





Table S2. The top 72 genotyped SNPs that associated with symptom count (inflation corrected p<0.0001) in COGA GWAS sample and replication data in SAGE and OZALC samples. In COGA sample, p values in bold indicate suggestive evidence of association ($p \leq 1.0 \times 10^{-5}$). In SAGE and OZALC samples, p values in bold indicate nominal association.

SNP	CHR	POS	Gene region	A1	A2	COGA sample			SAGE sample			OZALC sample								
						MAF(A1)	N	Effect_A1	PChiSq	Corrected PChiSq	MAF(A1)	N	Effect_A1	PChiSq	source	MAF(A1)	N	Effect_A1	PChiSq	source
rs12903120	15	38988097	C15orf53	T	G	0.30	2005	-0.18	5.45E-08	1.09E-06	0.31	2582	-0.05	0.072	genotyped	0.31	6165	0.02	0.231	imputed
rs17616845	7	12781543		C	T	0.25	2007	-0.21	8.49E-08	1.56E-06	0.21	2593	0.05	0.079	genotyped	0.22	6166	-0.02	0.450	imputed
rs12916379	15	38991520	C15orf53	G	A	0.30	2002	-0.17	1.74E-07	2.79E-06	0.30	2583	-0.06	0.030	genotyped	0.30	6166	0.02	0.205	imputed
rs2132157	15	38992547	C15orf53	G	A	0.30	2007	-0.17	1.92E-07	3.02E-06	0.30	2584	-0.06	0.033	genotyped	0.31	6163	-0.03	0.164	genotyped
rs6060124	20	33536897	GSS	A	C	0.26	2003	0.16	4.41E-07	5.92E-06	0.27	2579	0.03	0.215	genotyped	0.28	6166	0.02	0.384	imputed
rs896543	2	237509207	CXCR7	A	G	0.18	1775	-0.22	4.75E-07	6.29E-06	0.19	2633	0.03	0.428	imputed	0.21	6166	0.00	0.899	imputed
rs9847462	3	164558595		G	A	0.12	1776	0.23	6.65E-07	8.26E-06	0.11	2632	0.04	0.333	imputed	0.11	6166	-0.02	0.538	imputed
rs1451724	11	3856668	RHOG	A	G	0.47	2008	-0.15	6.68E-07	8.29E-06	0.47	2591	0.00	0.953	genotyped	0.48	6157	0.02	0.281	genotyped
rs6060038	20	33357715	NCOA6	A	G	0.44	2003	-0.15	6.88E-07	8.49E-06	0.44	2581	-0.05	0.063	genotyped	0.44	6166	0.01	0.685	imputed
rs3736802	20	33604042	TRPC4AP	T	C	0.47	2004	0.15	7.56E-07	9.17E-06	0.47	2585	0.00	0.896	genotyped	0.48	6166	0.00	0.830	imputed
rs1995364	5	10903781		A	G	0.42	2001	-0.15	8.79E-07	1.04E-05	0.41	2569	0.03	0.257	genotyped	0.42	6148	0.01	0.618	genotyped
rs6141509	20	3319388	NCOA6	A	G	0.44	2000	-0.15	8.80E-07	1.04E-05	0.44	2585	-0.05	0.065	genotyped	0.43	6166	0.01	0.727	imputed
rs6431476	2	237517937	CXCR7	C	T	0.19	1999	-0.20	1.14E-06	1.28E-05	0.20	2592	-0.06	0.069	genotyped	0.22	6166	0.00	0.849	imputed
rs8005917	14	99053053		T	C	0.35	1779	0.16	1.70E-06	1.77E-05	0.33	2633	-0.01	0.802	imputed	0.33	6166	0.00	0.982	imputed
rs868702	3	143085345	SLC9A9	A	G	0.36	1781	0.15	1.73E-06	1.79E-05	0.36	2632	0.01	0.652	imputed	0.37	6166	0.00	0.813	imputed
rs10446322	3	143068250	SLC9A9	A	G	0.42	2009	-0.15	1.73E-06	1.80E-05	0.43	2591	0.02	0.437	genotyped	0.42	6166	-0.02	0.213	imputed
rs12579483	12	83089431	TMTC2	C	T	0.18	1999	0.18	1.86E-06	1.90E-05	0.19	2587	-0.03	0.380	genotyped	0.20	6160	0.01	0.505	genotyped
rs7168475	15	38960882	C15orf53	C	A	0.22	1783	-0.18	1.98E-06	2.00E-05	0.20	2632	0.00	0.893	imputed	0.19	6166	0.00	0.923	imputed
rs8885247	6	73660234	KCNQ5	G	A	0.16	1971	0.18	1.99E-06	2.01E-05	0.15	2584	0.01	0.697	genotyped	0.16	6166	0.00	0.893	imputed
