

A transcriptome-wide association study identifies novel candidate susceptibility genes for prostate cancer risk

Running title: A transcriptome-wide association study of prostate cancer

Duo Liu^{1,2,*}, Jingjing Zhu^{2,*}, Dan Zhou³, Emily G Nikas⁴, Nikos T Mitanis⁵, Yanfa Sun^{2,6,7,8}, Chong Wu⁹, Nicholas Mancuso¹⁰, Nancy J. Cox³, Liang Wang¹¹,
Stephen J Freedland^{12,13}, Christopher A Haiman¹⁰, Eric R. Gamazon^{3,14,15}, Jason B Nikas¹⁶, Lang Wu²

*. These authors contributed equally to this work

Corresponding to: Lang Wu, Email: lwu@cc.hawaii.edu, phone: (808)564-5965; or Jason B Nikas, jbnikas@Genomix-inc.com, phone: (612)385-5200

The contents of Supplementary Tables

Title	Page
Supplementary Table 1 Prediction performance of gene expression prediction models built	3
Supplementary Table 2 Two hundred and forty nine genes located at genomic loci at least 500kb away from any GWAS-identified prostate cancer risk variants	4
Supplementary Table 3 One hundred and ninety four novel genes located at known susceptibility loci that have not yet been reported	26
Supplementary Table 4 Seventy-two genes that have been reported in previous TWAS showing the same directions of effect compared with the current study	45
Supplementary Table 5 Twenty-four genes that have been previous reported as candidate susceptibility genes with the results of both-side direction in TWAS	59
Supplementary Table 6 Sixteen genes that have been previous reported as candidate susceptibility genes in TWAS with different directions compared with those in the current analyses	76
Supplementary Table 7 One hundred and fifty-two genes showing differential expression in tumor vs normal prostate samples with directions of effect consistent with those in TWAS analyses	81
Supplementary Table 8 151 CpG sites showing biologically significant differential methylation levels between prostate tumor and tumor adjacent normal samples	88
Supplementary Table 9 Pathway enrichment analyses of associated protein-coding genes	95

Supplementary Table 1 Prediction performance of gene expression prediction models built

Model	Prediction performance (R²)	All	Protein	lncRNAs	miRNAs
PrediXcan	≥0.01	5885	4232	1652	1
	≥0.04	3917	2789	1127	1
	≥0.09	2248	1547	700	1
	≥0.16	1315	902	412	1
Modified UTMOST	≥0.01	7782	5695	2086	1
	≥0.04	5355	3850	1504	1
	≥0.09	2940	2053	886	1
	≥0.16	1641	1131	509	1
JTI	≥0.01	10612	7759	2851	2
	≥0.04	7212	5217	1994	1
	≥0.09	3821	2676	1144	1
	≥0.16	2010	1385	624	1

Protein: Protein coding genes; lncRNAs: long non-coding RNAs; miRNAs: microRNAs.

Supplementary Table 2 Two hundred and forty nine genes located at genomic loci at least 500kb away from any GWAS-identified prostate cancer risk variants

