Singleton Deletions Throughout the Genome and One Common Duplication on Chr16p12.1 Increase Risk of Bipolar Disorder

Supplementary Materials

Supplementary Table 1 Details of The Primers Used for qPCR

Primer ID*	Primer Sequence	Singleton Region Locations
11950-1-F	CAATGCTTATCCCAGTTGCTAGGT	Chr15:43934925-44070720
11950-1-R	AAAAAGCCCCCCATGCA	Chr15:43934925-44070720
11950-2-F	TGTTCCGCTCGTCCTTGTC	Chr15:43934925-44070720
11950-2-R	TCTAATCCTGGCACTCCACCAT	Chr15:43934925-44070720
11950-3-F	CAGTTAGTGCCCTGCAGAGTGA	Chr15:43934925-44070720
11950-3-R	TTCAGAAGTCAAAACAGCAGCTCTA	Chr15:43934925-44070720
14684-1-F	AGCAGCCATAAGTATCAACCAATG	Chr13:104327533-104693653
14684-1-R	TGCAGATGTAACCAGTGAGATGTG	Chr13:104327533-104693653
14684-2-F	AAGTGCCAGAGGCCAAGCT	Chr13:104327533-104693653
14684-2-R	CGGGTGGGAAGCAATGTG	Chr13:104327533-104693653
14684-3-F	TCCAGATCCATGCAATCTTGTT	Chr13:104327533-104693653
14684-3-R	AGTTAGGAGGCCTTGGTAATTTTCT	Chr13:104327533-104693653
19192-1-F	AGCAAGACTCATGCAAATATGTTTCT	Chr8:89714774-89872504
19192-1-R	GACACCCACACCTTACCTAACATGT	Chr8:89714774-89872504
19192-2-F	GGAAAAGTACCAGCCCCTTGA	Chr8:89714774-89872504
19192-2-R	ACAGGGCTGGGAGGAGTCA	Chr8:89714774-89872504
19192-3-F	TCTCAACCAGACATAGGGACACA	Chr8:89714774-89872504
19192-3-R	CTGAGGCAATTTCAGCTATCCA	Chr8:89714774-89872504
27101-1-F	CACACAGCAAGGCAGGCATA	Chr3:65647659-65852131
27101-1-R	TGAATGCTGCAGAAACTTGATACC	Chr3:65647659-65852131
27101-2-F	AGCAAAGCTCTGCCTAAATAAATCTT	Chr3:65647659-65852131
27101-2-R	GGAGAAGGACCATTACTGGACTTC	Chr3:65647659-65852131
27101-3-F	GAGTTTCTGGGCATGCTCAAG	Chr3:65647659-65852131
27101-3-R	GATCCATGGGCGATTTGAGT	Chr3:65647659-65852131
28494-1-F	GACTCCAAATTCATCACCTGTGTT	Chr22:32209002-32482148
28494-1-R	CCAATC CGCTGTGTCTTCACT	Chr22:32209002-32482148
28494-2-F	CTCTACCGCTCCTC TTCCTCTATG	Chr22:32209002-32482148
28494-2-R	GGCCAGCATGGAGCCTAAC	Chr22:32209002-32482148
28494-3-F	TGATGCAAAACAACCAAGACTGT	Chr22:32209002-32482148
28494-3-R	GCTGCAAAGCCAGAGCAGTT	Chr22:32209002-32482148
28823-1-F	TGTCCATTTATCCCAGAAACATCA	Chr10:90344868-90556337
28823-1-R	AATGCGAGTAAGGAATCCTCATCT	Chr10:90344868-90556337
28823-2-F	CGTTCTGATACAAGTGTGTTTGCA	Chr10:90344868-90556337
28823-2-R	TTTTCATCATTGGTTCAGACATGTC	Chr10:90344868-90556337
28823-3-F	GCAGCTGCTTACCGTGTTCA	Chr10:90344868-90556337

