

Tissue-specific Gene Expression Prediction Associates
Vitiligo with SUOX through an Active Enhancer
(Supplementary)

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1 Supplementary Figures

A

Tissue type	Blood	Nerve	Muscle	Lung	Skin
Sample size	338	256	256	278	302
Germ layer	Mesoderm	Ectoderm	Mesoderm	Entoderm	Ectoderm

B

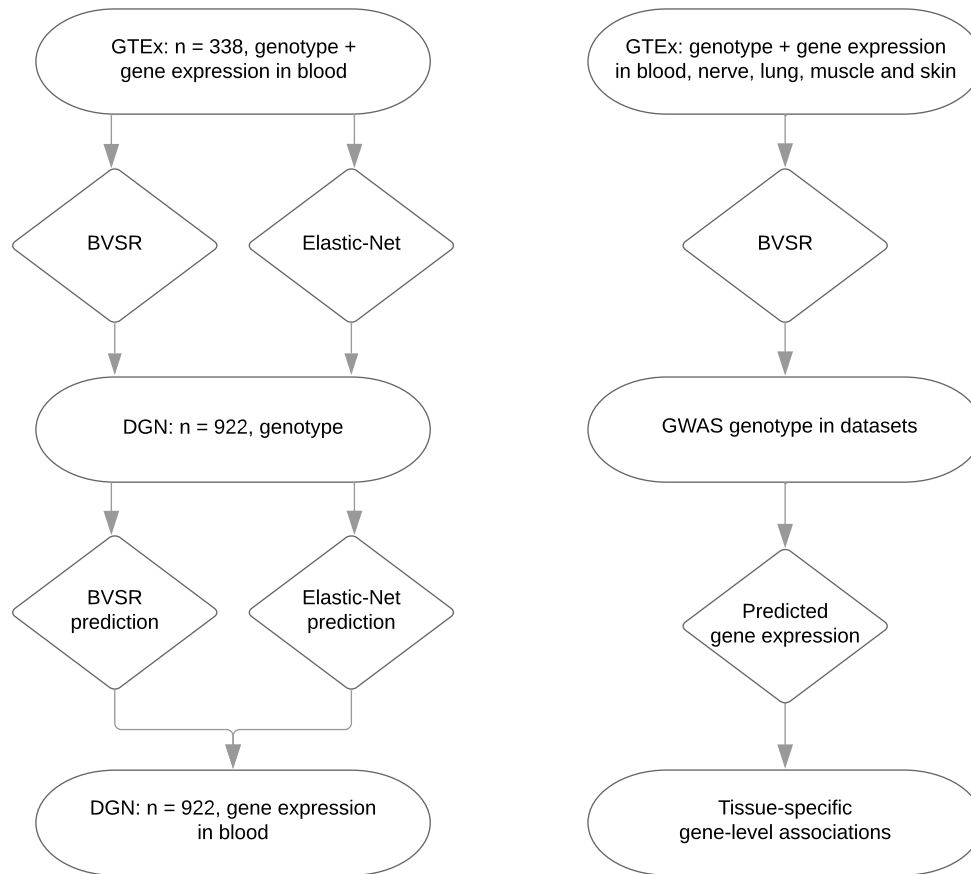


Figure S1: **Study design.** Left workflow compares performance in gene expression prediction between BVSr and Elastic-Net. Right workflow illustrates tissue-specific gene expression prediction and gene-level association.