Gene	Region	Classification	R ^{2a}	OR (95% CI)	P-value	P-value after FDR ^a	Closest risk SNPs ^b	Distance to the index SNP (kb)	Model
<i>AP4B1-ASI</i>	1p13.2	lncRNA	0.03	0.84 (0.75-0.93)	1.37×10^{-3}	3.75×10^{-2}	rs56391074	26188.54	Modified UTMOST
			0.04	0.83 (0.75-0.93)	7.89×10^{-4}	2.49×10^{-2}	rs56391074	26188.54	JTI
<i>SLC1A7</i>	1p32.3	protein_coding	0.07	1.11 (1.04-1.18)	1.44×10^{-3}	3.91×10^{-2}	rs636291	42996.76	JTI
<i>NSUN4</i>	1p33	protein_coding	0.03	0.88 (0.81-0.95)	7.11×10^{-4}	2.31×10^{-2}	rs636291	36249.75	JTI
<i>YBX1</i>	1p34.2	protein_coding	0.02	1.16 (1.06-1.27)	1.16×10^{-3}	3.35×10^{-2}	rs636291	32592.00	PrediXcan
			0.03	1.16 (1.06-1.26)	1.27×10^{-3}	3.56×10^{-2}	rs636291	32592.00	JTI
<i>ZC3H12A</i>	1p34.3	protein_coding	0.05	1.23 (1.12-1.34)	7.02×10^{-6}	5.33×10^{-4}	rs636291	27384.06	PrediXcan
			0.05	1.21 (1.09-1.35)	5.16×10^{-4}	1.81×10^{-2}	rs636291	27384.06	JTI
<i>DNAL11</i>	1p34.3	protein_coding	0.06	0.95 (0.92-0.98)	1.59×10^{-3}	4.19×10^{-2}	rs636291	27466.42	JTI
<i>LINC01137</i>	1p34.3	lncRNA	0.11	0.94 (0.91-0.97)	4.78×10^{-4}	1.71×10^{-2}	rs636291	27364.38	Modified UTMOST
			0.13	0.97 (0.95-0.99)	1.54×10^{-3}	4.09×10^{-2}	rs636291	27364.38	JTI
<i>FAM76A</i>	1p35.3	protein_coding	0.07	1.36 (1.12-1.65)	1.79×10^{-3}	4.51×10^{-2}	rs636291	17496.39	JTI
<i>RPA2</i>	1p35.3	protein_coding	0.42	0.96 (0.94-0.98)	1.65×10^{-4}	7.47×10^{-3}	rs636291	17661.94	PrediXcan
			0.41	0.95 (0.92-0.98)	3.40×10^{-4}	1.34×10^{-2}	rs636291	17661.94	Modified UTMOST
			0.45	0.97 (0.95-0.98)	3.44×10^{-4}	1.35×10^{-2}	rs636291	17661.94	JTI
<i>PLA2G2A</i>	1p36.13	protein_coding	0.14	1.59 (1.2-2.11)	1.43×10^{-3}	3.89×10^{-2}	rs636291	9745.83	Modified

									UTMOST
<i>VPS45</i>	1q21.2	protein_coding	0.02	1.46 (1.19-1.78)	2.54×10^{-4}	1.06×10^{-2}	rs56391074	61828.65	Modified UTMOST
			0.03	1.42 (1.17-1.71)	3.36×10^{-4}	1.33×10^{-2}	rs56391074	61828.65	JTI
<i>AC243772.2</i>	1q21.2	lncRNA	0.04	0.87 (0.82-0.92)	4.61×10^{-6}	3.84×10^{-4}	rs56391074	61546.50	JTI
<i>ADAMTSL4</i>	1q21.3	protein_coding	0.04	1.17 (1.08-1.28)	2.46×10^{-4}	1.03×10^{-2}	rs56391074	62311.17	Modified UTMOST
<i>AL589765.4</i>	1q21.3	lncRNA	0.14	1.08 (1.03-1.13)	9.44×10^{-4}	2.86×10^{-2}	rs17599629	1077.573	PrediXcan
			0.15	1.08 (1.03-1.13)	1.34×10^{-3}	3.70×10^{-2}			JTI
<i>MRPL9</i>	1q21.3	protein_coding	0.03	0.89 (0.83-0.96)	1.63×10^{-3}	4.26×10^{-2}	rs17599629	1073.83	JTI
<i>TDRKH-AS1</i>	1q21.3	lncRNA	0.03	0.87 (0.8-0.94)	9.99×10^{-4}	2.97×10^{-2}	rs17599629	1104.99	Modified UTMOST
<i>ADAMTSL4-AS1</i>	1q21.3	protein_coding	0.04	0.74 (0.66-0.83)	2.98×10^{-7}	3.39×10^{-5}	rs56391074	62322.77	Modified UTMOST
			0.08	0.72 (0.64-0.82)	7.59×10^{-7}	7.70×10^{-5}	rs56391074	62322.77	JTI
<i>C1orf21</i>	1q25.3	protein_coding	0.03	1.09 (1.05-1.14)	7.31×10^{-5}	3.96×10^{-3}	rs4845695	29444.39	JTI
<i>TSEN15</i>	1q25.3	protein_coding	0.08	0.92 (0.88-0.97)	5.87×10^{-4}	2.00×10^{-2}	rs4845695	29109.01	JTI
<i>AL078645.1</i>	1q25.3	lncRNA	0.02	2.18 (1.58-3)	1.87×10^{-6}	1.72×10^{-4}	rs4845695	29465.67	Modified UTMOST
<i>AC244034.2</i>	1q32.1	lncRNA	0.21	0.94 (0.92-0.97)	4.14×10^{-5}	2.48×10^{-3}	rs1775148	919.46	PrediXcan
			0.19	0.94 (0.91-0.98)	5.44×10^{-4}	1.89×10^{-2}	rs1775148	919.46	Modified UTMOST
			0.22	0.96 (0.93-0.98)					7.01×10^{-4}
<i>AL592148.3</i>	1q41	lncRNA	0.25	1.05 (1.02-1.09)	1.89×10^{-3}	4.71×10^{-2}	rs1775148	17074.39	PrediXcan
			0.3	1.04 (1.02-1.07)	1.72×10^{-3}	4.41×10^{-2}	rs1775148	17074.39	JTI