28823-3-R	TGACCTCAGCTGCTCCTTAATATG	Chr10:90344868-90556337
39296-1-F	TGGCATATGGTATTCAATAAAGAGAGA	Chr4:131746385-131852628
39296-1-R	TTCATAAAGCAAAGCTGCAAAAGT	Chr4:131746385-131852628
39296-2-F	TCCCAAAATGACATGTAATGCTTTAT	Chr4:131746385-131852628
39296-2-R	CAATCTGTCTTCCTAGTAGAAACGTAGTAAAA	Chr4:131746385-131852628
39296-3-F	TTTTATGCCTGAAAATATCGGATCT	Chr4:131746385-131852628
39296-3-R	TTGCAAGAAGCCAGGATGTTT	Chr4:131746385-131852628
40375-1-F	AGGTCTATTCAGGGAACTGGGATA	Chr2:51052476-51182653
40375-1-R	CACTGACCCTTATGGAAGAATCTGT	Chr2:51052476-51182653
40375-2-F	GCACCTGCTAGAAAGGCTTCA	Chr2:51052476-51182653
40375-2-R	GTGCTGCCCTAGATTTAAAAACACT	Chr2:51052476-51182653
40375-3-F	ACGGTGCCTTTGGTCTCCTA	Chr2:51052476-51182653
40375-3-R	CAGCTTCTCGAAATACTGAAAATAGC	Chr2:51052476-51182653
46078-1-F	TCAAACACT GTGTGTGTGATTTCAT	Chr12:23795077-23945839
46078-1-R	TGTCGCTCTCTCCCCTCCTT	Chr12:23795077-23945839
46078-2-F	GACAAGGTAGGCCAAAGGAAAAA	Chr12:23795077-23945839
46078-2-R	AAGCCCCTCTGTCCTTCTAGGA	Chr12:23795077-23945839
46078-3-F	TGTCTACTATTGAAAATAGGAGCAGGTT	Chr12:23795077-23945839
46078-3-R	AAGGAGTATGGTGGCCCACTT	Chr12:23795077-23945839
51472-1-F	GAACTGGACCCCTACCAGTTAGC	Chr7:80252572-80393232
51472-1-R	CTACTAGGAAGCAGAGCTGAGCAA	Chr7:80252572-80393232
51472-2-F	CCCCATCCTCCCCTTCCT	Chr7:80252572-80393232
51472-2-R	CGTAGTGACTGGTCCTCCCATT	Chr7:80252572-80393232
51472-3-F	GGGATGGGCCAGCAACTT	Chr7:80252572-80393232
51472-3-R	GAGTAGAATTGCTAACATTCCAAAAATG	Chr7:80252572-80393232
52883-1-F	GATTAGCCCCCAACAGCTCTT	Chr14:65606389-65762067
52883-1-R	TCGGTAATGTTTGCCAAACATC	Chr14:65606389-65762067
52883-2-F	AACATTGACTCAGTTCGTCTCTGTCT	Chr14:65606389-65762067
52883-2-R	GAGGCTGGCATGGATTGTG	Chr14:65606389-65762067
52883-3-F	ATTCACAACAATCCACACAATGC	Chr14:65606389-65762067
52883-3-R	AGCTGGCCTATTCCTGCTTTC	Chr14:65606389-65762067
54165-1-F	TGTTGAGCCATCACTAAAACCAA	Chr1:100964950-101093664
54165-1-R	TGCCTGACACAGCCAAACC	Chr1:100964950-101093664
54165-2-F	AGACTCCCACTGCCTCCATATG	Chr1:100964950-101093664
54165-2-R	ATTCCTTCCCTGCCCTCCTT	Chr1:100964950-101093664
54165-3-F	TGCGGAGGGCCTTCTCA	Chr1:100964950-101093664
54165-3-R	TGAGCTGCCACTGCTGTTTG	Chr1:100964950-101093664
59985-1-F	TGGGAGCTTTGCCAACTGA	Chr11:83857199-84048322
59985-1-R	GATGAGTCACAGCTTGGAAAACC	Chr11:83857199-84048322
59985-2-F	GCTCCCCAGCTCCCTATACAC	Chr11:83857199-84048322
59985-2-R	CTATGCCCTGAGAGCTGGAATG	Chr11:83857199-84048322
59985-3-F	AAGGGTGGCAGGAGGGATT	Chr11:83857199-84048322
59985-3-R	GCCCAATGTGCTGACAATTTT	Chr11:83857199-84048322

