACGCATAG
umc1744	1.11		ATGAAGCTGGCTGATACGGAAT	CGAGCCCTTAATTAGTTCTCGGTT
umc2246	2.00		AGGCTCCAGCTCTAGGGGAGT	GTGAACTGTGTAGCGTGGAGTTGT
bmc1017	2.02	bnlg1017	ATTGGAAGGATCTGCGTGAC	CAGCTGGTGGACTGCATCTA
umc2403	2.02		AGTCAGTCGATCGTACACAGTCCA	TTCGTATCTTAGCTGGTCTTTGGC
umc1823	2.02		AAAGCCTTACTGTTATTAGGCTAGGCA	AGAAAACCAGCCCAGATGTTT
ZAG125	2.02	bnlg125	GGGACAAAAGAAGAAGCAGAG	GAAATGGGACAGAGACAGACAAT
ZCA381	2.04	bnlg381	TCCCTCTGAGTGTTATCACAAA	GTTTCCATGGGCAGGTGTAT
umc2247	2.04		TTAAACTGGGCCCATAAAGTTCT	GAAGGATGAGCAAAGGAAGATGAA
phi083	2.04	prp2	CAAACATCAGCCAGAGACAAGGAC	ATTCATCGACGCGTCACAGTCTACT
umc2110	2.05		CTGCGTACTCTAGGTATCCCGTGT	GGTCGGATAGGAGAATCTACAGGC
umc2205	2.07		ATGGTGAGCGAGTGAAAGAGAGAT	CATGATCATTGGCGATGGTAAT
umc1042	2.07		AAGGCACTGCTACTCCTATGGCTA	CTGACCTTTGAATTCTGTGCTCCT
bmc1233	2.08	bnlg1233	GAACACCAGAGGAGAGTGGG	TTCATTGTCCACCACTGGA
bmc1662	2.08	bnlg1662	GCACCCACATGAAGTATCCC	TTGTTTTGTCAGTGCCTCAG
bmc1721	2.08	bnlg1721	ACGACTTTCATGCCTCGTCT	ATTTCTTTTGCCACCTCAGC
umc1798	2.08		TATAACAACGTAGCAAAGCACGGG	GATCGACCCTAATCGTCCTCCTAC
bmc1940	2.08	bnlg1940	CCTTTGTTTCAGGCCGTTA	CAGCAGCCTGATGATGAACA
umc2184	2.09		CTTGGCCTACTCCAAGTTCTCG	AGTAGAGCAGCACCATCCCCG
phi101049	2.10		CCGGGAACCTGTTTCATCG	CCACGTCCATGATCACACC
umc2214	2.10		ACCCCTGATTCTCTTACGTTT	CTGGATGAGGAGGAAGAATACGAG
umc1394	3.01		CCCGAGTCAGAAAAACATCACTT	CCTAACCTGAAGAAGGGAGGTCAT
umc2376	3.01		CATTTGTTCTCGCATCCTTTC	ATCTCCCCTGTCATCTAACCCAC
bmc1144	3.02	bnlg1144	TACTCGTGTGTGGCGTTAG	AGCCGAGGCTATCTAACGGT
mmc0132	3.04		ATATTCATCGGTTCAACTTCC	AGCGCCAGCCTCCCGTAGTC
umc2002	3.04		TGACCTCAACTCAGAATGCTGTTG	CACAAAATCCTCGAGTCTTGATTG
umc1307	3.05		GTACGGGTGAAGAGAACAGGTCAA	ATCTTCTGTTTTTGGTCCCTTCC
umc1539	3.05		GAGTCCAGGCAGCACGCTAGT	GAGCAGCACACGAGGACCAG
phi102228	3.06		ATTCCGACGCAATCAACA	TTCATCTCCTCCAGGAGCCTT
ZCT197	3.06	bnlg197	GCGAGAAGAAAGCGAGCAGA	CGCCAAGAAGAAACACATCACA
umc2050	3.07		CTCCTGCTGTGATTCTAGGACGA	CTGGATCTCGGCATGGTCTT
umc1320	3.08		TGCGAAATCTGTATACCATAGGCA	CTCTTTTAGCAGTGTGCCGAATTT
umc2174	3.08		GTACGTACGCAGCCACTTGTGAC	ACATAAATAAAACGTGTGCCGAC

umc2008	3.09		GTGGACTACTCTCGCTTCGCTTT	CGTGGACGTA	CGTGGACTACTCGATTAGTTTGGT
umc1682	4.01	bx2	AGCAAGCAAGCAAGTCACTGAGTA	GAGCTAGCCG	GAGCTAGCCGGAGATAGAGAGGAG
phi021	4.03	adh2	TTCCATTCTCGTGTCTTGGAGTGGTCCA	CTTGATCACCTT	CTTGATCACCTTCTCTGCTGTCGCCA