<i>OBSCN-AS1</i>	1q42.13	protein_coding	0.12	0.92 (0.88-0.96)	4.39×10^{-4}	1.60×10^{-2}	rs1775148	22633.38	PrediXcan
			0.15	0.94 (0.91-0.97)	3.97×10^{-4}	1.49×10^{-2}	rs1775148	22633.38	Modified UTMOST
			0.16	0.94 (0.91-0.98)	1.18×10^{-3}	3.39×10^{-2}	rs1775148	22633.38	JTI
<i>IBA57</i>	1q42.13	protein_coding	0.04	0.88 (0.82-0.95)	1.74×10^{-3}	4.43×10^{-2}	rs1775148	22595.69	JTI
<i>AL353593.1</i>	1q42.13	lncRNA	0.02	1.67 (1.25-2.24)	6.51×10^{-4}	2.17×10^{-2}	rs1775148	22704.46	JTI
<i>MAT2A</i>	2p11.2	protein_coding	0.02	0.5 (0.39-0.64)	8.72×10^{-8}	1.15×10^{-5}	rs74702681	19113.40	JTI
<i>CEP68</i>	2p14	protein_coding	0.03	0.85 (0.78-0.93)	5.10×10^{-4}	1.79×10^{-2}	rs58235267	2005.66	Modified UTMOST
			0.04	0.95 (0.92-0.98)	3.82×10^{-4}	1.46×10^{-2}	rs58235267	2005.66	JTI
<i>AC009975.1</i>	2p16.3	lncRNA	0.21	0.95 (0.92-0.98)	4.04×10^{-4}	1.51×10^{-2}	rs7591218	5398.48	PrediXcan
<i>CYP1B1-AS1</i>	2p22.2	lncRNA	0.02	0.89 (0.83-0.96)	1.80×10^{-3}	4.51×10^{-2}	rs13385191	17414.53	PrediXcan
<i>RMDN2-AS1</i>	2p22.2	lncRNA	0.02	0.81 (0.71-0.92)	1.24×10^{-3}	3.50×10^{-2}	rs13385191	17288.88	PrediXcan
<i>IFT172</i>	2p23.3	protein_coding	0.02	0.84 (0.76-0.92)	5.57×10^{-4}	1.93×10^{-2}	rs13385191	6778.97	JTI
<i>LINC01376</i>	2p24.2	lncRNA	0.03	2.54 (1.43-4.51)	1.53×10^{-3}	4.08×10^{-2}	rs9287719	8457.00	JTI
<i>CPSF3</i>	2p25.1	protein_coding	0.03	0.88 (0.82-0.95)	7.86×10^{-4}	2.48×10^{-2}	rs62106670	966.57	JTI
<i>SLC20A1</i>	2q13	protein_coding	0.07	1.23 (1.09-1.39)	8.29×10^{-4}	2.58×10^{-2}	rs11691517	1510.34	Modified UTMOST
<i>AC079922.2</i>	2q13	lncRNA	0.22	0.94 (0.91-0.97)	3.91×10^{-5}	2.36×10^{-3}	rs11691517	1506.31	PrediXcan
			0.23	0.94 (0.92-0.97)	1.76×10^{-4}	7.83×10^{-3}	rs11691517	1506.31	Modified UTMOST
			0.24	0.96 (0.94-0.98)	3.86×10^{-4}	1.47×10^{-2}	rs11691517	1506.31	JTI
<i>RIF1</i>	2q23.3	protein_coding	0.12	1.12 (1.06-1.18)	8.43×10^{-5}	4.42×10^{-3}	rs11691517	40373.30	PrediXcan
			0.15	1.07 (1.03-1.1)	5.79×10^{-5}	3.26×10^{-3}	rs11691517	40373.30	Modified