62878-1-F	CTCTGTTCTGAGTGCGTTGCTT	Chr5:117432239-117538631
62878-1-R	GCCATATTGCGGTTGAACAGT	Chr5:117432239-117538631
62878-2-F	CCAATGGCATCATCCTTTGAA	Chr5:117432239-117538631
62878-2-R	GAATCAAGAAAG ATGTCGAATAAACTGA	Chr5:117432239-117538631
62878-3-F	AGATGAGTGAGCTGGAAAGATGTG	Chr5:117432239-117538631
62878-3-R	TTCTGTTTGCTTCTAACTTCAGCAA	Chr5:117432239-117538631
67570-1-F	AAAGACCCAACCCCCAACTC	Chr1:30336050-30952188
67570-1-R	TGTGCACGTCCAGTCTGTGA	Chr1:30336050-30952188
67570-2-F	TGGGCCCCACAGTCATTCT	Chr1:30336050-30952188
67570-2-R	TTCGAATTCCAAACTCCAACCT	Chr1:30336050-30952188
67570-3-F	GACAGCCCCAGGCAGGTT	Chr1:30336050-30952188
67570-3-R	AGATGACCAGAGCAGGAAGCA	Chr1:30336050-30952188
70653-1-F	GCTGTGGACCTTGCCAAGTT	Chr4:80103729-80207060
70653-1-R	TGCAGTGCCAACCACAGTTT	Chr4:80103729-80207060
70653-2-F	TGCACACAGGCATACAATTCC	Chr4:80103729-80207060
70653-2-R	GTGAAAGAGGCACAAAGAAATTGA	Chr4:80103729-80207060
70653-3-F	CCATGTGAGGCATGGCTCTT	Chr4:80103729-80207060
70653-3-R	CCTGCGTGCCCTGAATATCT	Chr4:80103729-80207060
74073-1-F	GGCTGCTTCAGGTTTTAGAACAA	Chr3:17342361-17710957
74073-1-R	CCTTGCCTCACTCCTTTTTCA	Chr3:17342361-17710957
74073-2-F	CCCCTACATCCACACAATCACA	Chr3:17342361-17710957
74073-2-R	TCTGCTTATATTGTTTTAGCCACAATTC	Chr3:17342361-17710957
74073-3-F	TTAGAGTATTTTTGTCACAACGAAGGA	Chr3:17342361-17710957
74073-3-R	CAGCATTGTTAGTGATCAAAGACACA	Chr3:17342361-17710957
85245-1-F	GGGTGAGACAGTCTCTGCCATT	Chr5:99501600-99810104
85245-1-R	ATCTGGTGGCCTTTGGAACTT	Chr5:99501600-99810104
85245-2-F	CATCATCAGGCCGAGGAAA	Chr5:99501600-99810104
85245-2-R	ACTTAGTCCCATGTGAGCTTTAATTAGA	Chr5:99501600-99810104
85245-3-F	CACAGATTACATCCGAGTCCTTTTCT	Chr5:99501600-99810104
85245-3-R	CCAGGTGCTGGAATGTCATTG	Chr5:99501600-99810104
87920-1-F	GCTGCGGTTCCACATTGAA	Chr10:10058972-10215130
87920-1-R	CCCTTTGCCCCTGTTTCTC	Chr10:10058972-10215130
87920-2-F	GCCAGTTGCACCAAACGATA	Chr10:10058972-10215130
87920-2-R	GCTCATACAAGCCAGTAGCTGAAG	Chr10:10058972-10215130
87920-3-F	AACTCCTTGGGTTGGAGAACAG	Chr10:10058972-10215130
87920-3-R	TCACCAGCAGTTCAGTGTTTTGT	Chr10:10058972-10215130
89437-1-F	AGGGCTGGAACACCTCTTATGA	Chr1:14341488-14762438
89437-1-R	TCGCAGCAAACATTATCAATGG	Chr1:14341488-14762438
89437-2-F	GCTGTCTGGGTGGCAGAAAT	Chr1:14341488-14762438
89437-2-R	CTGGCATTGAGCGAGGAAA	Chr1:14341488-14762438
89437-3-F	GGTAGAGGAGGGCTTCTCGAA	Chr1:14341488-14762438
89437-3-R	CCTCGATGCATTTTGCATCA	Chr1:14341488-14762438
89844-1-F	CACAGAGGAAACAATCCACATCTC	Chr3:7611612-7733107