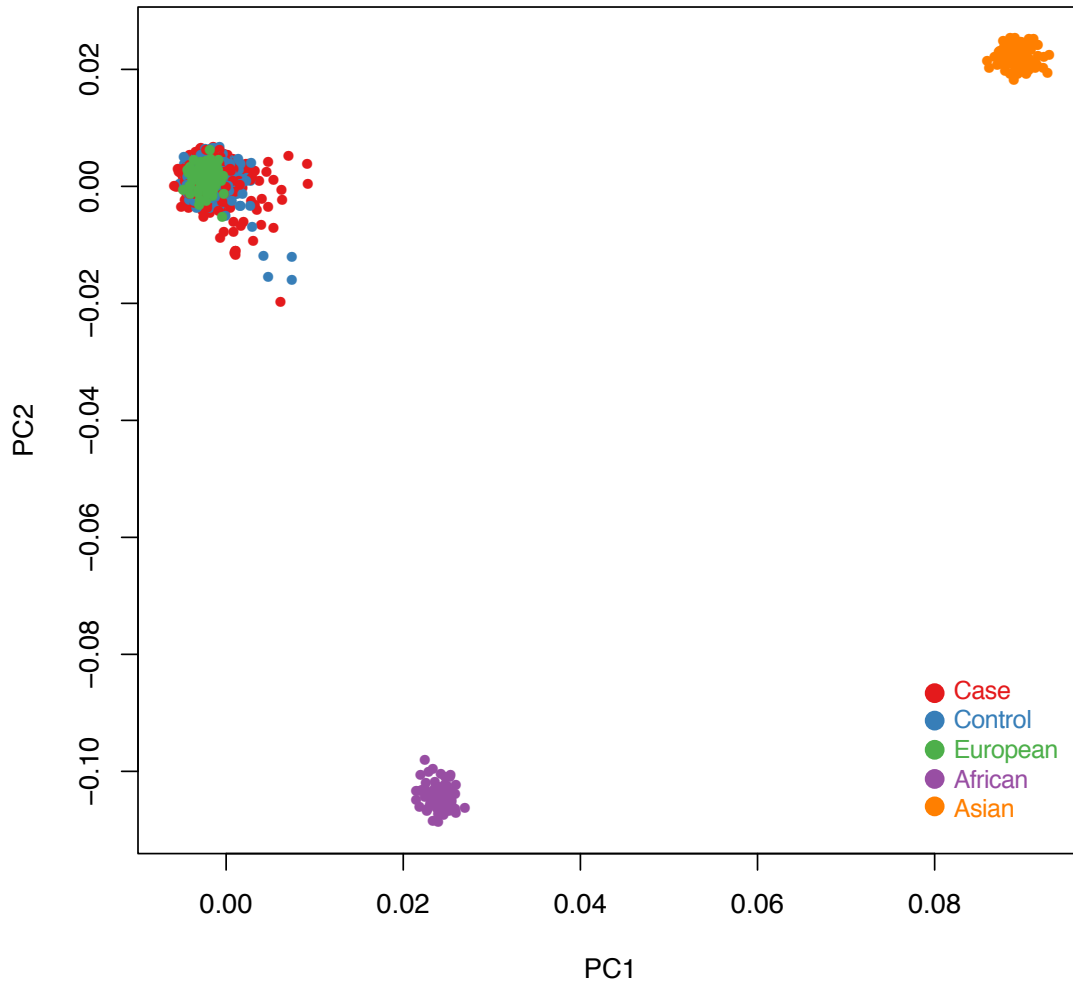


Figure S2: **Principal components plot of study samples.** Plot shows study subjects are clustered with HapMap3 samples of European decents.

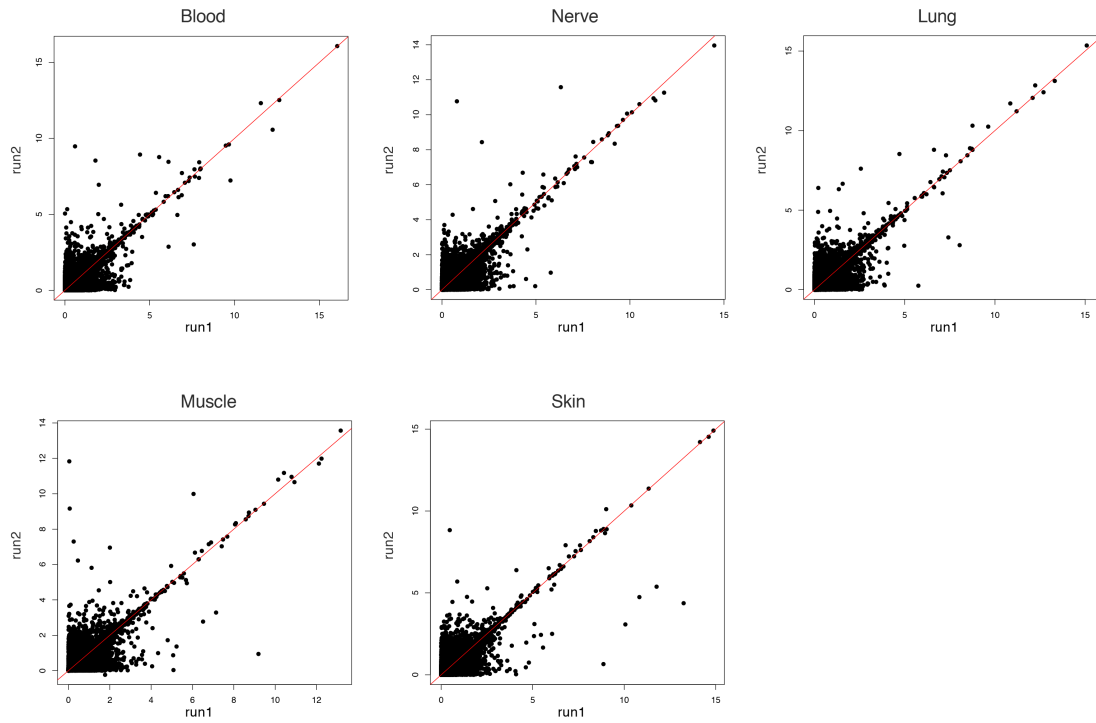


Figure S3: Comparison between two independent gene-expression prediction. For each gene in each tissue, we fit the BVSR model twice and obtain two predicted gene expressions, each of which produced a p-value in association with vitiligo status. We plot two sets $-\log_{10}(\text{p-values})$ against each other separately for each tissue.

2 Supplementary Table

Table S1: **Vitiligo significant hits in the MHC region.** P: p-values; Q: adjusted p-values using BHY procedure; OR: odds ratio. Position is the starting location of a gene and coordinates are from HG19. Significant test statistics ($Q < 0.05$) are marked bold. Only genes significant in more than one tissues are shown. Known GWAS hits are marked by †. Pseudogenes are marked by ‡.

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
RPS17P1†	6	29457048	P	N/A	0.62	1.1e-02	8.5e-08	3.9e-08
			Q	N/A	1	1	1.3e-03	6.7e-04
			OR	N/A	0.98	1.09	1.22	0.80
GABBR1	6	29523406	P	0.48	2.7e-11	4.3e-04	2.2e-05	3.2e-06
			Q	1	1.2e-06	1	0.16	2.6e-02
			OR	1.02	1.28	0.87	1.17	1.18
MOG	6	29624758	P	2.1e-07	4.0e-04	0.27	3.2e-11	1.6e-02
			Q	3.0e-03	1	1	1.4e-06	1
			OR	0.81	1.14	1.04	1.29	0.91
ZFP57	6	29640169	P	4.0e-08	4.9e-06	4.5e-08	2.6e-05	7.34e-06
			Q	7.3e-04	3.6e-02	7.8e-04	0.17	5.1e-02
			OR	0.80	0.83	0.80	0.84	0.83
HLA-F-AS1	6	29694378	P	7.6e-02	8.8e-08	2.0e-04	1.5e-11	7.4e-07
			Q	1	1.2e-03	0.75	8.6e-07	7.5e-03
			OR	0.93	0.81	0.86	0.76	0.82
IFITM4P‡	6	29718506	P	3.5e-07	2.3e-07	2.8e-07	6.0e-09	1.7e-08
			Q	4.5e-03	2.8e-03	3.3e-03	1.5e-04	3.6e-04
			OR	1.20	1.21	1.20	1.24	1.23
XXbac-BPG170G13.32	6	29719742	P	N/A	6.7e-08	8.4e-13	N/A	N/A
			Q	N/A	1.0e-03	5.4e-08	N/A	N/A
			OR	N/A	1.22	1.30	N/A	N/A
HLA-K‡	6	29894236	P	8.5e-17	6.4e-07	8.2e-09	4.0e-06	2.6e-03
			Q	2.8e-11	7.2e-03	1.7e-04	3.9e-02	1
			OR	1.37	1.20	1.24	1.19	1.11
MICD‡	6	29938578	P	7.7e-06	8.2e-12	5.1e-12	4.1e-14	2.6e-03
			Q	6.8e-02	5.3e-07	2.7e-07	1.3e-08	1
			OR	1.18	1.28	1.29	1.31	1.11
ZNRD1-AS1†	6	29968788	P	2.9e-05	1.0e-07	5.1e-06	1.3e-03	8.5e-07
			Q	0.19	1.4e-03	4.4e-02	1	8.4e-03
			OR	1.16	1.22	1.18	1.12	1.20
HLA-J‡	6	29974360	P	1.0e-08	7.1e-07	3.1e-08	3.5e-08	4.2e-07
			Q	2.5e-04	7.7e-03	6.0e-04	6.8e-04	5.0e-03
			OR	1.24	1.20	1.23	1.23	1.21