									UTMOST
			0.18	1.05 (1.03-1.08)	1.18×10^{-4}	5.80×10^{-3}	rs11691517	40373.30	JTI
<i>PDE11A</i>	2q31.2	protein_coding	0.1	0.93 (0.89-0.97)	1.79×10^{-3}	4.51×10^{-2}	rs34925593	4253.43	Modified UTMOST
<i>AC007319.1</i>	2q32.1	lncRNA	0.02	1.13 (1.05-1.22)	1.35×10^{-3}	3.72×10^{-2}	rs34925593	13633.40	Modified UTMOST
<i>AC093388.1</i>	2q32.2	lncRNA	0.03	0.92 (0.88-0.97)	1.15×10^{-3}	3.32×10^{-2}	rs34925593	17084.27	JTI
<i>CASP10</i>	2q33.1	protein_coding	0.05	0.88 (0.84-0.93)	6.72×10^{-6}	5.14×10^{-4}	rs34925593	27813.06	PrediXcan
			0.09	0.85 (0.8-0.9)	1.04×10^{-7}	1.35×10^{-5}	rs34925593	27813.06	Modified UTMOST
			0.04	0.88 (0.83-0.92)	5.11×10^{-7}	5.53×10^{-5}	rs34925593	27813.06	JTI
<i>HDAC4-AS1</i>	2q37.3	protein_coding	0.12	1.07 (1.03-1.11)	1.52×10^{-3}	4.07×10^{-2}	rs2292884	1879.90	PrediXcan
			0.21	1.06 (1.02-1.09)	8.30×10^{-4}	2.58×10^{-2}	rs2292884	1879.90	Modified UTMOST
			0.21	1.06 (1.03-1.1)	7.01×10^{-4}	2.28×10^{-2}	rs2292884	1879.90	JTI
<i>LIAS</i>	4p14	protein_coding	0.05	1.07 (1.03-1.11)	3.48×10^{-4}	1.36×10^{-2}	rs10009409	34394.63	JTI
<i>SMIM14</i>	4p14	protein_coding	0.02	0.83 (0.76-0.9)	7.21×10^{-6}	5.44×10^{-4}	rs10009409	34307.30	JTI
<i>MAEA</i>	4p16.3	protein_coding	0.46	1.04 (1.02-1.07)	1.57×10^{-3}	4.16×10^{-2}	rs10009409	72571.61	JTI
<i>UVSSA</i>	4p16.3	protein_coding	0.35	0.96 (0.94-0.99)	1.82×10^{-3}	4.57×10^{-2}	rs10009409	72514.20	Modified UTMOST
<i>UNC5C</i>	4q22.3	protein_coding	0.02	0.82 (0.74-0.9)	6.52×10^{-5}	3.59×10^{-3}	rs17021918	520.78	PrediXcan
<i>CYP2U1</i>	4q25	protein_coding	0.05	1.11 (1.04-1.18)	9.98×10^{-4}	2.97×10^{-2}	rs34480284	2787.90	JTI
<i>AC095055.1</i>	4q31.3	lncRNA	0.02	0.55 (0.4-0.74)	1.30×10^{-4}	6.23×10^{-3}	rs34480284	45996.52	Modified UTMOST
			0.05	0.83 (0.76-0.9)	4.44×10^{-6}	3.71×10^{-4}	rs34480284	45996.52	JTI

