Genome-wide association analysis identifies new candidate risk loci for familial intracranial aneurysm in the French-Canadian population

Authors and affiliations:

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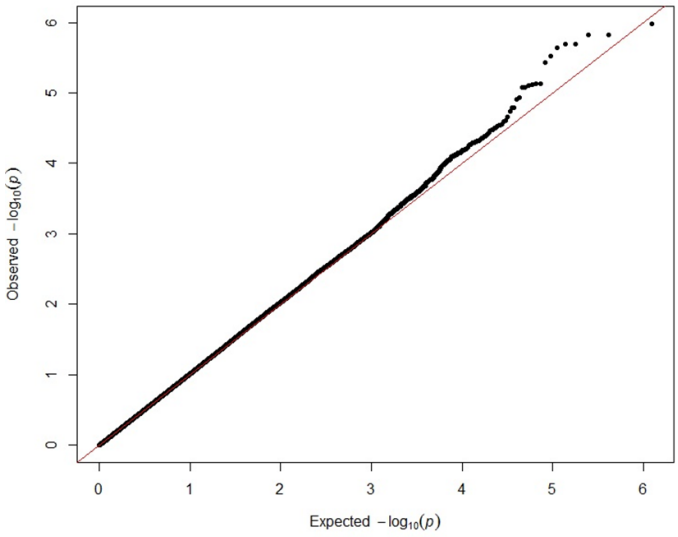
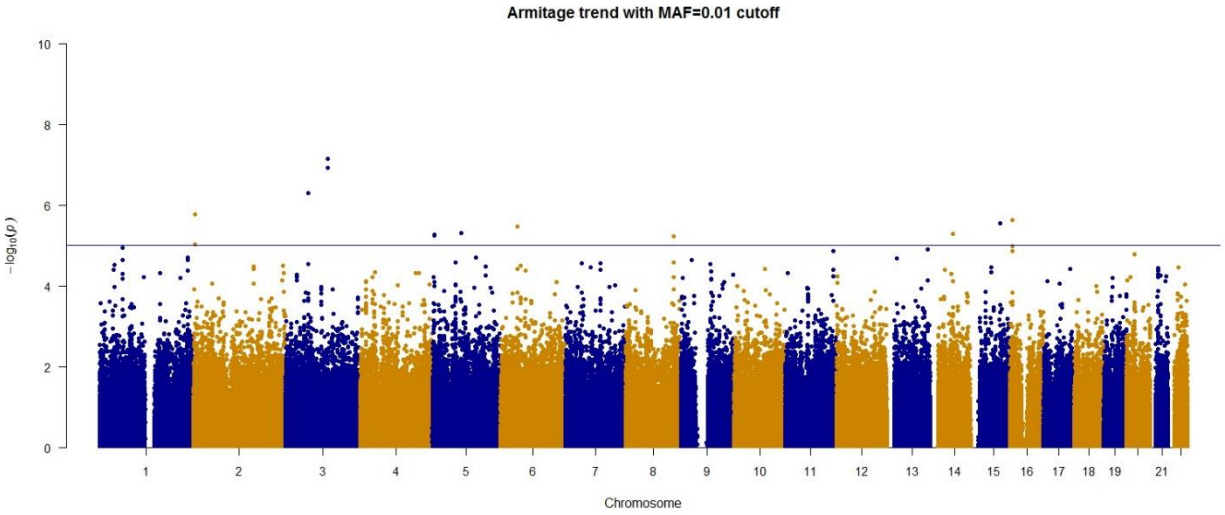
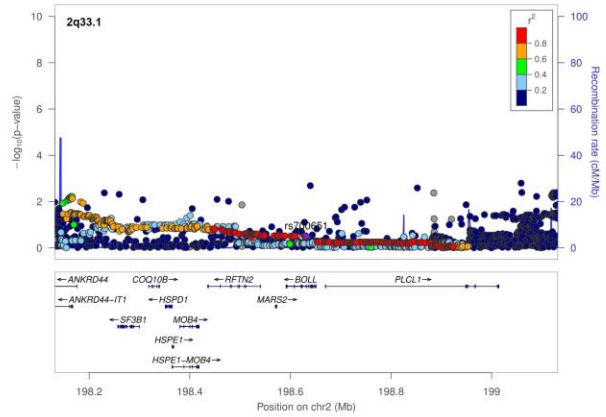


Supplementary Figure S1. Quantile-quantile plot of case-control logistic regression analysis