rs553637	11	117461602	DSCAML1	G	A	0.42	2008	-0.15	2.00E-06	2.01E-05	0.43	2593	0.02	0.460	genotyped	0.45	6166	-0.02	0.215	imputed
rs945333	10	112862029		C	T	0.49	2005	0.14	2.06E-06	2.07E-05	0.50	2592	-0.02	0.338	genotyped	na	na	na	na	na
rs7092048	10	111197730		T	C	0.14	2005	0.17	2.33E-06	2.28E-05	0.14	2587	-0.05	0.172	genotyped	0.15	6117	-0.06	0.012	genotyped
rs7594454	2	237537935	CXCR7	T	C	0.20	1998	-0.18	2.60E-06	2.49E-05	0.21	2591	-0.05	0.144	genotyped	0.21	6166	0.00	0.995	imputed
rs6088519	20	33132191	MAPILC3A	T	C	0.30	2002	-0.16	3.00E-06	2.80E-05	0.29	2579	-0.05	0.076	genotyped	0.30	6166	0.03	0.161	imputed
rs6088664	20	33551100	MYH7B	G	A	0.41	1781	-0.15	3.23E-06	2.98E-05	0.40	2633	-0.01	0.835	imputed	0.39	6166	0.01	0.477	imputed
rs1026028	2	177070756		T	G	0.36	1996	0.15	3.41E-06	3.11E-05	0.33	2579	0.02	0.362	genotyped	0.34	6166	-0.02	0.239	imputed
rs4905720	14	99053694		A	G	0.35	2004	0.15	3.86E-06	3.44E-05	0.34	2584	-0.01	0.700	genotyped	0.34	6162	0.00	0.934	genotyped
rs483954	1	212620214	NENF	G	A	0.39	1786	-0.15	3.90E-06	3.47E-05	0.39	2633	0.02	0.537	imputed	0.39	6166	-0.01	0.440	imputed
rs9810313	3	164588702		T	G	0.11	2009	0.20	4.14E-06	3.64E-05	0.11	2591	0.04	0.336	genotyped	0.11	6166	-0.02	0.533	imputed
rs11783062	8	3947325	CSMD1	G	T	0.46	1994	-0.14	4.18E-06	3.67E-05	0.46	2592	-0.01	0.596	genotyped	0.44	6166	0.02	0.246	imputed
rs1451722	11	3856553	RHOG	C	T	0.45	2007	0.14	4.35E-06	3.79E-05	0.44	2593	0.02	0.375	genotyped	0.43	6166	0.01	0.529	imputed
rs11035102	11	5029457	OR51L1	G	A	0.13	2008	-0.25	4.37E-06	3.81E-05	0.10	2592	0.04	0.289	genotyped	0.11	6165	0.01	0.632	genotyped
rs6579204	20	33553677	MYH7B	G	A	0.30	1781	0.15	4.54E-06	3.93E-05	0.30	2633	0.03	0.348	imputed	0.33	6166	0.03	0.119	imputed
rs1938831	11	101536336		A	G	0.23	2008	0.15	4.63E-06	3.99E-05	0.26	2593	-0.02	0.595	genotyped	0.28	6166	0.02	0.299	imputed
rs443394	15	80033885		C	T	0.42	2006	0.14	4.66E-06	4.01E-05	0.42	2584	-0.05	0.053	genotyped	0.42	6166	-0.03	0.112	imputed
rs2166512	2	177071181		G	A	0.38	1998	0.14	4.89E-06	4.17E-05	0.35	2593	0.01	0.592	genotyped	0.37	6158	0.02	0.219	genotyped
rs10842176	12	23674257		A	G	0.33	1744	-0.16	4.91E-06	4.18E-05	0.30	2628	0.01	0.679	imputed	0.30	6166	-0.03	0.162	imputed
rs4134385	20	23725019	CST1	G	A	0.16	1998	0.17	4.93E-06	4.20E-05	0.15	2555	-0.04	0.234	genotyped	0.16	6114	0.02	0.290	genotyped
rs1415771	20	33743493	EDEM2	A	G	0.46	2003	0.14	5.03E-06	4.27E-05	0.46	2573	-0.01	0.774	genotyped	0.47	6159	0.00	0.923	genotyped
rs4479194	15	75422131		G	A	0.24	2006	0.15	5.27E-06	4.43E-05	0.29	2581	0.05	0.072	genotyped	0.27	6166	0.03	0.191	imputed
rs12531206	7	50207532	C7orf72	A	G	0.29	1780	0.15	5.47E-06	4.57E-05	0.30	2633	0.00	0.998	imputed	0.29	6166	0.01	0.490	imputed
rs109634642	9	18130036		T	G	0.24	1779	-0.18	6.22E-06	5.07E-05	0.21	2631	0.05	0.099	imputed	0.21	6166	0.00	0.982	imputed