<i>SH3RF1</i>	4q32.3	protein_coding	0.02	0.74 (0.63-0.87)	3.91×10^{-4}	1.48×10^{-2}	rs34480284	63950.78	Modified UTMOST
<i>LINC02363</i>	4q35.1	lncRNA	0.02	1.33 (1.11-1.58)	1.65×10^{-3}	4.28×10^{-2}	rs34480284	79197.28	PrediXcan
<i>AC114956.1</i>	5p12	lncRNA	0.04	0.91 (0.86-0.96)	4.19×10^{-4}	1.54×10^{-2}	rs2121875	850.17	PrediXcan
<i>GDF9</i>	5q31.1	protein_coding	0.07	1.4 (1.16-1.68)	5.44×10^{-4}	1.89×10^{-2}	rs10793821	1639.34	JTI
<i>NDST1</i>	5q33.1	protein_coding	0.06	1.15 (1.06-1.24)	4.20×10^{-4}	1.55×10^{-2}	rs10793821	16029.17	Modified UTMOST
<i>CUL9</i>	6p21.1	protein_coding	0.02	0.76 (0.65-0.89)	7.48×10^{-4}	2.40×10^{-2}	rs4711748	544.69	JTI
<i>CNPY3</i>	6p21.1	protein_coding	0.1	1.07 (1.03-1.12)	1.16×10^{-3}	3.35×10^{-2}	rs4711748	797.66	PrediXcan
<i>AL035587.1</i>	6p21.1	lncRNA	0.07	1.13 (1.06-1.2)	9.27×10^{-5}	4.73×10^{-3}	rs4711748	786.50	PrediXcan
			0.13	1.12 (1.06-1.18)	8.03×10^{-5}	4.26×10^{-3}	rs4711748	786.50	Modified UTMOST
			0.14	1.11 (1.05-1.18)	5.71×10^{-4}	1.95×10^{-2}	rs4711748	786.50	JTI
<i>GLO1</i>	6p21.2	protein_coding	0.1	0.92 (0.88-0.97)	1.60×10^{-3}	4.20×10^{-2}	rs9469899	3850.58	Modified UTMOST
<i>PIMI</i>	6p21.2	protein_coding	0.02	1.11 (1.04-1.18)	1.55×10^{-3}	4.11×10^{-2}	rs9469899	2344.86	JTI
<i>BAK1</i>	6p21.31	protein_coding	0.26	0.95 (0.92-0.98)	1.19×10^{-3}	3.41×10^{-2}	rs9296068	551.63	PrediXcan
			0.31	0.96 (0.94-0.98)	7.66×10^{-4}	2.43×10^{-2}	rs9296068	551.63	Modified UTMOST
<i>PRSS16</i>	6p22.1	protein_coding	0.09	0.91 (0.87-0.96)	8.37×10^{-5}	4.40×10^{-3}	rs7767188	2858.30	PrediXcan
			0.14	0.93 (0.89-0.96)	1.26×10^{-4}	6.10×10^{-3}	rs7767188	2858.30	JTI
<i>LINC02829</i>	6p22.1	lncRNA	0.02	0.82 (0.74-0.91)	1.61×10^{-4}	7.40×10^{-3}	rs7767188	608.49	JTI
<i>HIST1H3H</i>	6p22.1	protein_coding	0.04	0.91 (0.86-0.96)	5.67×10^{-4}	1.95×10^{-2}	rs7767188	2295.93	PrediXcan
<i>HFE</i>	6p22.2	protein_coding	0.06	1.11 (1.05-1.17)	7.91×10^{-5}	4.22×10^{-3}	rs7767188	3986.27	PrediXcan