Supplementary Figure S2. Manhattan plot showing the result of the initial trend test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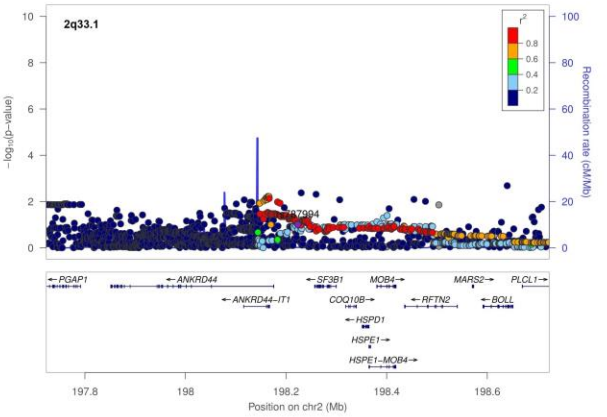
Position on chr2 (Mb)
Recombination rate (cM/Mb)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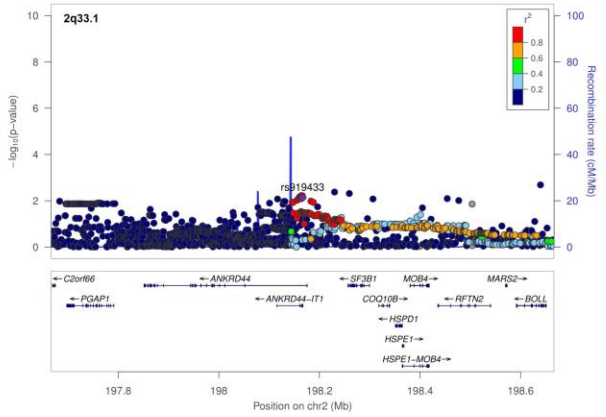
Position on chr2 (Mb)
Recombination rate (cM/Mb)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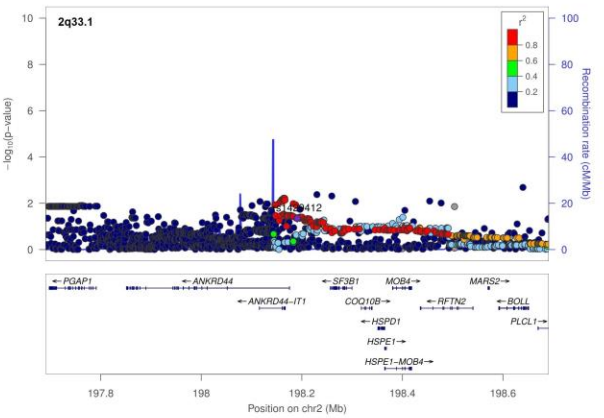
Recombination rate (cM/Mb)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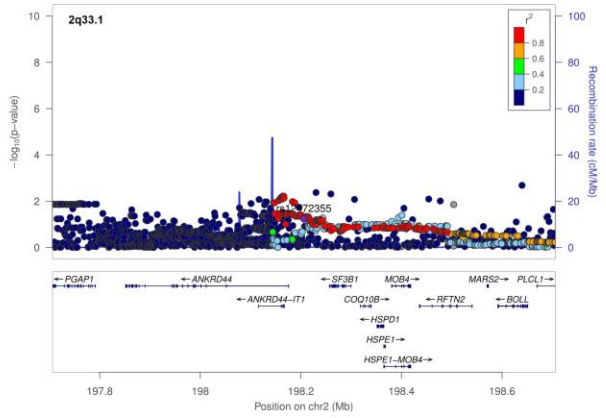
Recombination rate (cM/Mb)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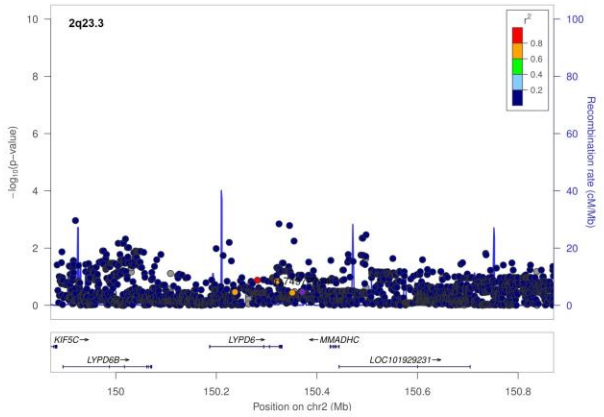
Recombination rate (cM/Mb)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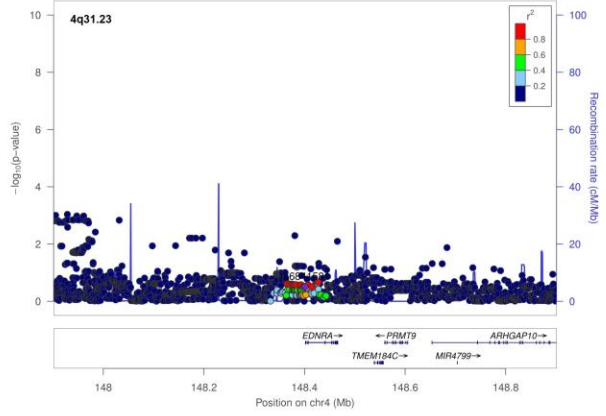
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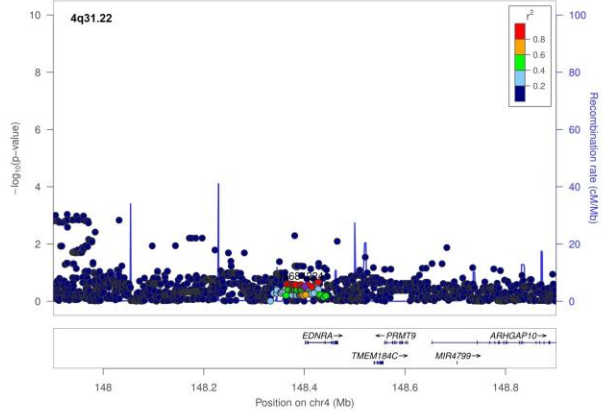
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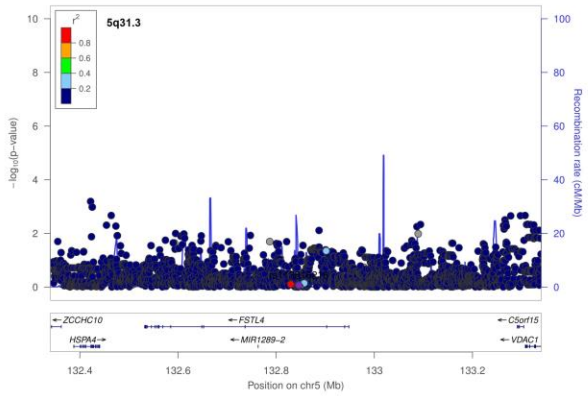
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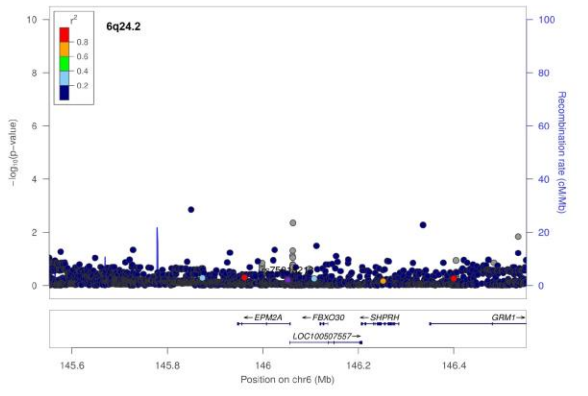
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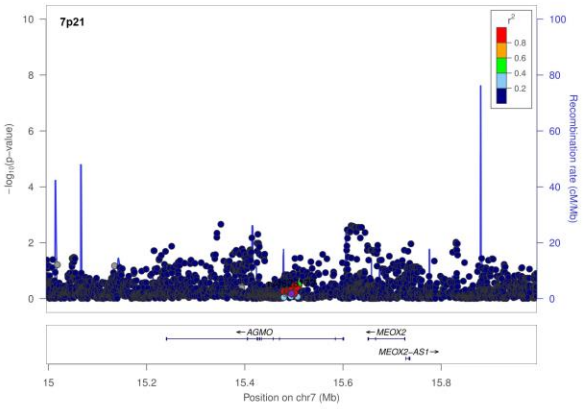
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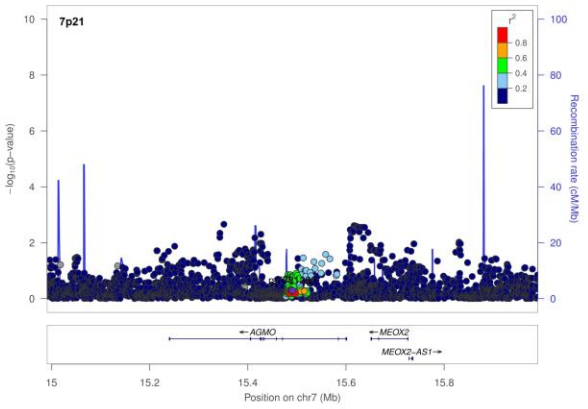