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Table S1 – continued from previous page

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
ETF1P1 [‡]	6	29999490	P	1.7e-04	1.0e-05	1.4e-10	N/A	4.2e-11
			Q	0.73	6.9e-02	5.3e-06	N/A	2.3e-06
			OR	1.15	1.19	1.27	N/A	1.28
RNF39	6	30038043	P	4.5e-08	3.8e-02	5.7e-16	N/A	4.3e-09
			Q	7.4e-04	1	1.8e-10	N/A	1.0e-04
			OR	1.22	0.92	1.35	N/A	0.79
TRIM26	6	30152232	P	4.4e-08	3.1e-02	1.3e-05	1.0e-07	1.0e-09
			Q	7.4e-04	1	9.6e-02	1.5e-03	4.3e-05
			OR	0.81	1.08	0.84	1.22	0.79
PAIP1P1 [‡]	6	30154575	P	3.8e-07	3.6e-06	2.2e-04	0.51	1.2e-15
			Q	4.8e-03	2.8e-02	0.79	1	4.1e-10
			OR	1.22	1.18	0.86	1.02	1.34
HCG17	6	30201816	P	0.19	1.1e-06	2.3e-03	4.0e-07	8.5e-04
			Q	1	1.0e-02	1	5.4e-03	1
			OR	0.95	0.83	0.89	0.82	0.87
XXbac-BPG249D20.9	6	30484043	P	5.8e-14	9.7e-03	8.9e-08	N/A	0.17
			Q	9.4e-09	1	1.2e-03	N/A	1
			OR	1.33	1.10	0.82	N/A	1.05
GNL1	6	30509154	P	0.26	0.53	5.2e-05	2.6e-08	5.5e-08
			Q	1	1	0.26	5.5e-04	8.6e-04
			OR	1.04	0.97	1.16	1.23	0.81
PRR3	6	30524663	P	0.28	4.9e-06	5.3e-08	0.31	1.0e-12
			Q	1	3.6e-02	8.7e-04	1	8.3e-08
			OR	0.96	0.83	0.82	0.96	0.76
PPP1R10	6	30568177	P	1.6e-09	1.1e-03	2.8e-07	0.12	0.83
			Q	5.9e-05	1	3.3e-03	1	1
			OR	0.79	0.88	0.82	1.05	0.99
HLA-C	6	31236526	P	2.1e-05	2.9e-05	3.4e-05	3.9e-06	5.6e-06
			Q	0.15	0.16	0.19	3.9e-02	4.2e-02
			OR	0.84	0.84	0.84	0.83	0.83
NFKBIL1	6	31514647	P	4.0e-03	7.7e-12	0.88	0.11	5.9e-07
			Q	1	5.3e-07	1	1	6.7e-03
			OR	0.89	0.76	0.99	0.94	0.82
ABHD16A	6	31654726	P	3.8e-09	4.2e-08	8.8e-02	5.5e-02	0.61
			Q	1.2e-04	6.9e-04	1	1	1
			OR	1.24	1.22	0.93	1.07	1.01
STK19	6	31938868	P	1.1e-05	1.5e-07	4.0e-04	6.2e-08	8.1e-03
			Q	9.3e-02	1.9e-03	1	1.0e-03	1
			OR	0.85	0.81	0.87	0.81	1.10
CYP21A1P [‡]	6	31973413	P	2.6e-13	4.2e-10	6.0e-14	7.6e-13	2.6e-15
			Q	2.8e-08	1.2e-05	9.8e-09	1.1e-07	4.3e-10
			OR	1.34	1.28	1.36	1.34	1.40

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Table S1 – continued from previous page