			0.07	1.19 (1.09-1.29)	8.57×10^{-5}	4.48×10^{-3}	rs7767188	3986.27	Modified UTMOST
			0.1	1.1 (1.05-1.15)	1.38×10^{-4}	6.54×10^{-3}	rs7767188	3986.27	JTI
<i>ABT1</i>	6p22.2	protein_coding	0.04	0.8 (0.72-0.89)	3.36×10^{-5}	2.07×10^{-3}	rs7767188	3476.60	JTI
<i>BTN3A2</i>	6p22.2	protein_coding	0.49	1.02 (1.01-1.04)	1.03×10^{-3}	3.05×10^{-2}	rs7767188	3708.39	JTI
<i>F13A1</i>	6p25.1	protein_coding	0.05	1.18 (1.06-1.31)	1.96×10^{-3}	4.84×10^{-2}	rs4713266	5074.71	JTI
<i>RIPK1</i>	6p25.2	protein_coding	0.18	0.93 (0.89-0.97)	1.80×10^{-3}	4.51×10^{-2}	rs4713266	8154.81	Modified UTMOST
<i>AL359715.1</i>	6q14.1	lncRNA	0.07	0.91 (0.86-0.96)	6.13×10^{-4}	2.07×10^{-2}	rs9443189	4657.18	Modified UTMOST
<i>AL359715.2</i>	6q14.1	lncRNA	0.02	0.84 (0.77-0.93)	3.02×10^{-4}	1.22×10^{-2}	rs9443189	4680.79	Modified UTMOST
			0.03	0.76 (0.65-0.89)	5.22×10^{-4}	1.83×10^{-2}	rs9443189	4680.79	JTI
<i>PRSS35</i>	6q14.2	protein_coding	0.06	1.11 (1.04-1.18)	1.78×10^{-3}	4.50×10^{-2}	rs9443189	7726.31	JTI
<i>AL139274.2</i>	6q14.3	lncRNA	0.03	0.88 (0.81-0.94)	3.86×10^{-4}	1.47×10^{-2}	rs9443189	11365.00	Modified UTMOST
			0.05	0.9 (0.84-0.96)	1.31×10^{-3}	3.63×10^{-2}	rs9443189	11365.00	JTI
<i>C6orf163</i>	6q15	protein_coding	0.11	1.1 (1.05-1.16)	2.36×10^{-4}	9.92×10^{-3}	rs9443189	11558.69	PrediXcan
			0.1	1.07 (1.03-1.11)	4.40×10^{-4}	1.60×10^{-2}	rs9443189	11558.69	Modified UTMOST
			0.15	1.05 (1.02-1.08)	1.28×10^{-3}	3.58×10^{-2}	rs9443189	11558.69	JTI
<i>CALHM5</i>	6q22.1	protein_coding	0.03	1.18 (1.08-1.28)	1.39×10^{-4}	6.56×10^{-3}	rs2273669	7547.62	PrediXcan
<i>NCOA7</i>	6q22.32	protein_coding	0.04	0.85 (0.78-0.94)	9.38×10^{-4}	2.84×10^{-2}	rs339331	8892.26	PrediXcan
			0.02	0.86 (0.79-0.94)	1.38×10^{-3}	3.78×10^{-2}	rs339331	8892.26	JTI
<i>L3MBTL3</i>	6q23.1	protein_coding	0.39	0.95 (0.93-0.97)	3.51×10^{-6}	3.05×10^{-4}	rs339331	13124.79	PrediXcan

			0.42	0.95 (0.93-0.97)	2.29×10^{-5}	1.49×10^{-3}	rs339331	13124.79	Modified UTMOST
			0.44	0.95 (0.92-0.97)	2.72×10^{-5}	1.72×10^{-3}	rs339331	13124.79	JTI
<i>AC005062.1</i>	7p21.1	lncRNA	0.02	0.89 (0.85-0.94)	3.06×10^{-6}	2.73×10^{-4}	rs527510716	18014.07	PrediXcan
<i>ZNF800</i>	7q31.33	protein_coding	0.02	0.87 (0.8-0.95)	1.58×10^{-3}	4.17×10^{-2}	rs6465657	29170.52	PrediXcan
<i>DOCK5</i>	8p21.2	protein_coding	0.02	0.91 (0.86-0.96)	7.53×10^{-4}	2.41×10^{-2}	rs11135910	849.90	Modified UTMOST
<i>EGR3</i>	8p21.3	protein_coding	0.02	0.84 (0.78-0.91)	1.23×10^{-5}	8.67×10^{-4}	rs2928679	893.80	PrediXcan
<i>AC107959.1</i>	8p21.3	lncRNA	0.07	0.86 (0.8-0.91)	1.01×10^{-6}	9.83×10^{-5}	rs2928679	596.87	Modified UTMOST
			0.08	0.76 (0.66-0.87)	8.73×10^{-5}	4.53×10^{-3}	rs2928679	596.87	JTI
<i>FAM66A</i>	8p23.1	processed_transcript	0.25	1.06 (1.03-1.1)	1.54×10^{-4}	7.14×10^{-3}	rs2928679	11219.45	PrediXcan
			0.3	1.08 (1.04-1.11)	6.22×10^{-5}	3.47×10^{-3}	rs2928679	11219.45	Modified UTMOST
<i>AC130352.1</i>	8p23.1	lncRNA	0.04	1.16 (1.06-1.27)	1.17×10^{-3}	3.35×10^{-2}	rs2928679	11105.00	Modified UTMOST
<i>CHMP4C</i>	8q21.13	protein_coding	0.29	0.96 (0.94-0.98)	1.12×10^{-3}	3.25×10^{-2}	rs6984769	56734.51	PrediXcan
			0.29	0.94 (0.91-0.97)	8.38×10^{-4}	2.60×10^{-2}	rs6984769	56734.51	Modified UTMOST
			0.31	0.96 (0.94-0.98)	9.86×10^{-4}	2.95×10^{-2}	rs6984769	56734.51	JTI
<i>LRRC69</i>	8q21.3	protein_coding	0.04	1.11 (1.05-1.17)	1.88×10^{-4}	8.24×10^{-3}	rs6984769	66203.90	PrediXcan
			0.07	1.15 (1.07-1.23)	6.75×10^{-5}	3.71×10^{-3}	rs6984769	66203.90	Modified UTMOST
			0.08	1.1 (1.04-1.17)	1.04×10^{-3}	3.06×10^{-2}	rs6984769	66203.90	JTI
<i>COL22A1</i>	8q24.3	protein_coding	0.03	0.91 (0.85-0.96)	1.15×10^{-3}	3.32×10^{-2}	rs7837688	11061.12	PrediXcan