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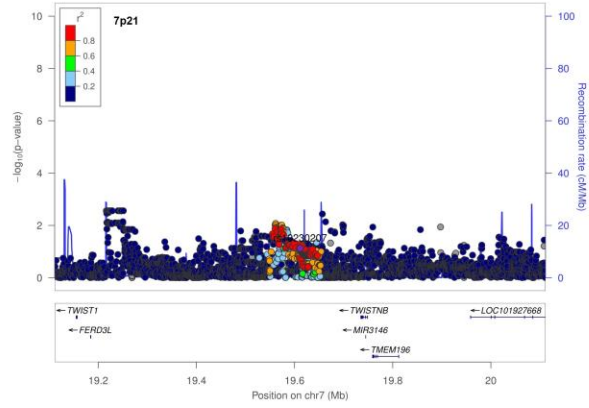
Recombination rate (cM/Mb)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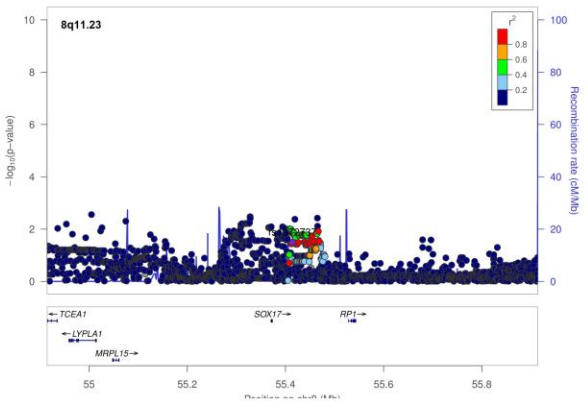
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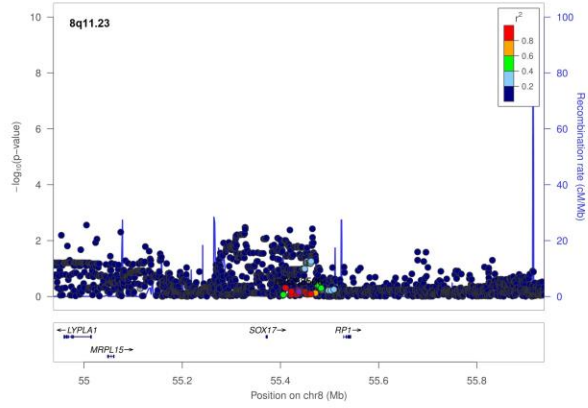
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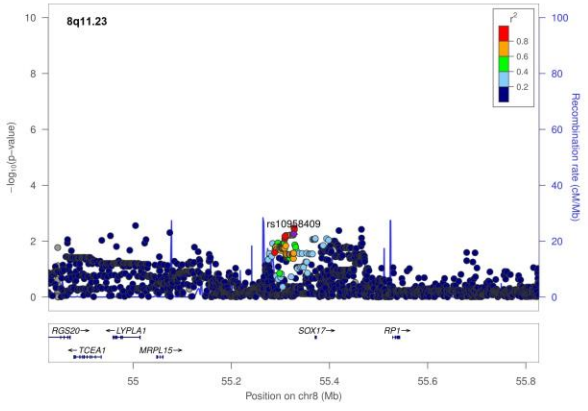
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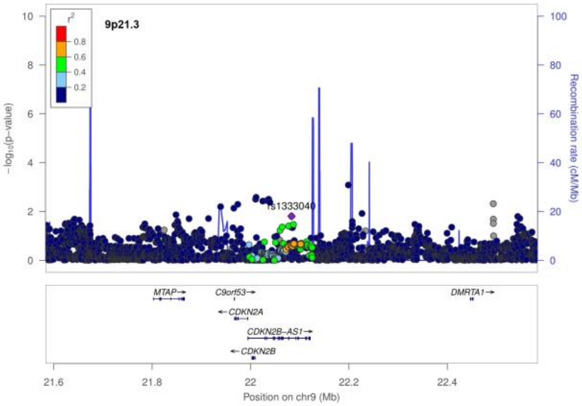
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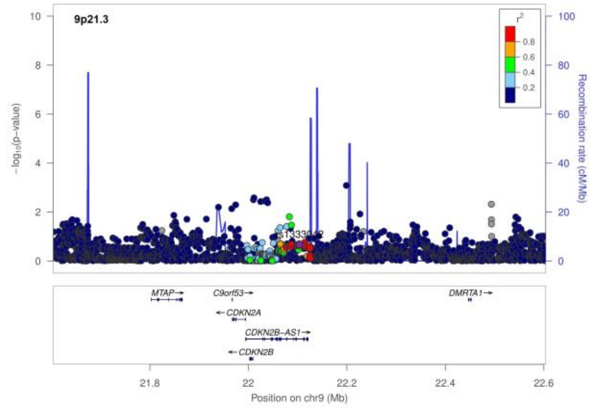
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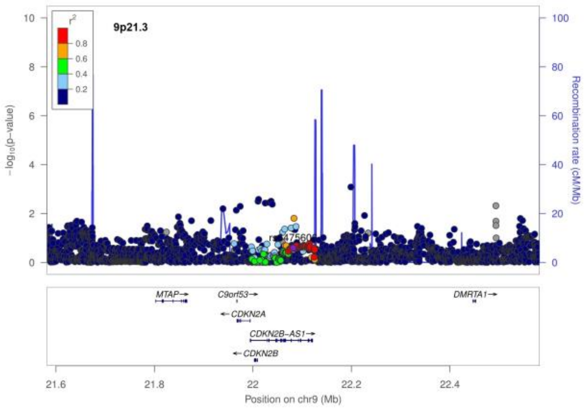
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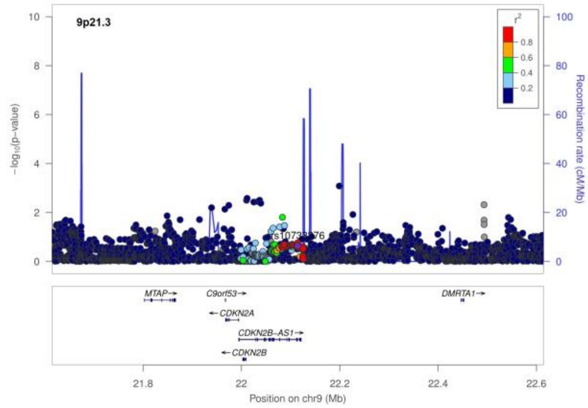
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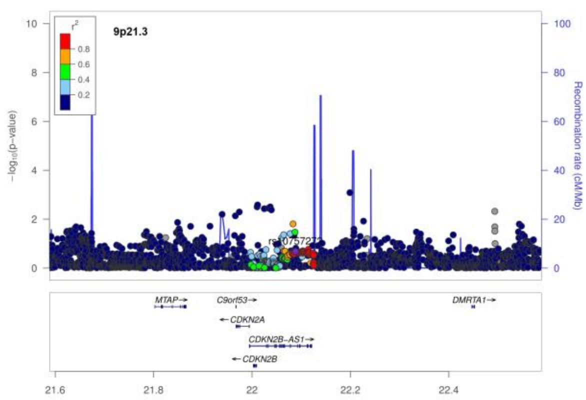
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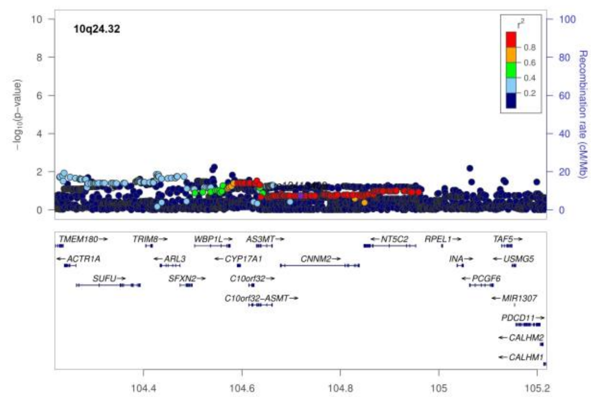
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NT5C2
RPEL1
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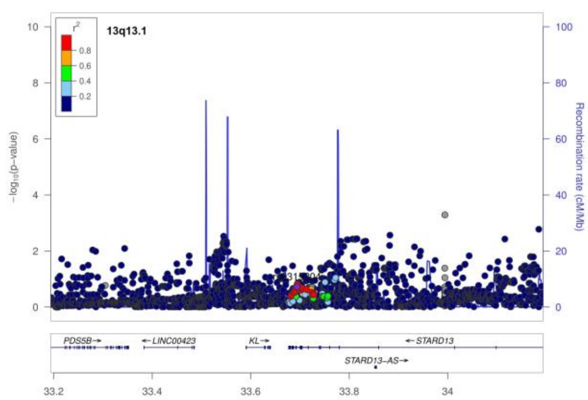
Position on chr10 (Mb)
Recombination rate (cM/Mb)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KL
STARD13
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Position on chr13 (Mb)
Recombination rate (cM/Mb)