umc2281	4.03		CAATGATTGGAGCCTAACCCT	ATGATGATCTG	ATGATGATCTGCAGAGCCTAGTCC
umc1969	4.05		CTCGAGCCCAGCAGAGAAAG	GGTGGAGCCC	GGTGGAGCCCATGGCTATTACTAT
umc1775	4.07		GAGGACAACGCTGCTATTCTCG	GGA	GGA
bmc2162	4.08	bnlg2162	GTCTGCTGCTAGTGGTGGTG	CACCGGCATT	CACCGGCATTGATATCTTT
umc1999	4.09		GTCCCATCTGCTGAGGGCTTAT	ACAACAAAT	ACAACAAATGGGATCTCCGTTACA
ZAG589	4.10	bnlg589	GGGTCGTTTAGGGAGGCACCTTTGGT	GCGACAGAC	GCGACAGACAGACAGACAAGCGCATTGT
umc1716	4.11		ACCACCAGCTACCAGGGATGT	CTGCTGGAT	CTGCTGGATCTGCTCGTACTTGT
umc1260	5.00		CTTAAGCAGAGCTCAAAA	TAAATTGT	TAAATTGTCAAGCGAGGTTTGGAT
umc1478	5.01		GAAGCTTCTCCTCTCGCGTCTC	CAGTCCCAG	CAGTCCCAGACCCTAGCTCAGTC
umc1766	5.01		ACAAGAAGGAATCGAGAGCAAATG	CTTCGGGAT	CTTCGGGATGGAGTCGTAGTTC
umc2161	5.03	mmp58	ACGGCACACAGATATTTCA	AAGATCAG	AAGATCAGATTTGCTTGTGGGTG
umc1110	5.03		TTACACCAAGGTCCGAAACAAGAT	TCTTGGA	TCTTGGAAGGCAAGACTCTACCTG
mmc0081	5.05		TGAAATAATTCACAGCACTCC	TGATAGC	TGATAGCACAACACAGCTATG
umc1019	5.06	umc126a	CCAGCCATGTCTTCTCGTTCTT	AAACAAAG	AAACAAAGCACCATCAATTCGG
mmc0481	5.06		GCACCTGCGAGACTAGG	TGTTTGAG	TGTTTGAGCCGTTCTAGACT
phi085	5.06	gln4	AGCAGAACGGCAAGGGCTACT	TTTGGC	TTTGGCACCACGACGA
ZCT118	5.07	bnlg118	CTTCCAGCCGCAACCCTC	CCAACA	CCAACAACGCGGACGTGA
umc1829	5.09		GTTGATTGGTTGATGTGGA	CAGTTTG	CAGTTTGATGTTTATGGCTCTCTC
ZAG238	6.00	bnlg238	CTTATTGCTTTTCGTCATACACACATTC	GAGCATG	GAGCATGAGCTTGCATATTTCTTGTGG
umc1002	6.00	fdx2	AGCTAGCTATACACC	TCAGTTT	TCAGTTTGGAAACAGGGAAAAGTA
umc1018	6.00	gpc2	GAACGGATATTGGAACCTGTGC	GTGCAC	GTGCACGGTGTCTACTTGAAC
bmc1433	6.01	bnlg1433	CTCAGTCCCTCCCATTTTGA	TTCTGG	TTCTGGCTCAAAGGGCTAGA
bmc1422	6.01	bnlg1422	GACGATTAACAGGTGGGGAC	ATGATG	ATGATGCAAATGAGGCACAA
umc1656	6.02		AGTTTTGACCGCGCAAAAGTTA	GTACG	GTACGAGCAGGCCATTAACCC
umc1006	6.02		AATCGCTTACTTGTAACCCACTTG	AGTTT	AGTTTCCGAGCTGCTTTCTCT
bmc2191	6.02	bnlg2191	CACACAATCCCCACAAAAA	CGAAAC	CGAAACATCCAGGAAACTGC
AC192572	6.01		ATGGGCATGGCGATGATTGA	GTAGA	GTAGAAGCCCGCTCTCTTCC
Z3559	6.02		CGGCGCTATCCTACTGGTTT	GGCTG	GGCTGGAATATCACGAGCGA
Z3663	6.02		AGATGAGCTGAACCTGCACC	TACACT	TACACTGCGGCACTGTAAGG
npi393	6.03		CTGCAGCTCATGGATGCTGGCTCT	GTCCG	GTCCGTGGTCTTCTCTCTCCCGGCC
umc1796	6.04		CGCTGAGGCTTAAGATGGTGT	AACGC	AACGCCTTACGAGCACGAAC
Z4325	6.04		TGCAAGACATGGCTGCCATA	CCTCT	CCTCTCCAATCTCCATCGGC
umc2610	6.04		AGTCGATCATGATTGTGCATCCT	AGTG	AGTGCCCTTCTCTCAAGCCTAAC
