

Supplementary Table 1. Results of gene-based and differential expression analyses of 58 MS-associated genes

Gene	Chromosome	Start position	Length	#SNP*	Initial p	Genes significant in initial study based on SNP-based p	Genes in PheGenl	Replication p	Differential expression p	Sample [†]
<i>C6orf10</i>	6	32255475	89181	21	3.97×10^{-39}	<i>C6orf10</i>	<i>C6orf10</i>	3.16×10^{-3}	NS	NS
<i>NOTCH4</i>	6	32157620	39224	7	2.51×10^{-31}	<i>NOTCH4</i>	<i>NOTCH4</i>	NS	NS	NS
<i>TNXB</i>	6	32003932	78221	2	6.61×10^{-28}	<i>TNXB</i>	<i>TNXB</i>	3.37×10^{-3}	4.45×10^{-2}	S2
<i>HLA-DRA</i>	6	32402619	15204	9	3.73×10^{-24}	<i>HLA-DRA</i>	<i>HLA-DRA</i>	4.08×10^{-3}	5.82×10^{-5}	S1
<i>AIF1</i>	6	31577994	11804	1	3.15×10^{-23}	<i>AIF1</i>	<i>AIF1</i>	NA	2.04×10^{-2}	S1
<i>SNORA38</i>	6	31585856	10131	1	3.15×10^{-23}	<i>SNORA38</i>	NA	NA	NA	NA
<i>BAT2</i>	6	31583450	27104	3	1.18×10^{-22}	<i>BAT2</i>	<i>BAT2</i>	3.42×10^{-2}	NS	NS
<i>BAT3</i>	6	31601805	23672	3	4.41×10^{-19}	<i>BAT3</i>	<i>BAT3</i>	9.52×10^{-3}	NS	NS
<i>PPIAP9</i>	6	31481654	11525	1	1.46×10^{-15}	<i>PPIAP9</i>	<i>PPIAP9</i>	4.67×10^{-2}	NA	NA
<i>HLA-DQB2</i>	6	32718875	17455	6	9.02×10^{-15}	<i>HLA-DQB2</i>	<i>HLA-DQB2</i>	1.01×10^{-2}	NS	NS
<i>HLA-DOA2</i>	6	32704163	15501	6	1.25×10^{-14}	<i>HLA-DOA2</i>	<i>HLA-DOA2</i>	3.93×10^{-3}	NS	NS
<i>EHMT2</i>	6	31842536	27928	1	8.91×10^{-14}	<i>EHMT2</i>	<i>EHMT2</i>	NS	4.30×10^{-3}	S1
									4.50×10^{-2}	S2
<i>LOC100287272</i>	6	31238352	13179	5	1.79×10^{-13}	<i>LOC100287272</i>	NA	4.76×10^{-3}	NA	NA
<i>MCCD1</i>	6	31491739	11269	2	4.39×10^{-13}	<i>MCCD1</i>	<i>MCCD1</i>	NA	NS	NS
<i>LOC100462812</i>	6	31340494	10311	5	4.71×10^{-13}	<i>LOC100462812</i>	NA	8.07×10^{-5}	NA	NA