Supplementary Figure S3. Regional validation of 12 previous GWAS associated loci (23 previous genome-wide significant SNPs)

Supplementary Table S1.

Marker	CHR	POS	Allele1	Allele2	Zscore	P-value	Direction	P.FC	WEIGHT.FC	BETA.FC	SE.FC	P.UI	WEIGHT.UI	BETA.UI	SE.UI	LOCI
rs76308736	8	10572792	a	g	-4.753	2.01E-06	--	0.0000045	1945	-1.13246	0.246891	0.0093	4033	0.3	0.12	8p23.1
rs79244282	8	10624237	t	c	4.714	2.43E-06	++	0.00000155	1945	-1.28675	0.267805	0.0163	4033	0.3	0.12	8p23.1
rs7084131	10	8399121	a	g	4.686	2.78E-06	++	0.00000483	1945	1.03693	0.226803	0.0114	4033	-0.24	0.09	10p14
rs72753560	5	31626036	a	g	4.644	3.42E-06	++	0.00000275	1945	0.698537	0.14898	0.0165	4033	-0.15	0.06	5p13.3
rs4867356	5	31623146	t	c	-4.608	4.07E-06	--	0.00000491	1945	0.680363	0.148924	0.0148	4033	-0.16	0.06	5p13.3
rs117537300	8	10743939	a	g	-4.47	7.81E-06	--	0.000000664	1945	-1.21512	0.244413	0.0466	4033	0.21	0.11	8p23.1
rs56034913	6	43619582	a	g	4.326	1.52E-05	++	0.00000238	1945	-1.62618	0.344681	0.0465	4033	0.3	0.15	6p21.1
rs6940568	6	43622285	t	c	-4.309	1.64E-05	--	0.00000192	1945	-1.6476	0.346004	0.0525	4033	0.3	0.15	6p21.1
rs148409800	6	43621108	t	c	-4.275	1.91E-05	--	0.00000192	1945	-1.6476	0.346004	0.0577	4033	0.29	0.15	6p21.1
rs114988842	6	43620110	t	c	-4.23	2.34E-05	--	0.00000192	1945	-1.6476	0.346004	0.0653	4033	0.28	0.15	6p21.1
rs78339483	6	43619226	t	c	4.202	2.65E-05	++	0.00000192	1945	-1.6476	0.346004	0.0705	4033	0.28	0.15	6p21.1
rs6915370	6	43617995	a	g	4.163	3.14E-05	++	0.00000192	1945	-1.6476	0.346004	0.0781	4033	0.27	0.15	6p21.1
rs6911069	6	43617687	a	g	-4.151	3.31E-05	--	0.00000192	1945	-1.6476	0.346004	0.0806	4033	0.27	0.15	6p21.1
rs8063371	16	8284980	a	g	4.104	4.07E-05	++	0.00000141	1945	-0.563417	0.116817	0.0997	4033	-0.08	0.05	16p13.2
rs76079870	6	43615434	a	g	4.076	4.59E-05	++	0.00000192	1945	-1.6476	0.346004	0.0979	4033	0.26	0.15	6p21.1
rs142836448	3	29398714	a	g	4.055	5.01E-05	++	0.00000226	1945	0.786315	0.166286	0.0983	4033	-0.12	0.07	3p24.1
rs7749866	6	43605219	a	g	-4.027	5.66E-05	--	0.00000376	1945	-1.53854	0.33271	0.0908	4033	0.26	0.15	6p21.1
rs7750364	6	43602008	t	g	-4.022	5.78E-05	--	0.00000376	1945	-1.53854	0.33271	0.092	4033	0.25	0.15	6p21.1
rs111241794	6	43602538	t	c	-4.022	5.78E-05	--	0.00000376	1945	-1.53854	0.33271	0.092	4033	0.25	0.15	6p21.1
rs6938576	6	43599394	a	g	-4.008	6.13E-05	--	0.00000423	1945	-1.5273	0.332027	0.092	4033	0.25	0.15	6p21.1
rs962929	16	8285898	a	t	3.968	7.24E-05	++	0.00000186	1945	-0.558539	0.11713	0.1285	4033	-0.07	0.05	16p13.2
rs13029421	2	28823571	t	c	-3.954	7.68E-05	--	0.00000323	1945	-1.35667	0.291423	0.1139	4033	0.18	0.11	2p23.2
rs142704507	6	43607074	t	c	-3.95	7.80E-05	--	0.00000286	1945	-1.56469	0.334308	0.119	4033	0.24	0.16	6p21.1
rs12660473	6	43611038	a	g	-3.95	7.82E-05	--	0.00000286	1945	-1.56469	0.334308	0.1191	4033	0.24	0.16	6p21.1
rs3757271	6	43603468	t	c	-3.949	7.86E-05	--	0.00000286	1945	-1.56469	0.334308	0.1195	4033	0.24	0.16	6p21.1
rs8044543	16	8285015	a	t	-3.945	7.99E-05	--	0.00000264	1945	-0.549584	0.117009	0.1234	4033	-0.07	0.05	16p13.2
rs144339892	6	43601509	t	c	-3.931	8.46E-05	--	0.00000286	1945	-1.56469	0.334308	0.1247	4033	0.24	0.16	6p21.1
rs35295534	2	28829620	a	g	-3.928	8.55E-05	--	0.0000028	1945	-1.34009	0.286047	0.1262	4033	0.17	0.11	2p23.2
rs11638991	15	78569950	a	g	3.918	8.93E-05	++	0.00000491	1945	-0.593136	0.129831	0.1102	4033	0.08	0.05	15q25.1
rs8032417	15	78569930	a	g	3.865	0.000111	++	0.00000482	1945	-0.593635	0.129826	0.1261	4033	0.08	0.05	15q25.1