umc1857	6.04		TTCCTTGCCAAACAATAACAAGGAT	GTTCA	GTTCAATTGCTTCTCTTGGAACT
bmc1617	6.04	bnlg1617	CGTGCACGGTACAGAAAGAA	AGAA	AGAAAGCCACGTACCCTTT
AC205395	6.05		CACCATCTCAGTCGGCAACT	GGGT	GGGTGGCTCCTATTGTGCT
umc2319	6.04		GCTCTACTAGCCTCGATTCC	GATCC	GATCCACGCGAGGTTCACTG
umc1805	6.05		AGTGCACCAGCTTTAATCACCTC	TGTG	TGTGACCTGTGTGGTCTGTGG
bmc1702	6.05	bnlg1702	TTATCATCAAATGGAGGACACG	AAAG	AAAGACACAGCTAATGGGC
mmc0241	6.05		TATATCCGTGCATTTACGTTT	CATCG	CATCGCTTGTCTGTGCGA
ZCT345	6.05	bnlg345	CGAAGCTAGATGTAGAAA	CTTAC	CTTACCAACCAACTCCCAT
umc1859	6.06		ATATACATGTGAGCTGGTTGCCCT	GATG	GATGCTATTACCAATCTCCAGGT
umc2162	6.06		GATGCTGATGACGCTCTACAAGG	GACG	GACGATGACGAACCCGAGC
phi299852	6.07		GATGTGGGTGCTACGAGCC	AGAT	AGATCTCGGAGCTCGGCTA
bnlg1136	6.07		TAACCGGATGAGCATCTTCC	CATC	CATCAGCTTCAACGAGTTCCG
umc1653	6.07		GAGACATGGCAGACTCACTGACA	GCCG	GCCGCCCACGTACATCTATC
bmc2132	7.00	bnlg2132	GGCGAGAGAGGCAAAGTTAA	GTCG	GTCGCACAAGGGGATCAC
umc1409	7.01		GCTAGTAGACATCGACGGATCGAC	ATG	ATGACGTCCAGGAGGATGACC
umc2392	7.01		CAGAGACCTCGACTTCGACCAC	CTT	CTTCTGCTTCTGCTCGACCTTCT
umc1213	7.02	in1	CACGCTCGATCACTGAAGCAT	GTAC	GTACGTCCACCCCGTGTCT

umc1666	7.02		TTATTGCCCTCCCTGTTCTTGTT	ACCTTGACGCAGCAATCCTC
mmc0411	7.02		CGATGCAAGAGTGTCAAGTA	ACTCCCTAGTGCAAAAATCA
ZCT155	7.03	bnlg155	ACCGAGTAGCCGAGACACG	AGAGTCCTGGAGCCACATGAG
bmc1666	7.04	bnlg1666	GCTGGTAGCTTTTCAGATGGC	TGTCCTCCTCCAGTTTCAC
umc1029	7.04		AACACCTGCTGGATATGGATCACT	GGAAGAAAAATGTGACCTGCTC
umc1782	7.04	rip2	CGTCAACTACCTGGCGAAGAA	TCGCATACCATGATCACTAGCTTC
umc1412	7.04		GCATCTGTAGCCTTTTTGTGTGTG	CTCAGCTTGCAGGTTATCGCTT
umc2222	7.05		CCAACAACCTTGCTACCATAGTCC	TACATGGTCCTGTGACAACTTGC
umc1760	7.05		CATGTGGGTGTTAATAAGCAAGGG	GCCTTGTTTGCTCTCTGAAACAAT
umc1327	8.01		AGGGTTTTGCTCTTGAATCTCTC	GAGGAAGGAGGAGGTTCGTATCGT
umc1741	8.03		AGACGAACCCACCATCATCTTTC	CGCTTGCGATCTCCATGTATATCT
bmc1812	8.05	bnlg1812	CGAGAAGACTTTCGTGAACA	TTACGTGCGTCGTGAGAATC
umc2395	8.06		ATCACATCTTTCGTTGTCATTTTG	ATGGATTCTTCCGGCCTCTC
bmc1823	8.07	bnlg1823	TGTGACTCCATACCGCACAT	CTCATCATGTTGTACATGGCG
bmc1828	8.07	bnlg1828	TTGTGTACGATGCGATCGAT	ACAACGGACAGGAACAGGAC
umc1663	8.08		GCTTGCACTAGCTTTAGCTCCATC	CGGGATCAGTCGTTACAAACATAG
bmc1724	9.01	bnlg1724	CTGACCCAGAGCATTGTGAA	GATGAAGAGCTTGCAGTCCC
dupssr6	9.02		GATCCTACCAAAATCTTATAGGC	ACAGCTAGCCAAGATCTGATT