			0.13	0.87 (0.8-0.94)	9.75×10^{-4}	2.93×10^{-2}	rs7837688	11061.12	Modified UTMOST
<i>THEM6</i>	8q24.3	protein_coding	0.05	1.09 (1.04-1.15)	6.68×10^{-4}	2.20×10^{-2}	rs7837688	15269.26	PrediXcan
<i>AC105219.4</i>	8q24.3	lncRNA	0.02	0.75 (0.64-0.89)	7.45×10^{-4}	2.39×10^{-2}	rs7837688	16300.96	Modified UTMOST
<i>IL11RA</i>	9p13.3	protein_coding	0.13	1.17 (1.07-1.29)	1.21×10^{-3}	3.43×10^{-2}	rs10122495	600.92	JTI
<i>CD72</i>	9p13.3	protein_coding	0.04	1.18 (1.07-1.32)	1.83×10^{-3}	4.57×10^{-2}	rs10122495	1559.75	PrediXcan
			0.08	1.13 (1.06-1.2)	1.46×10^{-4}	6.84×10^{-3}	rs10122495	1559.75	Modified UTMOST
<i>UNC13B</i>	9p13.3	protein_coding	0.06	1.13 (1.07-1.19)	5.71×10^{-6}	4.51×10^{-4}	rs10122495	1112.22	JTI
<i>AL357874.2</i>	9p13.3	lncRNA	0.09	0.9 (0.84-0.96)	1.46×10^{-3}	3.94×10^{-2}	rs10122495	1592.73	PrediXcan
			0.08	0.9 (0.86-0.96)	4.35×10^{-4}	1.59×10^{-2}	rs10122495	1592.73	Modified UTMOST
			0.13	0.9 (0.85-0.95)	3.53×10^{-4}	1.37×10^{-2}	rs10122495	1592.73	JTI
<i>TXN</i>	9q31.3	protein_coding	0.14	1.24 (1.1-1.4)	3.73×10^{-4}	1.44×10^{-2}	rs817826	2849.79	JTI
<i>AL138895.1</i>	9q32	lncRNA	0.02	0.16 (0.05-0.48)	1.29×10^{-3}	3.58×10^{-2}	rs817826	7002.70	JTI
<i>TRAF1</i>	9q33.2	protein_coding	0.02	1.13 (1.05-1.22)	1.65×10^{-3}	4.28×10^{-2}	rs1571801	762.70	Modified UTMOST
<i>NEK6</i>	9q33.3	protein_coding	0.13	0.88 (0.83-0.94)	1.03×10^{-4}	5.10×10^{-3}	rs1571801	2592.51	Modified UTMOST
			0.14	0.89 (0.83-0.96)	1.43×10^{-3}	3.89×10^{-2}	rs1571801	2592.51	JTI
<i>ODF2</i>	9q34.11	protein_coding	0.03	0.83 (0.75-0.93)	1.67×10^{-3}	4.32×10^{-2}	rs1182	1358.60	Modified UTMOST
<i>CFAP157</i>	9q34.11	protein_coding	0.06	1.1 (1.04-1.15)	5.35×10^{-4}	1.86×10^{-2}	rs1182	2106.79	PrediXcan
			0.05	1.66 (1.34-2.05)	3.73×10^{-6}	3.21×10^{-4}	rs1182	2106.79	Modified