rs1554600	3	61157774	c	g	-3.852	0.000117	--	4.66E-09	1945	-1.98215	0.338309	0.5345	4033	0.11	0.17	3p14.2
rs13028204	2	28853137	c	g	3.846	0.00012	++	0.00000239	1945	-1.38092	0.29275	0.1597	4033	0.16	0.11	2p23.2
rs982855	16	8297685	t	c	3.843	0.000122	++	0.00000178	1945	-0.557424	0.116681	0.1735	4033	-0.06	0.05	16p13.2
rs7190604	16	8295039	a	g	3.834	0.000126	++	0.00000242	1945	-0.551713	0.11701	0.1635	4033	-0.06	0.05	16p13.2
rs71443090	2	28871783	c	g	-3.816	0.000136	--	0.00000441	1945	-1.33072	0.289858	0.1449	4033	0.16	0.11	2p23.2
rs114999403	3	131692910	t	g	3.814	0.000137	++	0.00000267	1945	-2.01095	0.428374	0.1666	4033	0.25	0.18	3q22.1
rs13020458	2	28857714	t	c	-3.81	0.000139	--	0.00000365	1945	-1.34607	0.290695	0.1548	4033	0.16	0.11	2p23.2
rs67702090	2	28866637	a	t	3.805	0.000142	++	0.0000041	1945	-1.33657	0.290173	0.1517	4033	0.16	0.11	2p23.2
rs11863984	16	8290916	t	c	3.783	0.000155	++	0.00000211	1945	-0.553815	0.11678	0.1893	4033	-0.06	0.05	16p13.2
rs116130729	4	16012786	t	c	-3.778	0.000158	--	0.00000018	1945	-1.79302	0.343542	0.3291	4033	0.2	0.2	4p15.32
rs77639126	2	25598423	a	c	3.774	0.000161	++	0.00000235	1945	-1.58283	0.335271	0.188	4033	0.25	0.19	2p23.3
rs2360850	16	8293989	a	g	3.754	0.000174	++	0.00000242	1945	-0.551713	0.11701	0.1949	4033	-0.06	0.05	16p13.2
rs7203131	16	8296805	a	g	3.747	0.000179	++	0.00000278	1945	-0.54768	0.116865	0.1911	4033	-0.06	0.05	16p13.2
rs4482268	16	8297350	t	g	3.743	0.000182	++	0.00000293	1945	-0.546432	0.116866	0.1901	4033	-0.06	0.05	16p13.2
rs982854	16	8297724	t	c	3.735	0.000188	++	0.00000285	1945	-0.547261	0.116901	0.1948	4033	-0.06	0.05	16p13.2
rs2039332	9	9138642	t	c	-3.735	0.000188	--	0.00000148	1945	-2.05874	0.42766	0.2285	4033	0.41	0.34	9p23
rs7195828	16	8295407	a	g	3.726	0.000194	++	0.00000278	1945	-0.54768	0.116865	0.1997	4033	-0.06	0.05	16p13.2
rs141084492	3	61158840	t	c	3.715	0.000203	++	1.92E-08	1945	-1.91471	0.340729	0.5346	4033	0.11	0.17	3p14.2
rs78181937	2	25605740	c	g	-3.697	0.000218	--	0.00000235	1945	-1.58283	0.335271	0.2214	4033	0.23	0.19	2p23.3
rs1462099	16	8298133	a	g	3.656	0.000256	++	0.00000439	1945	-0.53757	0.117072	0.2068	4033	-0.06	0.05	16p13.2
rs7989887	13	25681112	t	c	3.613	0.000303	++	0.000000693	1945	-1.00943	0.203382	0.341	4033	0.08	0.08	13q12.13
rs3002218	13	25683444	a	g	-3.586	0.000336	--	0.000000731	1945	-1.00686	0.203286	0.3544	4033	0.07	0.08	13q12.13
rs3002219	13	25683894	t	c	-3.582	0.000341	--	0.000000731	1945	-1.00686	0.203286	0.3568	4033	0.07	0.08	13q12.13
rs146929064	7	44346336	a	c	3.491	0.000481	++	0.00000132	1945	-1.83941	0.38035	0.3725	4033	0.18	0.2	7p13
rs79515922	13	25684362	a	g	-3.483	0.000495	--	0.0000017	1945	-0.974484	0.203608	0.359	4033	0.07	0.08	13q12.13
rs12430973	13	25687428	a	c	3.477	0.000507	++	0.00000162	1945	-0.977041	0.203704	0.3667	4033	0.07	0.08	13q12.13
rs61949677	13	25697959	a	g	-3.45	0.00056	--	0.00000137	1945	-0.985199	0.203994	0.3971	4033	0.07	0.08	13q12.13
rs9511648	13	25696076	t	c	-3.446	0.00057	--	0.00000145	1945	-0.982214	0.203877	0.3958	4033	0.07	0.08	13q12.13
rs9511647	13	25694482	a	c	-3.444	0.000574	--	0.00000145	1945	-0.982214	0.203877	0.3971	4033	0.07	0.08	13q12.13
rs2994902	13	25690566	t	c	3.435	0.000592	++	0.00000172	1945	-0.973997	0.203588	0.3897	4033	0.07	0.08	13q12.13
rs9511641	13	25690765	a	t	3.425	0.000616	++	0.00000172	1945	-0.973997	0.203588	0.3969	4033	0.07	0.08	13q12.13
rs2399431	3	112280706	c	g	-3.372	0.000747	--	0.000000633	1945	-2.44035	0.489933	0.5182	4033	-0.15	0.23	3q13.2
rs9511655	13	25711337	a	g	-3.363	0.000771	--	0.00000271	1945	-0.95984	0.204584	0.4029	4033	0.07	0.08	13q12.13
rs138031402	16	8960325	a	g	-3.327	0.000879	--	0.000000887	1945	-2.40373	0.489044	0.5243	4033	0.22	0.35	16p13.2