89844-1-R	AAGTAGTCGCTGATGCTGAAAGC	Chr3:7611612-7733107
89844--2-F	GCCTAGGAAAGAAAAGCCAATTT	Chr3:7611612-7733107
89844--2-R	TGCAACAATACTCAGGTCATCATTT	Chr3:7611612-7733107
89844--3-F	GGCAATTTTAAGCTTTTTGGAACT	Chr3:7611612-7733107
89844--3-R	ACACATTGAATGTTAAAGAGGGAGAGT	Chr3:7611612-7733107
97196-1-F	CACAGGTTTTCTCAATTAACCCATATT	Chr2:17019985-17226171
97196-1-R	CAAGTGCCCTTAACTGGCAAA	Chr2:17019985-17226171
97196-2-F	ACCGCACACCACCTGTATCA	Chr2:17019985-17226171
97196-2-R	TCTGAGTTAGAGTTGCTGAAAACCA	Chr2:17019985-17226171
97196-3-F	GGTTAACCCTGAAGGAAGGACAT	Chr2:17019985-17226171
97196-3-R	TCAACTGTCGTCCATCATACATACA	Chr2:17019985-17226171
97271-1-F	TTTTCTCTTTAGTTGCCCAAGCA	Chr15:95135953-95889109
97271-1-R	GGCTGTGAATGCAGGAATGA	Chr15:95135953-95889109
97271-2-F	GTTGTTCATGGAGAGGAGCATTT	Chr15:95135953-95889109
97271-2-R	CTTGCTGCAAACCACATAATCTATG	Chr15:95135953-95889109
97271-3-F	GCTGGCCCACTGCCAGTA	Chr15:95135953-95889109
97271-3-R	ATTCTGGAAAAAATGACACTGTATCTAGTAG	Chr15:95135953-95889109
Hoxa7_primer-F	AACGCTGCACTTTTGCCATT	Endogenous Control
Hoxa7_primer-R	GGGAAGAGTCGCCCACTTG	

* F indicates the forward primer and R means the reverse primer. For example, 11950-1-F and 11950-1-R are a pair of primers.

Quantitative Real-Time PCR

The quantitative real-time PCR was performed using the ABI PrismTM 7900HT Sequence Detection System and ABI PrismTM 384-well Clear Optical Reaction Plates. Each locus was amplified individually in a total volume of 10 μl, which contained 300 nM of each primer, 5 μl of ABI POWER SYBR Green Master Mix and 4 μl of DNA dilution. All the amplifications used in the same conditions: 95◦C for 10 min, and 40 cycles of 95◦C for 15 sec and 60◦C for 1 min. Amplification was followed by a melting curve analysis starting from 60◦C to 95◦C at a linear rate of 0.1◦C/sec to exclude the presence of unspecific products. The amplification data were analyzed using SDS software (version 2.1, Applied Biosystems).

Supplementary Table 2. Singleton Deletions Identified in This Study.