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
TNXB	6	32008931	P	0.25	4.5e-04	1.1e-02	2.4e-08	7.3e-07
			Q	1	1	1	5.3e-04	7.5e-03
			OR	1.04	0.87	1.10	0.80	1.20
PRRT1	6	32116136	P	4.8e-03	5.9e-15	1.6e-05	1.1e-11	1.2e-06
			Q	1	1.9e-09	0.11	8.6e-07	1.1e-02
			OR	0.89	1.36	1.17	1.29	1.21
PPT2	6	32121218	P	1.5e-08	1.0e-06	3.5e-09	8.0e-04	4.6e-02
			Q	3.4e-04	1.0e-02	8.2e-05	1	1
			OR	0.80	1.20	1.24	0.87	0.92
XXbac- BPG300A18.13	6	32152516	P	8.2e-08	2.3e-06	7.8e-07	3.7e-05	5.9e-07
			Q	1.2e-03	2.1e-02	8.5e-03	0.22	6.7e-03
			OR	0.80	0.82	0.81	0.85	0.81
HLA-DRA †	6	32407619	P	1.2e-06	1.6e-03	1.1e-06	2.1e-03	0.83
			Q	1.3e-02	1	1.1e-02	1	1
			OR	0.83	1.12	0.82	1.12	1.00
HLA-DRB6	6	32520490	P	9.9e-09	2.1e-10	1.1e-07	1.8e-09	7.2e-09
			Q	2.4e-04	7.0e-06	1.5e-03	5.6e-05	1.5e-04
			OR	1.24	1.27	1.22	1.25	1.24
HLA-DRB1 †	6	32546546	P	3.1e-10	4.6e-10	1.7e-09	3.5e-10	1.3e-09
			Q	1.6e-05	1.2e-05	4.7e-05	1.4e-05	4.5e-05
			OR	0.77	0.77	0.78	0.77	0.78
HLA-DQA2	6	32709119	P	2.3e-10	7.5e-11	6.1e-12	1.4e-09	2.2e-07
			Q	1.5e-05	3.0e-06	2.8e-07	4.7e-05	2.9e-03
			OR	1.2	1.27	1.29	1.25	1.21
HLA-DMA	6	32916390	P	2.6e-07	0.15	2.7e-02	4.9e-05	4.1e-06
			Q	3.5e-03	1	1	0.28	3.2e-02
			OR	0.81	0.94	1.08	0.85	0.82
RING1	6	33176272	P	5.1e-02	1.0e-10	1.8e-02	8.0e-03	7.0e-06
			Q	1	3.9e-06	1	1	4.9e-02
			OR	1.07	1.26	1.09	0.90	1.18
B3GALT4	6	33244917	P	0.10	0.32	1.3e-08	5.9e-02	1.3e-07
			Q	1	1	2.7e-04	1	1.9e-03
			OR	0.94	1.03	1.23	1.07	0.82

Table S2: **Vitiligo associated genes.** P: p-values; Q: adjusted p-values using BHY procedure; OR: odds ratio. Position is the transcript start site in HG19. Table include genes (transcripts) that are significant ($Q < 0.05$) in at least one tissue.

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
RP5-1115A15.1	1	8484705	P	0.23	4.91e-06	2.1e-05	9.8e-05	9.1e-06
			Q	1	3.6e-02	0.13	0.49	6.1e-02
			OR	0.95	0.84	0.85	0.86	0.84
LPP-AS2	3	187868994	P	7.3e-02	3.8e-02	0.23	3.6e-03	6.0e-06
			Q	1	1	1	1	4.4e-02
			OR	0.93	1.07	0.95	1.14	1.18
MAS1LP1	6	29442802	P	N/A	0.23	9.0e-03	N/A	2.5e-06
			Q	N/A	1	1	N/A	2.0e-02
			OR	N/A	0.95	1.13	N/A	0.83
RPS17P1	6	29457048	P	N/A	0.62	1.1e-02	8.5e-08	3.9e-08
			Q	N/A	1	1	1.3e-03	6.7e-04
			OR	N/A	0.98	1.09	1.22	0.80
XXbac-BPG13B8.10	6	29465286	P	N/A	4.4e-03	1.0e-02	0.20	4.3e-12
			Q	N/A	1	1	1	2.8e-07
			OR	N/A	0.89	1.09	0.95	0.76
GABBR1	6	29523406	P	0.48	2.7e-11	4.3e-04	2.2e-05	3.2e-06
			Q	1	1.2e-06	1	0.16	2.6e-02
			OR	1.02	1.28	0.87	1.17	1.18
OR2H2	6	29555683	P	0.15	0.18	1.5e-03	N/A	1.38e-06
			Q	1	1	1	N/A	1.1e-02
			OR	0.94	0.95	0.88	N/A	0.83
MOG	6	29624758	P	2.1e-07	4.0e-04	0.27	3.2e-11	1.6e-02
			Q	3.0e-03	1	1	1.4e-06	1
			OR	0.81	1.14	1.04	1.29	0.91
ZFP57	6	29640169	P	4.0e-08	4.9e-06	4.5e-08	2.6e-05	7.34e-06
			Q	7.3e-04	3.6e-02	7.8e-04	0.17	5.1e-02
			OR	0.80	0.83	0.80	0.84	0.83
HLA-F-AS1	6	29694378	P	7.6e-02	8.8e-08	2.0e-04	1.5e-11	7.4e-07
			Q	1	1.2e-03	0.75	8.6e-07	7.5e-03
			OR	0.93	0.81	0.86	0.76	0.82
IFITM4P	6	29718506	P	3.5e-07	2.3e-07	2.8e-07	6.0e-09	1.7e-08
			Q	4.5e-03	2.8e-03	3.3e-03	1.5e-04	3.6e-04
			OR	1.20	1.21	1.20	1.24	1.23
XXbac-BPG170G13.32	6	29719742	P	N/A	6.7e-08	8.4e-13	N/A	N/A
			Q	N/A	1.0e-03	5.4e-08	N/A	N/A
			OR	N/A	1.22	1.30	N/A	N/A
HLA-K	6	29894236	P	8.5e-17	6.4e-07	8.2e-09	4.0e-06	2.6e-03
			Q	2.8e-11	7.2e-03	1.7e-04	3.9e-02	1
			OR	1.37	1.20	1.24	1.19	1.11

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Table S2 – continued from previous page