rs2705520	3	112269287	a	g	-3.315	0.000917	--	0.000000633	1945	-2.44035	0.489933	0.564	4033	-0.13	0.23	3q13.2
rs1877364	3	112303231	t	c	3.313	0.000924	++	0.000000633	1945	-2.44035	0.489933	0.5659	4033	-0.13	0.23	3q13.2
rs2638034	3	112305873	a	g	3.313	0.000924	++	0.000000633	1945	-2.44035	0.489933	0.5659	4033	-0.13	0.23	3q13.2
rs1385527	3	112301244	c	g	3.312	0.000925	++	0.000000633	1945	-2.44035	0.489933	0.5661	4033	-0.13	0.23	3q13.2
rs1472106	3	112298471	t	c	3.312	0.000926	++	0.000000633	1945	-2.44035	0.489933	0.5664	4033	-0.13	0.23	3q13.2
rs1532198	3	112298523	c	g	3.312	0.000927	++	0.000000633	1945	-2.44035	0.489933	0.5665	4033	-0.13	0.23	3q13.2
rs2969894	3	112298995	c	g	-3.312	0.000927	--	0.000000633	1945	-2.44035	0.489933	0.5667	4033	-0.13	0.23	3q13.2
rs2705551	3	112310253	t	c	-3.311	0.000929	--	0.000000633	1945	-2.44035	0.489933	0.5672	4033	-0.13	0.23	3q13.2
rs2933139	3	112294719	t	g	-3.311	0.000931	--	0.000000633	1945	-2.44035	0.489933	0.5675	4033	-0.13	0.23	3q13.2
rs2705510	3	112288393	a	g	-3.31	0.000934	--	0.000000633	1945	-2.44035	0.489933	0.5684	4033	-0.13	0.23	3q13.2
rs2638030	3	112285190	a	g	-3.309	0.000936	--	0.000000633	1945	-2.44035	0.489933	0.5688	4033	-0.13	0.23	3q13.2
rs2638038	3	112295980	a	g	3.309	0.000938	++	0.000000633	1945	-2.44035	0.489933	0.5692	4033	-0.13	0.23	3q13.2
rs2705506	3	112291218	t	g	3.308	0.00094	++	0.000000633	1945	-2.44035	0.489933	0.5698	4033	-0.13	0.23	3q13.2
rs1844864	3	112311134	t	c	3.308	0.000941	++	0.000000633	1945	-2.44035	0.489933	0.5701	4033	-0.13	0.23	3q13.2
rs2464612	3	112284302	t	c	-3.307	0.000944	--	0.000000633	1945	-2.44035	0.489933	0.5707	4033	-0.13	0.23	3q13.2
rs986883	3	112317604	a	c	3.303	0.000956	++	0.000000633	1945	-2.44035	0.489933	0.5738	4033	-0.13	0.23	3q13.2
rs971832	3	112272647	a	t	3.299	0.000969	++	0.000000633	1945	-2.44035	0.489933	0.5768	4033	-0.13	0.23	3q13.2
rs2705554	3	112273546	t	c	3.295	0.000984	++	0.000000633	1945	-2.44035	0.489933	0.5804	4033	-0.12	0.23	3q13.2
rs1472107	3	112298345	a	g	-3.294	0.000988	--	0.00000105	1945	-2.36768	0.484976	0.5352	4033	-0.14	0.23	3q13.2
rs2638025	3	112269748	a	c	3.294	0.000988	++	0.000000633	1945	-2.44035	0.489933	0.5814	4033	-0.12	0.23	3q13.2
rs2933140	3	112250872	a	g	3.293	0.00099	++	0.000000633	1945	-2.44035	0.489933	0.5818	4033	-0.12	0.23	3q13.2
rs1491629	3	112258622	t	c	3.293	0.000991	++	0.000000633	1945	-2.44035	0.489933	0.5822	4033	-0.12	0.23	3q13.2
rs2668216	3	112295615	a	g	3.293	0.000992	++	0.00000105	1945	-2.36768	0.484976	0.5361	4033	-0.14	0.23	3q13.2
rs2705514	3	112321921	t	c	3.29	0.001004	++	0.000000633	1945	-2.44035	0.489933	0.5851	4033	-0.12	0.23	3q13.2
rs1388442	3	112257291	a	g	3.289	0.001006	++	0.000000633	1945	-2.44035	0.489933	0.5857	4033	-0.12	0.23	3q13.2
rs2638041	3	112248774	t	g	3.289	0.001007	++	0.000000633	1945	-2.44035	0.489933	0.5859	4033	-0.12	0.23	3q13.2
rs2705563	3	112258124	a	t	-3.289	0.001007	--	0.000000633	1945	-2.44035	0.489933	0.5859	4033	-0.12	0.23	3q13.2
rs2638043	3	112245836	a	g	-3.288	0.001008	--	0.000000633	1945	-2.44035	0.489933	0.5862	4033	-0.12	0.23	3q13.2
rs2638044	3	112245295	a	g	-3.266	0.001091	--	0.000000774	1945	-2.4111	0.487894	0.5862	4033	-0.12	0.23	3q13.2
rs1877362	3	112331590	a	g	3.234	0.00122	++	0.000000844	1945	-2.39866	0.487047	0.6048	4033	-0.12	0.23	3q13.2
rs10934177	3	112332147	t	c	-3.231	0.001232	--	0.000000844	1945	-2.39866	0.487047	0.6072	4033	-0.12	0.23	3q13.2
rs116704890	3	112311803	a	g	-3.231	0.001233	--	0.000000633	1945	-2.44035	0.489933	0.6349	4033	0.11	0.23	3q13.2
rs1552707	3	112331348	t	c	-3.231	0.001234	--	0.000000844	1945	-2.39866	0.487047	0.6076	4033	-0.12	0.23	3q13.2
rs114685196	3	112282665	a	g	3.229	0.001244	++	0.000000633	1945	-2.44035	0.489933	0.637	4033	0.11	0.23	3q13.2