Chr	Start	End	Phenotype (1=control, 2 = case)
1	112987422	113369070	1
1	113388739	114043773	1
1	114105331	114260861	1
1	114379103	114611497	1
1	114627212	115118807	1
1	214001144	214182688	1
1	246404335	246667943	1

Chr	Start	End	Phenotype (1=control, 2 = case)
1	179082079	179207535	1
1	239069843	239226340	1
1	100964950	101093664	1
1	696962	803181	1
1	14341488	14762438	2
1	30336050	30952188	2
1	62052182	62289893	2
1	85996510	86164671	2
1	247034191	247138092	2
1	144093481	144503421	2
1	59854502	60323099	2
1	111824223	111936532	1
2	194335159	194473802	1
2	87214683	87326171	1
2	110061321	110173878	1
2	41648921	41782840	1
2	117685550	117846661	1
2	117965258	118115612	1
2	194024309	194135536	1
2	141557011	141854532	1
2	78078191	78417836	1
2	50830356	50939853	2
2	211338224	211945208	2
2	187739868	188037266	2
2	134279946	134607843	2
2	81245677	81345716	2
2	51052476	51182653	2
2	17019985	17226171	2
2	31581547	31691315	2
2	82866310	83147178	2
2	179017997	179222014	2
2	43681325	43834135	2
2	130580429	130874329	2
2	133734967	133872725	2
2	2784	364086	2
2	52139472	52253660	2
2	135582431	136001762	2
2	209513906	209750829	2
2	138876258	138999006	2
2	193305544	193473630	2

Chr	Start	End	Phenotype (1=control, 2 = case)
2	57451768	57574406	2
2	51223965	51364053	1
2	51949825	52117047	1
2	153261397	153446144	1
2	77117777	77266367	1
2	52266990	52437594	2
2	138413047	138516208	2
2	122393161	122819888	1
2	117217972	117452675	1
3	2650155	3025952	1
3	192767319	192984913	1
3	89638717	90070475	1
3	165298261	165401615	1
3	13944582	14068739	1
3	107316477	107685603	2
3	65647659	65852131	2
3	22215863	22347752	2
3	105569731	105752712	2
3	17342361	17710957	2
3	145439120	145710806	2
3	18981260	19131053	2
3	9935293	10196986	2
3	181297216	181468866	2
3	832458	1403398	2
3	167146025	167290266	2
3	7611612	7733107	2
3	96172820	96286311	2
3	20364761	20467460	1
3	8356115	8625632	1
3	118264707	118416541	1
3	35225818	35409506	1
3	101143456	101386471	1
3	120342178	120478373	1
3	60945848	61106220	1
4	29104176	29217491	1
4	93499105	93648445	1
4	117291716	118395629	1
4	112922084	113764131	1
4	80103729	80207060	1
4	99017017	99146601	1

Chr	Start	End	Phenotype (1=control, 2 = case)
4	180005002	180169855	1
4	133789062	133911766	2
4	98207371	98370821	2
4	189737452	190802642	2
4	190922957	191140365	2
4	181983992	182237242	2
4	128329186	128541282	2
4	100416318	100528007	2
4	188718084	189093837	2
4	9088444	9243088	2
4	79275401	79382547	2
4	131746385	131852628	2
4	133983530	134242899	2
4	181669986	181822346	1
4	58530285	58727740	1
5	110337010	110448344	1
5	160545244	161037282	1
5	99501600	99810104	1
5	19906605	20606744	1
5	46025150	46231639	2
5	46235193	46425030	2
5	17698274	17830332	2
5	117133409	117416984	2
5	117432239	117538631	2
5	12452671	12963368	2
5	25121394	25414219	2
5	68532	214394	2
5	101026885	101313281	2
5	96565280	96666521	2
5	165026670	165342653	2
5	28971964	29184630	2
5	28549024	28718875	2
5	129367156	129884973	1
5	59677588	60022604	1
6	5267637	5369510	1
6	27870166	28498379	1
6	151340020	151472562	1
6	45013269	45349965	1
6	93159029	93282768	1
6	162035802	162238195	1