umc1636	9.02	omt2	CATATCAGTCGTTTCGTCAGCTAa	GTAAGGTCAGGTCGTCGCTCTT
umc1037	9.02		GTGCGCGATTCTTAGTTTGC	CTTCTTCGTAAAGGCATTTTGTGC
umc2398	9.04		TCTAATACATAGCAGCCCTCGCTC	CACACGTTACAAGGAGCAAGAAGA
umc1492	9.04		GAGACCCAACCAAACTAATAATCTCTT	CTGCTGCAGACCATTTGAAATAAC
umc1519	9.04		CTCGAGACTCTGGTTCAATCCAAT	CATGCACGTAATCCCTGATTTTT
umc2371	9.05		GATTATTTGATTAGCCCGGTTGGT	CTGAGTCGTATTTATAGAGCCCGC
umc1789	9.06		ACCTCTCCTTTTTCTCGCCTT	GTCAGAGAAGAGGCCGGGTC
ZCT619	9.07	bnlg619	ACCCATCCCCTTTCCACCTCCTCCT	GCTTTTCAGCGAATACTGAATAACGCGGA
umc1318	10.01		ACTTCGTCTAGTGTCCCTCCGTT	TGCCAGATTAAGCAACACAAGA
umc1432	10.02		GGCCATGATACAGCAAGAAATGAT	TACTAGATGATGACTGACCCAGCG
umc1785	10.03		TTCAATCCGTAGTCTGGTGCTAT	CAATAATTTCTTTCGCTTGTTCG
ZAG210	10.03	bnlg210	GCCTCGCACCAAGACATAATA	TGCCCCATTTGAGTAGACTTC
bmc1716	10.03	bnlg1716	AAATAACCAGAACATGCCGC	CGCAACTTTCATCGAGTTGA
umc2016	10.03	pao1	AGAGACGACATGTCTATCCTTGCC	ATTGCATTGCATTCAGCTGTTGT
bmc1655	10.03	bnlg1655	ATTAAAATCTTGTGATGGCG	TTCTGTTCCCGCCTGTAATT
umc1077	10.04		CAGCCACAGTGAGGCACATC	CAGAGACTCTCCATTATCCCTCCA
umc2163	10.04	mmp121	AAGCGGGAATCTGAATCTTTGTTT	GAAATTGCTGGGGTCTCATTCTT
umc1053	10.04	incw3	CTTGATCATCAGCTAGGGCATGT	TCAACTTATGTCAACTGCATGCTT
umc2350	10.04		AGTAGCGACTCCTCTGCGTGAG	CGAATCGAGGATGGTTTGTTTTT
ZAG594	10.06	bnlg594	CGAGCGCTTTGCGAGTACCAGTACACA	CTGCGTGCGTCCAGCCTCCACT
umc2122	10.06	tip5	TTGACAAGCTAGTGTGCAACTGTG	TGAAAGCCCACTGGACAACTAAT
bmc2190	10.06	bnlg2190	TCCTCCTTCATCCCCTTCTT	CCCAGTATCATTGCCCAATC
umc1084	10.07		GATAAAAAGGCAAGTGCAACAAGG	ATATCAACCAGAGGCTGGAACCTG
bmc1518	10.04	bnlg1518	AGCTGTACACGCAGTAGGCA	GGCTCTGTTAATTCGATCGC
umc1344	10.07	crr2	GCGCTCTGACTTAATTAGAGGAGTTG	GGCAGCAGATCTATGTCCAAGAAG

Supplemental Table 2. Primers for analysis of the *Pl1* gene

Primer	Objective	Primer sequence (5' -> 3')
pl1myb_s_86	Cloning, sequencing	ATGGGCAGGAGGGCGTGCTGCG
pl1myb_as_87	Cloning, sequencing	CTACACAAGCTGCTCGGCCGTGTG
pl1_389-s	Sequencing, fragment analysis	AGCAGCCATCTGCTACGAAT
pl1_34-s	Sequencing	CCGAACAGACAATGAAATCAAG
pl1myb_696-s	Sequencing	CGCCCGGCTCCGCAGCAGT
pl1_355-s	Sequencing	TGGTGGAGGAGGAGAAGCAC
pl1myb_361-as	Sequencing	GCCGAGGAGCTTGTGGAGCCGG
pl1_720-as	Sequencing, fragment analysis	CGAGGTCCGCGCGAGGAGCGGC
pl1_407-as	Sequencing	GCTTCCTACGAGGGGAGATAC
pl1_495-as	Sequencing	GTCGGACTCGAGAAACGATG