rs7618978	3	112330130	t	c	-3.228	0.001249	--	0.000000844	1945	-2.39866	0.487047	0.6105	4033	-0.12	0.23	3q13.2
rs145651986	3	112248033	a	g	-3.217	0.001293	--	0.000000633	1945	-2.44035	0.489933	0.6468	4033	0.11	0.23	3q13.2
rs9511628	13	25666239	a	g	-3.195	0.001401	--	0.00000275	1945	-1.06966	0.228125	0.5266	4033	0.06	0.1	13q12.13
rs73098967	3	61220002	a	g	3.116	0.001835	++	0.000000267	1945	-1.40637	0.273343	0.8258	4033	0.03	0.12	3p14.2
rs73098971	3	61223331	a	g	3.112	0.001857	++	0.000000267	1945	-1.40637	0.273343	0.8292	4033	0.03	0.12	3p14.2
rs1207426	2	206154365	t	c	3.085	0.002036	++	0.0000041	1945	-0.875028	0.189958	0.5775	4033	-0.04	0.08	2p33.3
rs11714398	3	61226363	a	g	-3.077	0.002093	--	0.000000267	1945	-1.40637	0.273343	0.863	4033	0.02	0.12	3p14.2
rs55994842	3	61203154	a	g	-3.076	0.002099	--	0.00000108	1945	-1.31068	0.268776	0.7201	4033	0.04	0.12	3p14.2
rs4688348	3	61194447	t	c	3.072	0.002128	++	0.00000108	1945	-1.31068	0.268776	0.7239	4033	0.04	0.12	3p14.2
rs73098963	3	61218137	a	t	-3.067	0.00216	--	0.000000267	1945	-1.40637	0.273343	0.872	4033	0.02	0.12	3p14.2
rs73097006	3	61186195	a	c	-3.066	0.002169	--	0.00000108	1945	-1.31068	0.268776	0.729	4033	0.04	0.12	3p14.2
rs192887436	3	61188626	a	g	3.054	0.002256	++	0.00000108	1945	-1.31068	0.268776	0.7398	4033	0.04	0.12	3p14.2
rs17064638	3	61186878	a	g	-3.053	0.002267	--	0.00000108	1945	-1.31068	0.268776	0.7412	4033	0.04	0.12	3p14.2
rs1207415	2	206169925	t	c	3.031	0.002436	++	0.00000493	1945	-0.86818	0.190067	0.6042	4033	-0.04	0.08	2p33.3
rs11714472	3	61226572	a	g	-3.009	0.002617	--	0.000000782	1945	-1.38208	0.279781	0.8154	4033	0.03	0.12	3p14.2
rs17583011	13	54424384	a	g	-2.99	0.002792	--	0.00000133	1945	-1.53832	0.318175	0.7778	4033	0.03	0.12	13q14.3
rs73104225	3	60995581	t	g	-2.974	0.00294	--	0.00000305	1945	-2.23132	0.478031	0.7044	4033	0.07	0.18	3p14.2
rs139102048	3	61196860	t	c	-2.966	0.003013	--	0.00000343	1945	-1.27397	0.274386	0.6987	4033	0.05	0.12	3p14.2
rs140866572	3	61197457	t	c	-2.965	0.003025	--	0.00000343	1945	-1.27397	0.274386	0.6998	4033	0.05	0.12	3p14.2
rs56174846	3	61225234	t	c	-2.956	0.003117	--	0.000000782	1945	-1.38208	0.279781	0.8663	4033	0.02	0.12	3p14.2
rs73098993	3	61230478	a	g	2.94	0.003283	++	0.00000141	1945	-1.33911	0.277653	0.8185	4033	0.03	0.12	3p14.2
rs73098988	3	61227542	t	c	-2.923	0.003467	--	0.000000782	1945	-1.38208	0.279781	0.898	4033	0.02	0.12	3p14.2
rs116375594	3	61197014	c	g	2.902	0.003705	++	0.00000343	1945	-1.27397	0.274386	0.7574	4033	0.04	0.12	3p14.2
rs114375292	13	54413853	t	c	2.847	0.004414	++	0.000000725	1945	-1.55348	0.313554	0.9797	4033	0	0.13	13q14.3
rs1357639	3	61211013	a	t	2.794	0.005211	++	0.0000018	1945	-1.25222	0.262258	0.9319	4033	0.01	0.12	3p14.2
rs73161791	22	36455779	t	c	-2.705	0.006829	--	0.00000365	1945	-2.59289	0.559998	0.938	4033	0.02	0.29	22q12.3
rs11699714	20	1613011	t	c	2.647	0.008133	++	0.00000367	1945	-1.18146	0.255218	0.9942	4033	0	0.11	20p13
rs55952004	20	1614600	a	t	-2.625	0.008671	--	0.000004716	1945	-1.16432	0.254383	0.9864	4033	0	0.11	20p13
rs56040592	20	1611918	a	g	-2.591	0.009575	-+	0.00000198	1945	-1.22327	0.257248	0.8822	4033	-0.02	0.11	20p13
rs2705535	3	112208927	t	c	-2.59	0.009588	-+	0.00000327	1945	-1.86427	0.40064	0.9381	4033	-0.01	0.18	3q13.2
rs10495046	1	217417902	a	g	-2.563	0.01037	-+	0.00000474	1945	-1.18702	0.259403	0.9545	4033	-0.01	0.11	1q41
rs12058987	1	217421015	a	c	-2.107	0.03515	-+	0.00000133	1945	-1.47758	0.305576	0.4277	4033	-0.1	0.13	1q41
rs79571254	8	127902373	t	c	-1.899	0.05762	-+	0.00000162	1945	0.706359	0.147273	0.3082	4033	0.06	0.06	8q24.21
rs6772523	3	61190420	a	g	1.867	0.06185	+-	0.00000492	1945	-0.949471	0.207846	0.3687	4033	-0.09	0.1	3p14.2

rs59910027	3	61194299	t	g	1.857	0.06336	+-	0.00000492	1945	-0.949471	0.207846	0.3618	4033	-0.09	0.1	3p14.2
rs112000237	8	127911357	a	g	1.854	0.06378	+-	0.00000162	1945	0.706359	0.147273	0.283	4033	0.07	0.06	8q24.21
rs150148362	1	234191488	a	g	-1.831	0.06716	-+	0.000000816	1945	-2.55442	0.517978	0.2317	4033	-0.41	0.35	1q42.2
rs56268052	3	61215230	a	g	-1.78	0.07513	-+	0.00000283	1945	-0.978093	0.208875	0.2778	4033	-0.1	0.1	3p14.2
rs7011138	8	127922200	a	t	-1.579	0.1143	-+	0.00000135	1945	0.72319	0.149667	0.1518	4033	0.09	0.06	8q24.21
rs151319278	13	44537888	a	g	-1.11	0.2671	-+	0.00000458	1945	-1.89937	0.414408	0.067	4033	-0.45	0.25	13q14.3