<i>HCG27</i>	6	31160537	16208	3	6.34×10^{-13}	<i>HCG27</i>	<i>HCG27</i>	3.84×10^{-2}	NS	NS
<i>HLA-DRB9</i>	6	32422597	10269	6	9.42×10^{-13}	<i>HLA-DRB9</i>	<i>HLA-DRB9</i>	1.60×10^{-3}	NA	NA
<i>HLA-S</i>	6	31344346	10918	6	4.89×10^{-12}	<i>HLA-S</i>	<i>HLA-S</i>	3.36×10^{-2}	NA	NA
<i>HLA-DOA1</i>	6	32600183	16246	1	1.68×10^{-11}	<i>HLA-DOA1</i>	<i>HLA-DOA1</i>	5.96×10^{-4}	3.51×10^{-2}	S1
<i>TAP2</i>	6	32784610	26937	2	8.02×10^{-11}	<i>TAP2</i>	<i>TAP2</i>	NS	3.35×10^{-3}	S1
<i>BTNL2</i>	6	32357513	22387	7	1.43×10^{-10}	<i>BTNL2</i>	<i>BTNL2</i>	8.76×10^{-5}	NS	NS
<i>HLA-DOB</i>	6	32775540	14285	4	1.78×10^{-10}	<i>HLA-DOB</i>	<i>HLA-DOB</i>	NA	1.63×10^{-5}	S1
<i>RDBP</i>	6	31914864	17000	2	4.31×10^{-10}	<i>RDBP</i>	<i>RDBP</i>	4.16×10^{-2}	2.01×10^{-2}	S1
									3.70×10^{-2}	S2
<i>PSORS1C1</i>	6	31077608	35261	10	8.59×10^{-10}	<i>PSORS1C1</i>	<i>PSORS1C1</i>	NS	4.85×10^{-2}	S2
<i>HLA-DMB</i>	6	32897406	16441	1	2.63×10^{-9}	<i>HLA-DMB</i>	<i>HLA-DMB</i>	NS	4.45×10^{-2}	S3
<i>DHX16</i>	6	30615896	29934	1	7.13×10^{-9}	<i>DHX16</i>	<i>DHX16</i>	2.73×10^{-3}	NS	NS
<i>POU5F1</i>	6	31127114	16337	4	9.96×10^{-9}	<i>POU5F1</i>	<i>POU5F1</i>	4.68×10^{-3}	8.28×10^{-3}	S2
<i>TCF19</i>	6	31121303	15689	2	2.02×10^{-7}	<i>TCF19</i>	<i>TCF19</i>	1.78×10^{-2}	NS	NS
<i>3.8-1.5 (HLA complex group 26)</i>	6	29727893	11180	4	2.40×10^{-7}	<i>3.8-1.5</i>	NA	1.27×10^{-3}	NA	NA
<i>HLA-F</i>	6	29686117	13956	7	4.67×10^{-7}	<i>HLA-F</i>	NA	1.17×10^{-2}	2.64×10^{-2}	S1
<i>LOC100507436</i>	6	31362561	76025	8	4.98×10^{-7}	<i>LOC100507436</i>	NA	NS	NA	NA
<i>HLA-X</i>	6	31424623	10644	1	1.55×10^{-6}	NA	<i>HLA-X</i>	NA	NA	NA
<i>HCG4P4</i>	6	29917982	10428	1	8.60×10^{-6}	NA	<i>HCG4P4</i>	6.98×10^{-4}	NA	NA