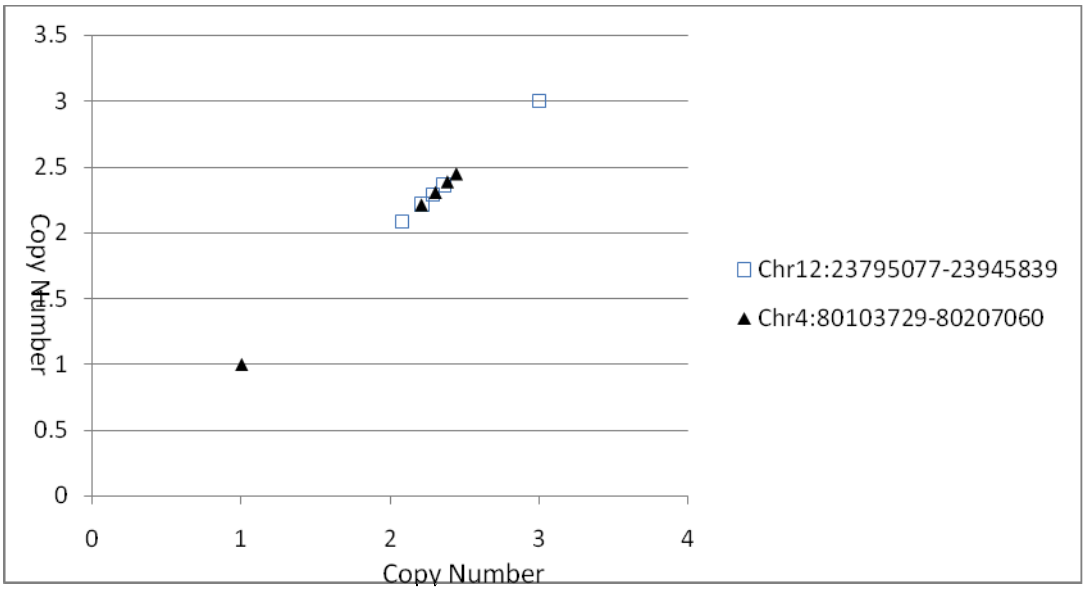
Chr	Start	End	Phenotype (1=control, 2 = case)
6	107598945	107772723	1
6	8537498	8664123	1
6	65788287	65908614	2
6	162297547	162466706	2
6	65913525	66058470	2
6	20860023	21094979	2
6	66450069	66568114	2
6	162768919	162951431	2
6	104923619	105082413	2
6	110341005	110496619	2
6	64845289	64981515	2
6	104282675	104588821	1
6	41949777	42425545	1
6	27591795	27719987	1
6	119101408	119211399	1
7	63163680	63422330	1
7	10490955	10631135	1
7	83834194	84122855	1
7	13830534	13987646	1
7	56361154	56482133	1
7	56511423	56651425	1
7	56736309	57221738	1
7	29637243	29747478	1
7	152525686	152731588	1
7	66118518	66230195	1
7	87503175	87628645	2
7	146619135	146732506	1
7	12234020	12334355	2
7	80252572	80393232	2
7	18172304	18354493	2
7	16816511	16974692	2
7	15093427	15230116	2
7	110030843	110177415	2
7	117711123	117812999	2
7	983474	1083962	2
7	51636486	51869014	2
7	89394963	89549758	1
7	1463147	1727907	1
7	5023605	5149325	1
7	102273590	102493457	1

Chr	Start	End	Phenotype (1=control, 2 = case)
8	8577248	8764567	1
8	89910306	90021039	1
8	90544322	90678285	1
8	17649519	17813473	1
8	9835494	9942198	1
8	89714774	89872504	2
8	115818013	115979174	2
8	112404217	112532873	2
8	33984545	34181218	2
8	62198081	62342696	2
8	13594555	13803591	2
8	127289895	127420529	2
8	57757261	58123374	1
9	107239010	107340007	1
9	107575646	107771176	1
9	7776145	7894651	1
9	103893182	104086715	1
9	25280188	25771446	1
9	84001758	84203153	2
9	118479893	118601081	2
9	30879485	30987350	2
9	12770295	12899312	2
9	9837864	9971069	2
9	10745356	11271192	2
9	1320599	1465882	2
9	5209901	5375778	2
9	8005209	8106186	2
9	108094238	108218479	1
9	118293597	118397730	1
9	287878	400370	1
10	128361479	128559816	1
10	10058972	10215130	2
10	111195021	111323778	2
10	56148428	56359760	2
10	32899498	33000799	2
10	37554667	37710375	2
10	90344868	90556337	1
10	90559662	90957411	1
11	26949271	27197653	1
11	81327836	81464615	1