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
HCG4P5	6	29909852	P	5.1e-03	3.3e-06	9.7e-06	2.4e-04	1.2e-04
			Q	1	2.7e-02	7.7e-02	1	0.53
			OR	0.89	0.83	0.84	0.86	0.86
MICD	6	29938578	P	7.7e-06	8.2e-12	5.1e-12	4.1e-14	2.6e-03
			Q	6.8e-02	5.3e-07	2.7e-07	1.3e-08	1
			OR	1.18	1.28	1.29	1.31	1.11
HCG9	6	29942889	P	6.7e-04	0.18	2.6e-13	2.6e-02	N/A
			Q	1	1	2.2e-08	1	N/A
			OR	1.13	1.05	0.75	0.92	N/A
DDX39BP2	6	29960986	P	0.18	5.2e-07	N/A	N/A	N/A
			Q	1	6.1e-03	N/A	N/A	N/A
			OR	0.95	0.82	N/A	N/A	N/A
ZNRD1-AS1	6	29968788	P	2.9e-05	1.0e-07	5.1e-06	1.3e-03	8.5e-07
			Q	0.19	1.4e-03	4.4e-02	1	8.4e-03
			OR	1.16	1.22	1.18	1.12	1.20
HLA-J	6	29974360	P	1.0e-08	7.1e-07	3.1e-08	3.5e-08	4.2e-07
			Q	2.5e-04	7.7e-03	6.0e-04	6.8e-04	5.0e-03
			OR	1.24	1.20	1.23	1.23	1.21
ETF1P1	6	29999490	P	1.7e-04	1.0e-05	1.4e-10	N/A	4.2e-11
			Q	0.73	6.9e-02	5.3e-06	N/A	2.3e-06
			OR	1.15	1.19	1.27	N/A	1.28
PPP1R11	6	30034486	P	3.5e-02	0.33	4.5e-04	2.9e-02	2.5e-07
			Q	1	1	1	1	3.2e-03
			OR	1.08	1.03	0.87	1.08	1.21
RNF39	6	30038043	P	4.5e-08	3.8e-02	5.7e-16	N/A	4.3e-09
			Q	7.4e-04	1	1.8e-10	N/A	1.0e-04
			OR	1.22	0.92	1.35	N/A	0.79
TRIM31	6	30070674	P	N/A	N/A	2.7e-13	N/A	1.4e-05
			Q	N/A	N/A	2.2e-08	N/A	9.2e-02
			OR	N/A	N/A	1.32	N/A	1.18
TRIM31-AS1	6	30073017	P	N/A	N/A	2.4e-07	N/A	3.9e-03
			Q	N/A	N/A	3.0e-03	N/A	1
			OR	N/A	N/A	1.22	N/A	0.89
TRIM15	6	30130993	P	4.9e-03	N/A	1.6e-02	N/A	3.5e-08
			Q	1	N/A	1	N/A	6.3e-04
			OR	0.90	N/A	1.09	N/A	1.23
TRIM26	6	30152232	P	4.4e-08	3.1e-02	1.3e-05	1.0e-07	1.0e-09
			Q	7.4e-04	1	9.6e-02	1.5e-03	4.3e-05
			OR	0.81	1.08	0.84	1.22	0.79
PAIP1P1	6	30154575	P	3.8e-07	3.6e-06	2.2e-04	0.51	1.2e-15
			Q	4.8e-03	2.8e-02	0.79	1	4.1e-10
			OR	1.22	1.18	0.86	1.02	1.34

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Table S2 – continued from previous page

Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
HCG17	6	30201816	P	0.19	1.1e-06	2.3e-03	4.0e-07	8.5e-04
			Q	1	1.0e-02	1	5.4e-03	1
			OR	0.95	0.83	0.89	0.82	0.87
SUCLA2P1	6	30436659	P	N/A	N/A	N/A	3.2e-06	N/A
			Q	N/A	N/A	N/A	3.4e-02	N/A
			OR	N/A	N/A	N/A	1.19	N/A
RANP1	6	30453717	P	2.1e-08	0.16	4.4e-02	4.1e-02	0.89
			Q	4.4e-04	1	1	1	1
			OR	1.23	1.05	0.92	1.08	1.00
HLA-E	6	30457244	P	9.2e-02	0.36	1.1e-10	0.77	5.4e-05
			Q	1	1	4.6e-06	1	0.26
			OR	1.06	1.03	1.27	0.98	0.85
XXbac-BPG249D20.9	6	30484043	P	5.8e-14	9.7e-03	8.9e-08	N/A	0.17
			Q	9.4e-09	1	1.2e-03	N/A	1
			OR	1.33	1.10	0.82	N/A	1.05
GNL1	6	30509154	P	0.26	0.53	5.2e-05	2.6e-08	5.5e-08
			Q	1	1	0.26	5.5e-04	8.6e-04
			OR	1.04	0.97	1.16	1.23	0.81
PRR3	6	30524663	P	0.28	4.9e-06	5.3e-08	0.31	1.0e-12
			Q	1	3.6e-02	8.7e-04	1	8.3e-08
			OR	0.96	0.83	0.82	0.96	0.76
ABCF1	6	30539153	P	6.4e-09	0.65	0.72	2.7e-02	3.6e-03
			Q	1.9e-04	1	1	1	1
			OR	0.80	0.98	0.98	0.92	0.89
PPP1R10	6	30568177	P	1.6e-09	1.1e-03	2.8e-07	0.12	0.83
			Q	5.9e-05	1	3.3e-03	1	1
			OR	0.79	0.88	0.82	1.05	0.99
ATAT1	6	30594619	P	0.69	0.17	2.3e-07	3.3e-05	0.32
			Q	1	1	3.0e-03	0.21	1
			OR	1.01	1.05	0.82	1.16	0.96
HCG20	6	30734602	P	5.9e-03	5.4e-09	3.0e-03	N/A	4.2e-03
			Q	1	1.1e-04	1	N/A	1
			OR	1.10	1.24	1.11	N/A	1.11
HLA-C	6	31236526	P	2.1e-05	2.9e-05	3.4e-05	3.9e-06	5.6e-06
			Q	0.15	0.16	0.19	3.9e-02	4.2e-02
			OR	0.84	0.84	0.84	0.83	0.83
RPL3P2	6	31248094	P	9.5e-02	0.91	1.5e-04	2.2e-02	2.3e-09
			Q	1	1	0.61	1	5.8e-05
			OR	1.06	0.99	0.86	0.91	1.24
HCP5	6	31368479	P	4.1e-10	1.4e-03	2.4e-05	3.0e-04	2.4e-05
			Q	1.7e-05	1	0.14	1	0.15
			OR	1.26	1.12	1.18	1.14	1.17