Supplementary Table 1. Results of gene-based and differential expression analyses of 58 MS-associated genes (continued)

Gene	Chromosome	Start position	Length	#SNP*	Initial p	Genes significant in initial study based on SNP-based p	Genes in PheGen	Replication p	Differential expression p	Sample†
RPL3P2	6	31243108	11240	2	1.66×10^{-5}	NA	RPL3P2	NA	NA	NA
HLA-C	6	31231529	13326	2	1.72×10^{-5}	NA	HLA-C	4.29×10^{-2}	6.15×10^{-3}	S1
									2.74×10^{-2}	S2
DHFRP2	6	31326244	13498	2	2.89×10^{-5}	NA	DHFRP2	NA	NA	NA
MICE	6	29704234	17646	1	4.63×10^{-5}	NA	MICE	NA	NA	NA
TRIM31	6	30065674	20193	1	1.18×10^{-4}	NA	TRIM31	1.31×10^{-4}	NS	NS
MOG	6	29619758	25391	2	1.21×10^{-5}	NA	NA	5.09×10^{-4}	2.12×10^{-2}	S1
									3.65×10^{-2}	S3
									2.92×10^{-2}	S4
HLA-DMA	6	32911391	14508	2	3.15×10^{-7}	NA	NA	4.08×10^{-2}	8.62×10^{-4}	S1
CCHCR1	6	31105216	25799	2	4.03×10^{-5}	NA	NA	1.08×10^{-3}	1.05×10^{-2}	S1
HCG22	6	31016984	15669	6	1.21×10^{-4}	NA	NA	2.29×10^{-2}	3.85×10^{-2}	S1
BRD2	6	32931437	22845	1	1.07×10^{-5}	NA	NA	NS	5.65×10^{-6}	S1
FAM69A	1	93302721	129358	11	4.47×10^{-5}	NA	NA	NA	1.63×10^{-2}	S1
LOC100294145	6	32856953	19582	3	2.27×10^{-5}	NA	NA	NA	4.21×10^{-2}	S2
POU2F3	11	12000000	89702	3	1.13×10^{-4}	NA	NA	NS	8.41×10^{-3}	S3
TRIM26P	6	30201078	13978	2	3.72×10^{-5}	NA	NA	7.80×10^{-6}	NA	NA
HCP5P14	6	29733324	12339	1	1.33×10^{-4}	NA	NA	9.94×10^{-5}	NA	NA
3.8-1.4(HLA complex group 26)	6	29828692	11172	7	1.58×10^{-5}	NA	NA	1.08×10^{-3}	NA	NA
C6orf15	6	31074000	11332	3	9.26×10^{-5}	NA	NA	2.22×10^{-3}	NS	NS
MUC21	6	30946485	16190	4	4.40×10^{-5}	NA	NA	3.42×10^{-3}	NA	NA
HLA-A	6	29905309	13352	4	1.61×10^{-5}	NA	NA	8.38×10^{-3}	NS	NS
HLA-F-AS1	6	29689378	32448	7	1.83×10^{-6}	NA	NA	2.52×10^{-2}	NA	NA
MXD3	5	17700000	16791	2	7.60×10^{-7}	NA	NA	NS	NS	NS
LOC100287247	22	-	-	1	2.71×10^{-5}	NA	NA	NA	NA	NA
LOC100127934	1	93392136	10509	1	6.18×10^{-5}	NA	NA	NA	NA	NA
RPL15P4	6	31490853	10645	1	2.08×10^{-7}	NA	NA	NA	NA	NA
HCG2P8	6	29767896	13543	1	3.96×10^{-5}	NA	NA	NA	NA	NA

PheGenI, Phenotype-Genotype Integrator.

*The number of SNP included in a gene with p -value < 0.05, †Ms-related cells sample used to differential expression analysis. S1: PBMC, S2: CD34+ HPC, S3: CD8+ T lymphocytes, S4, spinal cord. The genes listed here that are not defined in the main text are chromosome 6 open reading frame 10 (C6orf10), notch 4 (NOTCH4), small nucleolar RNA, H/ACA box 38 (SNORA38), proline-rich coiled-coil 2A (BAT2), BCL2-associated athanogene 6 (BAT3), peptidylprolyl isomerase A pseudogene 9 (PPIAP9), major histocompatibility complex, class II, DQ beta 2 (HLA-DQB2), major histocompatibility complex, class II, DQ alpha 2 (HLA-DQA2), ubiquitin specific peptidase 8 pseudogene 1 (LOC100287272), mitochondrial coiled-coil domain 1 (MCCD1), fibroblast growth factor receptor 3 pseudogene 1 (LOC100462812), HLA complex group 27 (HCG27), major histocompatibility complex, class II, DR beta 9 (HLA-DRB9), major histocompatibility complex, class I, S (HLA-S), butyrophilin-like 2 (BTML2), DEAH (Asp-Glu-Ala-His) box polypeptide 16 (DHX16) transcription factor 19 (TCF19), HLA complex group 26 pseudogene (3.8-1.5), MHC class I polypeptide-related sequence A (LOC100507436), major histocompatibility complex, class I x (HLA-X), HLA complex group 4 pseudogene 4 (HCG4P4), ribosomal protein L3 pseudogene 2 (RPL3P2), dihydrofolate reductase pseudogene 2 (DHFRP2), MHC class I polypeptide-related sequence E (MICE), ripartite motif containing 31 (TRIM31), MAX dimerization protein 3 (MXD3), similar to hCG1987428 (LOC100287247), meiotic nuclear divisions 1 homolog (LOC100127934), ribosomal protein L15 pseudogene 4 (RPL15P4), HLA complex group 2 pseudogene 8 (HCG2P8) respectively.