Supplementary Table S2. FBAT-O result of 50 *FHIT* variants with significant association ($p<0.05$) in Nunavik Inuit

Marker	chr	pos	afreq	fam#	S-E(S)	Var(S)	Z	P	Offset
rs780365	3	59761789	0.377	14	6.842	5.254	2.985	0.002839	0.231
rs17361653	3	59771515	0.462	18	-6.903	5.489	-2.946	0.003216	0.203
rs9809480	3	60448671	0.23	14	5.032	3.155	2.833	0.004615	0.277
rs1597104	3	60453227	0.23	14	5.032	3.155	2.833	0.004615	0.277
rs7621114	3	60418721	0.205	13	4.663	3.003	2.691	0.007123	0.257
rs2255772	3	60557852	0.207	10	4.039	2.519	2.545	0.010928	0.245
rs2687189	3	60423009	0.438	18	4.701	3.768	2.422	0.015436	0.095
rs445057	3	60447369	0.433	18	4.701	3.768	2.422	0.015436	0.095
rs424675	3	60448261	0.433	18	4.701	3.768	2.422	0.015436	0.095
rs17061176	3	59755841	0.179	11	4.311	3.188	2.414	0.015763	0.224
rs13092167	3	59772342	0.293	10	4.244	3.148	2.392	0.016762	0.212
rs3920477	3	60733152	0.328	15	4.425	3.484	2.371	0.017762	0.154
rs9861525	3	60004908	0.398	15	4.756	4.157	2.332	0.019677	0.268
rs241700	3	60516256	0.311	13	4.01	3.005	2.313	0.020728	0.235
rs10451993	3	60566492	0.321	13	4.01	3.005	2.313	0.020728	0.235
rs17669257	3	60566161	0.412	17	4.626	4.158	2.269	0.023295	0.271
rs17609699	3	60487578	0.48	18	-5.16	5.188	-2.265	0.023496	0.27
rs49413	3	59757484	0.418	20	5.311	5.546	2.255	0.024112	0.264
rs993000	3	59745585	0.158	10	2.989	1.815	2.218	0.026535	0.4
rs1683346	3	59749703	0.158	10	2.989	1.815	2.218	0.026535	0.4
rs17061173	3	59754178	0.156	10	2.989	1.815	2.218	0.026535	0.4
rs994931	3	59741758	0.319	15	-4.661	4.506	-2.196	0.028127	0.451
rs780366	3	59762116	0.347	15	-4.661	4.506	-2.196	0.028127	0.451
rs11130733	3	59767786	0.347	15	-4.661	4.506	-2.196	0.028127	0.451
rs17361780	3	59772328	0.347	15	-4.661	4.506	-2.196	0.028127	0.451
rs1627302	3	60658608	0.473	17	-4.48	4.468	-2.119	0.034058	0.27
rs721207	3	60607896	0.468	16	-5.031	5.672	-2.112	0.034649	0.372
rs780354	3	59772460	0.366	15	-4.505	4.578	-2.106	0.035223	0.478
rs2682931	3	60631936	0.359	19	-4.939	5.68	-2.072	0.038225	0.261
rs6766789	3	60090013	0.468	20	-4.352	4.463	-2.06	0.039397	0.349
rs10780042	3	60090402	0.468	20	-4.352	4.463	-2.06	0.039397	0.349
rs9881736	3	60487247	0.139	11	3.056	2.21	2.055	0.039836	0.5
rs6786100	3	60351746	0.402	17	4.528	5.083	2.008	0.04461	0.302
rs2142301	3	60095070	0.396	19	-3.978	4.074	-1.971	0.048745	0.18
rs2885865	3	60610341	0.381	19	-4.741	5.811	-1.967	0.049201	0.292

rs2363670	3	60611613	0.372	19	-4.741	5.811	-1.967	0.049201	0.292
rs7633853	3	60613659	0.38	19	-4.741	5.811	-1.967	0.049201	0.292
rs11926787	3	60615310	0.368	19	-4.741	5.811	-1.967	0.049201	0.292
rs6762641	3	60616153	0.356	19	-4.741	5.811	-1.967	0.049201	0.292
rs10510852	3	60616790	0.356	19	-4.741	5.811	-1.967	0.049201	0.292
rs12637393	3	60620284	0.368	19	-4.741	5.811	-1.967	0.049201	0.292
rs2856058	3	60625598	0.36	19	-4.741	5.811	-1.967	0.049201	0.292
rs1735448	3	60647540	0.36	19	-4.741	5.811	-1.967	0.049201	0.292
rs1716709	3	60657213	0.349	19	-4.741	5.811	-1.967	0.049201	0.292
rs1716714	3	60660179	0.349	19	-4.741	5.811	-1.967	0.049201	0.292
rs1735443	3	60662282	0.349	19	-4.741	5.811	-1.967	0.049201	0.292
rs1735444	3	60664075	0.348	19	-4.741	5.811	-1.967	0.049201	0.292
rs1716722	3	60681361	0.349	19	-4.741	5.811	-1.967	0.049201	0.292
rs1735457	3	60683737	0.349	19	-4.741	5.811	-1.967	0.049201	0.292
rs1735468	3	60703616	0.36	19	-4.741	5.811	-1.967	0.049201	0.292

Supplementary Table S3. Mutation burden of exonic variants of the 4 genes from 18q11.2 loci in FC IA compared with controls

Loci	**Gene**	**Number of exonic variants**	**MAC in each gene**	***P*-value**	**std error (SE)**	**permutations**
18q11.2	*GATA6*	2	2	0.731269	0.441789	1000
18q11.2	*CTAGE1*	6	174	0.0753849	0.371797	5000
18q11.2	*RBBP8*	6	43	0.0585883	0.376427	5000
18q11.2	***CABLES1***	3	68	**0.00559888**	0.356104	5000

Supplementary Table S4. *CCDC80* exonic and splicing variants in FC IA cases and controls

Position	**Annotation**	**MAF (CEU)**	**SNP**	**MAC in case**	**MAC in control**
3:112324305	c.T2812C:p.Y938H	0.01	rs114697626	0	4
3:112328856	c.C2394G:p.L798L	0.002	rs61732242	0	2
3:112357336	c.C1417T:p.H473Y	0.009	rs116307644	4	1
3:112357537	c.A1216G:p.R406G	0		0	1
3:112357730	c.G1023T:p.L341F	0.01	rs115738438	5	2
3:112357878	c.C875A:p.A292E	0		0	1
3:112358168	c.G585C:p.E195D	0	rs370290734	0	1

3:112358171	c.T582A:p.G194G	0.01	rs116819563	5	2
3:112358658	c.G95A:p.S32N	0.001	rs75074453	0	1
3:112358761	UTR5 c.-9G>T	0		0	1