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
NFKBIL1	6	31514647	P	4.0e-03	7.7e-12	0.88	0.11	5.9e-07
			Q	1	5.3e-07	1	1	6.7e-03
			OR	0.89	0.76	0.99	0.94	0.82
BAG6	6	31606805	P	8.3e-05	3.3e-05	0.22	2.3e-08	5.1e-04
			Q	0.44	0.18	1	5.3e-04	1
			OR	1.15	1.16	1.04	1.25	1.14
C6orf47-AS1	6	31626106	P	4.9e-02	8.1e-04	0.55	0.43	2.6e-10
			Q	1	1	1	1	1.2e-05
			OR	0.92	0.88	1.02	0.97	0.78
ABHD16A	6	31654726	P	3.8e-09	4.2e-08	8.8e-02	5.5e-02	0.61
			Q	1.2e-04	6.9e-04	1	1	1
			OR	1.24	1.22	0.93	1.07	1.01
LY6G6C	6	31686425	P	0.93	9.5e-07	0.19	0.56	4.9e-02
			Q	1	9.8e-03	1	1	1
			OR	0.99	1.20	0.95	1.02	0.92
DDAH2	6	31694815	P	0.32	4.7e-04	8.6e-02	0.43	5.6e-06
			Q	1	1	1	1	4.2e-02
			OR	0.96	1.14	1.06	1.03	1.19
SAPCD1-AS1	6	31732087	P	0.24	2.3e-08	0.16	0.70	0.22
			Q	1	4.3e-04	1	1	1
			OR	0.95	1.23	0.94	0.98	0.95
C6orf48	6	31802385	P	0.49	6.1e-02	5.5e-04	7.6e-08	N/A
			Q	1	1	1	1.2e-03	N/A
			OR	1.02	1.07	1.14	1.23	N/A
SNORD48	6	31803040	P	0.90	0.10	0.19	1.4e-11	N/A
			Q	1	1	1	8.6e-07	N/A
			OR	1.00	1.06	1.05	1.28	N/A
NEU1	6	31825436	P	0.13	7.9e-08	1.5e-05	0.51	N/A
			Q	1	1.1e-03	0.11	1	N/A
			OR	1.05	1.22	1.17	0.97	N/A
SLC44A4	6	31830969	P	4.0e-07	1.7e-02	8.7e-02	0.25	N/A
			Q	4.8e-03	1	1	1	N/A
			OR	0.81	0.91	1.06	0.95	N/A
EHMT2-AS1	6	31851538	P	N/A	6.0e-05	4.2e-08	N/A	N/A
			Q	N/A	0.28	7.6e-04	N/A	N/A
			OR	N/A	1.16	0.80	N/A	N/A
ZBTB12	6	31867384	P	N/A	2.3e-08	3.0e-04	N/A	N/A
			Q	N/A	4.3e-04	0.97	N/A	N/A
			OR	N/A	0.80	1.14	N/A	N/A
CFB	6	31895475	P	4.2e-02	1.5e-03	6.3e-05	2.4e-07	N/A
			Q	1	1	0.30	3.4e-03	N/A
			OR	1.07	1.12	1.16	1.22	N/A

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
STK19	6	31938868	P	1.1e-05	1.5e-07	4.0e-04	6.2e-08	8.1e-03
			Q	9.3e-02	1.9e-03	1	1.0e-03	1
			OR	0.85	0.81	0.87	0.81	1.10
CYP21A1P	6	31973413	P	2.6e-13	4.2e-10	6.0e-14	7.6e-13	2.6e-15
			Q	2.8e-08	1.2e-05	9.8e-09	1.1e-07	4.3e-10
			OR	1.34	1.28	1.36	1.34	1.40
TNXA	6	31976391	P	0.56	0.59	3.4e-04	1.0e-12	4.8e-03
			Q	1	1	1	1.1e-07	1
			OR	1.02	0.98	1.14	1.31	1.10
C4B	6	31982539	P	7.3e-03	1.1e-09	3.1e-02	0.25	2.4e-04
			Q	1	3.0e-05	1	1	0.85
			OR	0.89	0.79	0.92	0.95	0.86
CYP21A2	6	32006042	P	5.7e-08	0.55	6.7e-04	8.7e-03	0.24
			Q	8.8e-04	1	1	1	1
			OR	0.80	1.02	1.14	0.90	0.95
TNXB	6	32008931	P	0.25	4.5e-04	1.1e-02	2.4e-08	7.3e-07
			Q	1	1	1	5.3e-04	7.5e-03
			OR	1.04	0.87	1.10	0.80	1.20
FKBPL	6	32096484	P	0.72	2.4e-06	1.6e-05	4.6e-03	7.2e-02
			Q	1	2.1e-02	0.11	1	1
			OR	0.98	0.83	0.84	0.89	0.93
PRRT1	6	32116136	P	4.8e-03	5.9e-15	1.6e-05	1.1e-11	1.2e-06
			Q	1	1.9e-09	0.11	8.6e-07	1.1e-02
			OR	0.89	1.36	1.17	1.29	1.21
PPT2	6	32121218	P	1.5e-08	1.0e-06	3.5e-09	8.0e-04	4.6e-02
			Q	3.4e-04	1.0e-02	8.2e-05	1	1
			OR	0.80	1.20	1.24	0.87	0.92
RNF5	6	32146131	P	1.3e-03	2.7e-12	1.3e-02	2.7e-02	1.6e-02
			Q	1	4.5e-07	1	1	1
			OR	0.88	1.29	1.09	1.08	1.09
AGER	6	32148745	P	0.14	0.10	1.4e-09	7.8e-02	0.69
			Q	1	1	4.7e-05	1	1
			OR	0.94	0.94	0.79	1.06	1.01
PBX2	6	32152512	P	0.37	5.3e-12	1.0e-02	0.83	1.4e-02
			Q	1	5.3e-07	1	1	1
			OR	0.96	1.29	1.09	1.00	0.91
XXbac- BPG300A18.13	6	32152516	P	8.2e-08	2.3e-06	7.8e-07	3.7e-05	5.9e-07
			Q	1.2e-03	2.1e-02	8.5e-03	0.22	6.7e-03
			OR	0.80	0.82	0.81	0.85	0.81
NOTCH4	6	32162620	P	2.3e-03	1.7e-02	1.2e-03	2.8e-06	5.2e-05
			Q	1	1	1	3.1e-02	0.26
			OR	0.89	1.09	1.13	1.19	1.16