rs2263190	6	96739393		T	C	0.21	1970	-0.17	6.78E-06	5.44E-06	0.22	2591	-0.04	0.241	genotyped	0.22	6166	0.08	0.001	imputed
rs11682667	2	129819469		C	T	0.16	1773	0.17	7.06E-06	5.62E-05	0.15	2633	0.00	0.895	imputed	0.15	6166	0.04	0.086	imputed
rs7172677	15	75424593		A	C	0.24	2005	0.15	7.15E-06	5.68E-05	0.28	2554	0.05	0.065	genotyped	0.26	6134	-0.03	0.180	genotyped
rs12006002	9	18166899		T	C	0.29	1779	0.15	7.24E-06	5.73E-05	0.33	2631	0.01	0.846	imputed	0.33	6166	0.00	0.798	imputed
rs7431637	3	143049769	SLC9A9	T	C	0.38	2006	-0.14	7.58E-06	5.95E-05	0.40	2592	0.00	0.951	genotyped	0.39	6165	0.00	0.977	genotyped
rs10943075	6	67179982	KCNQ5	G	A	0.16	1971	0.17	7.93E-06	6.17E-05	0.15	2593	0.03	0.463	genotyped	0.17	6164	0.00	0.955	genotyped
rs48404	1	212619339	NENF	C	T	0.43	2010	-0.14	8.36E-06	6.44E-05	0.41	2589	0.01	0.603	genotyped	0.41	6166	-0.02	0.196	imputed
rs7212295	17	27431425	MYO18A	G	A	0.49	2007	0.13	9.42E-06	7.10E-05	0.50	2585	-0.03	0.302	genotyped	0.50	6166	0.00	0.861	genotyped
rs2952621	2	129998443		T	C	0.47	1997	0.14	9.51E-06	7.15E-05	0.48	2590	0.06	0.014	genotyped	0.47	6166	0.00	0.915	imputed
rs4620789	12	83108395	TMTC2	G	T	0.12	1999	0.19	9.63E-06	7.23E-05	0.12	2583	-0.01	0.718						

Table S3. The association of SNPs in the *C15orf53* gene with symptom count in COGA and SAGE samples. SNP in red is a non-synonymous cSNP; SNP in blue located in 3'UTR of the gene. Bold p values in SAGE sample indicate the nominal association with p<0.05. *correlation between SNPs is based on 1000 genomes pilot 1 data.

SNP	Position (hg19)	Effect_COGA	P value_COGA	Corrected P value_COGA	Source_COGA	Effect_SAGE	P value_SAGE	rs12912251*	D' with rs12912251*
rs12912251	38986368	-0.18	4.56E-08	9.42E-07	imputed	-0.05	0.081	1	1
rs12898460	38986813	-0.18	4.71E-08	9.67E-07	imputed	-0.05	0.078	0.95	1
rs12903120	38988097	-0.18	5.45E-08	1.09E-06	genotyped	-0.05	0.075	1	1
rs35102843	38988107	-0.18	4.55E-08	9.40E-07	imputed	-0.05	0.074	1	1
rs7163869	38988391	-0.18	9.32E-08	1.68E-06	imputed	-0.05	0.069	1	1
rs7171233	38988760	-0.18	8.45E-08	1.55E-06	imputed	-0.05	0.064	0.95	1
rs7165988	38988815	-0.18	9.70E-08	1.74E-06	imputed	-0.05	0.064	0.95	1
rs34356257	38989605	-0.18	1.01E-07	1.79E-06	imputed	-0.05	0.076	1	1
rs34141940	38989657	-0.18	1.07E-07	1.88E-06	imputed	-0.05	0.076	0.95	1
rs34281605	38989674	-0.18	1.25E-07	2.13E-06	imputed	-0.05	0.076	0.95	1
rs35024396	38989770	-0.18	1.23E-07	2.10E-06	imputed	-0.07	0.019	1	1
rs2172835	38990171	-0.17	2.01E-07	3.13E-06	imputed	-0.07	0.019	1	1
rs12916379	38991520	-0.17	1.74E-07	2.79E-06	genotyped	-0.06	0.030	1	1
rs2132157	38992547	-0.17	1.92E-07	3.02E-06	genotyped	-0.06	0.033	1	1
rs12901215	38992893	-0.17	4.38E-07	5.88E-06	imputed	-0.07	0.019	1	1
rs7183893	38996981	-0.17	8.20E-07	9.80E-06	imputed	-0.06	0.030	0.89	0.95
rs36094159	38998395	-0.17	6.94E-07	8.55E-06	imputed	-0.07	0.019	0.95	1
rs35795311	38998669	-0.17	6.44E-07	8.05E-06	imputed	-0.07	0.019	0.90	1