Chr	Start	End	Phenotype (1=control, 2 = case)
11	114721884	114868905	1
11	131159857	131261275	1
11	50424537	50546653	1
11	4760556	4866960	1
11	39882026	40007110	1
11	31510470	31740158	2
11	132518807	132864395	2
11	38893850	39061298	2
11	36668226	36773732	2
11	28011741	28338552	2
11	25250128	26084796	2
11	93615588	93718931	2
11	102652001	102778728	2
11	4481014	4590667	2
11	7551379	7741499	2
11	5541538	5722264	2
11	96315312	96464735	1
11	133786141	134449982	1
12	5106123	5264317	1
12	42738391	42871809	1
12	85728483	86139645	1
12	69556712	69659898	1
12	11055369	11171582	2
12	81739512	81882550	2
12	125358126	126141645	2
12	130388049	130664946	2
12	33548635	33727028	1
13	66110636	66297368	1
13	99707290	99841672	1
13	54419445	54552662	1
13	63303324	63835483	2
13	66506774	66679448	2
13	68562415	68756637	2
13	19695328	20002424	2
13	86484088	86607162	2
13	69735960	69875736	2
13	86002839	86118457	2
13	104327533	104693653	2
13	67078117	67195263	2
13	41305653	41475788	1

Chr	Start	End	Phenotype (1=control, 2 = case)
14	85746169	85907603	2
14	38180299	38387234	2
14	45561879	45874496	2
14	41634412	42844607	2
14	48132582	48260726	2
14	65606389	65762067	2
14	86185554	86334317	2
14	26589758	26862564	1
15	50759751	50950209	1
15	34140057	34272543	1
15	98203369	98317280	1
15	95135953	95889109	1
15	43934925	44070720	2
15	44460444	44629062	2
15	100122652	100286563	2
15	60948591	61059666	2
15	91468546	91686822	2
15	73848212	74678295	2
15	74682831	76002735	2
15	85865979	86171624	1
15	68562262	68662843	1
16	81109185	81240041	1
16	70938484	71171821	1
16	75500301	75644624	2
16	45780566	46216218	2
16	77497019	77634452	2
16	6334356	6573261	2
16	34054852	34162068	2
16	78768757	78894217	2
16	77200307	77342789	2
16	88616964	88815036	2
16	3377269	3599472	2
16	29425212	30099408	1
17	63489383	63696899	2
17	14034987	15425596	2
17	10192755	10302402	2
17	48308592	48669406	2
17	19363885	19524790	2
17	3339284	3580845	1
17	49284284	49458197	1

Chr	Start	End	Phenotype (1=control, 2 = case)
17	22997431	23100753	1
17	346628	469478	2
18	18586267	18717349	1
18	65736224	65871226	2
18	63759585	63934609	2
18	13772867	13916665	2
18	55816000	56063854	2
19	22926249	23090115	1
19	13585920	13751837	2
19	20114007	20272000	2
20	53236812	53448810	1
20	23423221	23551527	2
20	8124269	8230686	2
20	61947003	62426597	1
21	22332016	22535203	1
21	45957636	46066684	2
21	36039929	36180839	2
21	26179419	26309441	2
22	17386126	18691917	2
22	19046936	19795835	2
22	32209002	32482148	2
22	24248713	24457052	1
23	1415800	1663566	2



Supp Figure 1. Validation of one singleton deletion region (one copy) and one singleton duplication (3 copies) region by qPCR. For each region, five samples were tested (one carried CNV, the others had 2 copies). The results were consistent with the identifications from Birdsuite. For Chr4:80103729-80207060, one sample possessed the deletion and the other 4 samples had two copies; For Chr12:23795077-23945839, one sample carried 3 copies, the others had two copies.