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
HLA-DRA	6	32407619	P	1.2e-06	1.6e-03	1.1e-06	2.1e-03	0.83
			Q	1.3e-02	1	1.1e-02	1	1
			OR	0.83	1.12	0.82	1.12	1.00
HLA-DRB9	6	32427598	P	N/A	N/A	N/A	N/A	1.6e-09
			Q	N/A	N/A	N/A	N/A	4.5e-05
			OR	N/A	N/A	N/A	N/A	1.25
HLA-DRB6	6	32520490	P	9.9e-09	2.1e-10	1.1e-07	1.8e-09	7.2e-09
			Q	2.4e-04	7.0e-06	1.5e-03	5.6e-05	1.5e-04
			OR	1.24	1.27	1.22	1.25	1.24
HLA-DRB1	6	32546546	P	3.1e-10	4.6e-10	1.7e-09	3.5e-10	1.3e-09
			Q	1.6e-05	1.2e-05	4.7e-05	1.4e-05	4.5e-05
			OR	0.77	0.77	0.78	0.77	0.78
HLA-DQA2	6	32709119	P	2.3e-10	7.5e-11	6.1e-12	1.4e-09	2.2e-07
			Q	1.5e-05	3.0e-06	2.8e-07	4.7e-05	2.9e-03
			OR	1.2	1.27	1.29	1.25	1.21
AL645941.1	6	32904693	P	2.6e-05	0.27	1.7e-03	N/A	4.1e-08
			Q	0.17	1	1	N/A	6.7e-04
			OR	1.17	1.04	0.88	N/A	0.81
HLA-DMA	6	32916390	P	2.6e-07	0.15	2.7e-02	4.9e-05	4.1e-06
			Q	3.5e-03	1	1	0.28	3.2e-02
			OR	0.81	0.94	1.08	0.85	0.82
BRD2	6	32936437	P	2.6e-02	2.2e-02	0.43	0.50	1.5e-09
			Q	1	1	1	1	4.5e-05
			OR	1.08	1.08	1.03	0.97	1.25
COL11A2	6	33130458	P	0.70	8.4e-02	2.1e-06	0.17	4.9e-03
			Q	1	1	2.0e-02	1	1
			OR	0.98	1.06	0.83	0.95	0.89
RXRB	6	33161365	P	1.0e-12	0.11	0.15	0.84	1.8e-02
			Q	8.8e-08	1	1	1	1
			OR	0.76	0.94	0.94	0.99	0.91
SLC39A7	6	33168222	P	0.36	9.8e-05	0.35	2.0e-06	2.3e-02
			Q	1	0.43	1	2.4e-02	1
			OR	1.03	1.15	0.96	0.83	0.91
RING1	6	33176272	P	5.1e-02	1.0e-10	1.8e-02	8.0e-03	7.0e-06
			Q	1	3.9e-06	1	1	4.9e-02
			OR	1.07	1.26	1.09	0.90	1.18
XXbac- BPG157A10.21	6	33213852	P	2.6e-04	1.2e-11	6.1e-04	3.8e-04	6.7e-02
			Q	0.99	6.9e-07	1	1	1
			OR	0.87	1.28	0.88	1.14	1.07
HCG25	6	33217311	P	4.9e-03	2.6e-04	0.26	7.3e-02	1.0e-06
			Q	1	0.86	1	1	1.0e-02
			OR	1.10	0.87	1.04	0.93	0.83

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
VPS52	6	33218049	P	6.6e-03	0.23	0.65	0.65	6.6e-15
			Q	1	1	1	1	7.2e-10
			OR	0.90	1.04	0.98	0.98	0.74
B3GALT4	6	33244917	P	0.10	0.32	1.3e-08	5.9e-02	1.3e-07
			Q	1	1	2.7e-04	1	1.9e-03
			OR	0.94	1.03	1.23	1.07	0.82
TAPBP	6	33267471	P	3.9e-10	0.82	0.29	0.24	0.15
			Q	1.7e-05	1	1	1	1
			OR	1.26	0.99	0.96	0.95	0.94
DAXX	6	33286335	P	0.28	7.1e-06	6.1e-02	7.0e-03	7.5e-02
			Q	1	4.8e-02	1	1	1
			OR	0.96	0.84	0.93	0.90	0.93
IP6K3	6	33689444	P	6.2e-02	5.5e-04	0.10	4.0e-06	4.8e-02
			Q	1	1	1	3.9e-02	1
			OR	1.07	1.13	0.94	0.83	1.07
RNASET2	6	167342992	P	1.4e-06	2.0e-07	8.5e-07	0.13	6.1e-06
			Q	1.5e-02	2.5e-03	8.9e-03	1	4.4e-02
			OR	0.83	0.82	0.83	0.94	0.84
AL133458.1	6	167357853	P	1.3e-05	3.5e-06	6.6e-06	1.7e-02	2.2e-05
			Q	0.10	2.8e-02	5.6e-02	1	0.14
			OR	0.85	0.84	0.84	0.91	0.85
FGFR1OP	6	167412670	P	4.6e-06	0.90	3.4e-02	0.41	3.0e-05
			Q	4.7e-02	1	1	1	0.17
			OR	1.18	1.00	1.08	1.03	1.16
C6orf123	6	168185217	P	N/A	6.8e-06	0.47	0.29	8.8e-03
			Q	N/A	4.7e-02	1	1	1
			OR	N/A	1.18	1.02	0.96	0.90
AC004967.7	7	97598317	P	4.5e-02	9.6e-07	0.30	0.94	0.95
			Q	1	9.8e-03	1	1	1
			OR	1.07	1.20	1.03	1.00	1.00
GPIHBP1	8	144295068	P	0.31	0.38	4.3e-06	0.27	0.38
			Q	1	1	3.8e-02	1	1
			OR	1.03	1.03	1.18	1.04	1.03
RP11-318E3.4	10	5903768	P	0.62	0.46	1.2e-06	0.92	0.99
			Q	1	1	1.1e-02	1	1
			OR	0.98	0.97	1.19	0.99	1.00
TMEM109	11	60681346	P	0.92	1.1e-06	0.26	3.0e-02	0.18
			Q	1	1.0e-02	1	1	1
			OR	1.00	0.83	0.95	0.92	0.95
SYT7	11	61282785	P	3.8e-02	0.94	1.6e-09	0.32	0.76
			Q	1	1	4.7e-05	1	1
			OR	1.08	1.00	0.79	1.03	1.01

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
TMEM258	11	61535973	P	8.3e-07	2.8e-09	1.1e-06	5.7e-08	2.3e-08
			Q	9.4e-03	6.1e-05	1.1e-02	1.0e-03	4.5e-04
			OR	0.82	0.79	0.83	0.81	0.80
FEN1	11	61560109	P	0.66	5.0e-05	8.2e-08	3.0e-03	7.8e-02
			Q	1	0.24	1.2e-03	1	1
			OR	0.98	1.16	1.22	1.11	1.06
FADS2	11	61560452	P	9.8e-09	2.7e-08	3.4e-09	8.5e-10	7.6e-08
			Q	2.4e-04	4.7e-04	8.2e-05	3.0e-05	1.1e-03
			OR	0.79	0.80	0.79	0.79	0.81
FADS1	11	61567099	P	2.6e-08	1.4e-09	0.17	2.7e-09	0.10
			Q	4.9e-04	3.4e-05	1	7.4e-05	1
			OR	0.81	1.25	1.05	1.25	1.06
TMEM223	11	62539101	P	7.5e-02	0.56	5.5e-02	2.1e-03	6.5e-07
			Q	1	1	1	1	7.1e-03
			OR	0.93	1.02	0.93	0.89	0.83
GRM5-AS1	11	88237744	P	N/A	3.0e-06	7.6e-04	N/A	N/A
			Q	N/A	2.5e-02	1	N/A	N/A
			OR	N/A	0.84	1.13	N/A	N/A
RAB5B	12	56367697	P	0.59	0.97	0.19	6.5e-07	0.61
			Q	1	1	1	8.2e-03	1
			OR	0.98	0.99	1.04	0.83	1.01
AC034102.1	12	56385991	P	1.9e-03	0.12	0.36	5.0e-07	0.69
			Q	1	1	1	6.5e-03	1
			OR	1.12	1.06	1.03	0.83	1.01
SUOX	12	56390964	P	6.2e-05	2.8e-06	8.2e-04	3.8e-03	1.2e-06
			Q	0.34	2.4e-02	1	1	1.1e-02
			OR	0.86	0.84	0.88	0.89	0.83
RPS26	12	56435637	P	5.1e-06	3.2e-03	3.0e-07	0.36	2.1e-07
			Q	5.1e-02	1	3.4e-03	1	2.9e-03
			OR	1.18	1.11	1.20	1.03	1.21
ESYT1	12	56512034	P	0.30	6.2e-06	0.75	0.47	3.1e-04
			Q	1	4.4e-02	1	1	1
			OR	1.03	1.18	0.98	0.97	1.14
RP11-977G19.12	12	56702652	P	4.2e-02	0.72	7.1e-02	1.6e-06	0.39
			Q	1	1	1	1.9e-02	1
			OR	1.07	1.01	1.06	1.19	0.96
PAN2	12	56710007	P	2.1e-03	2.9e-02	3.7e-06	0.16	1.0e-02
			Q	1	1	3.3e-02	1	1
			OR	1.12	0.92	1.18	1.05	0.90
SPRYD4	12	56862301	P	0.83	0.21	0.42	0.11	1.0e-06
			Q	1	1	1	1	1.0e-02
			OR	1.00	0.95	1.03	1.05	1.19

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Gene	Chr	Position	Statistics	Blood	Nerve	Lung	Muscle	Skin
AC005702.1	17	58119722	P	N/A	0.15	7.3e-08	N/A	0.26
			Q	N/A	1	1.1e-03	N/A	1
			OR	N/A	0.94	1.22	N/A	0.95
FAM106DP	17	58250683	P	5.9e-07	N/A	N/A	N/A	N/A
			Q	6.9e-03	N/A	N/A	N/A	N/A
			OR	1.20	N/A	N/A	N/A	N/A
LLNLR-246C6.1	19	15456879	P	0.18	0.71	0.65	4.4e-06	0.69
			Q	1	1	1	4.1e-02	1
			OR	1.05	0.98	0.98	1.18	1.01
IL2RB	22	37521878	P	0.26	0.98	0.22	2.7e-06	0.69
			Q	1	1	1	3.1e-02	1
			OR	1.04	0.99	1.04	1.19	0.98