									UTMOST
			0.02	1.11 (1.05-1.17)	3.84×10^{-4}	1.46×10^{-2}	rs1182	2106.79	JTI
<i>PTRH1</i>	9q34.11	protein_coding	0.19	1.13 (1.07-1.18)	2.35×10^{-6}	2.13×10^{-4}	rs1182	2120.80	PrediXcan
			0.21	1.09 (1.05-1.12)	6.98×10^{-7}	7.19×10^{-5}	rs1182	2120.80	Modified UTMOST
			0.24	1.09 (1.05-1.13)	1.02×10^{-5}	7.45×10^{-4}	rs1182	2120.80	JTI
<i>BRD3</i>	9q34.2	protein_coding	0.04	1.12 (1.04-1.2)	1.84×10^{-3}	4.60×10^{-2}	rs1182	4319.37	PrediXcan
<i>PIP4K2A</i>	10p12.2	protein_coding	0.05	1.09 (1.03-1.16)	1.80×10^{-3}	4.52×10^{-2}	rs141536087	21969.09	Modified UTMOST
<i>NUDT5</i>	10p13	protein_coding	0.02	0.84 (0.77-0.92)	6.38×10^{-5}	3.54×10^{-3}	rs141536087	11352.63	Modified UTMOST
			0.04	0.88 (0.83-0.93)	1.37×10^{-5}	9.49×10^{-4}	rs141536087	11352.63	JTI
<i>SEC61A2</i>	10p13	protein_coding	0.03	0.83 (0.76-0.91)	7.97×10^{-5}	4.25×10^{-3}	rs141536087	11316.95	PrediXcan
			0.09	0.92 (0.88-0.96)	1.80×10^{-4}	7.96×10^{-3}	rs141536087	11316.95	Modified UTMOST
			0.06	0.88 (0.82-0.95)	4.02×10^{-4}	1.50×10^{-2}	rs141536087	11316.95	JTI
<i>GDI2</i>	10p15.1	protein_coding	0.22	0.95 (0.91-0.98)	1.72×10^{-3}	4.41×10^{-2}	rs141536087	4952.50	Modified UTMOST
			0.24	0.96 (0.93-0.98)	1.97×10^{-3}	4.86×10^{-2}	rs141536087	4952.50	JTI
<i>TASOR2</i>	10p15.1	protein_coding	0.03	3.85 (2.06-7.19)	2.61×10^{-5}	1.67×10^{-3}	rs141536087	4872.11	JTI
<i>ZNF22</i>	10q11.21	protein_coding	0.02	1.14 (1.07-1.21)	2.59×10^{-5}	1.67×10^{-3}	rs76934034	587.06	JTI
<i>FRMPD2</i>	10q11.22	protein_coding	0.02	1.28 (1.11-1.48)	8.65×10^{-4}	2.66×10^{-2}	rs3123078	2160.37	PrediXcan
<i>FO681492.1</i>	10q11.22	protein_coding	0.12	2.32 (1.65-3.27)	1.64×10^{-6}	1.53×10^{-4}	rs76934034	875.67	Modified UTMOST
<i>SIRT1</i>	10q21.3	protein_coding	0.04	0.92 (0.88-0.97)	1.78×10^{-3}	4.51×10^{-2}	rs10993994	18094.93	JTI

<i>HKDC1</i>	10q22.1	protein_coding	0.11	0.89 (0.84-0.94)	4.76×10^{-5}	2.76×10^{-3}	rs10993994	19430.56	JTI
<i>PLAC9</i>	10q22.3	protein_coding	0.11	0.94 (0.91-0.97)	2.01×10^{-5}	1.33×10^{-3}	rs1935581	8303.71	PrediXcan
			0.17	0.91 (0.87-0.94)	8.48×10^{-7}	8.46×10^{-5}	rs1935581	8303.71	Modified UTMOST
			0.22	0.94 (0.91-0.97)	1.35×10^{-5}	9.40×10^{-4}	rs1935581	8303.71	JTI
<i>MARVELD1</i>	10q24.2	protein_coding	0.15	1.07 (1.03-1.12)	2.76×10^{-4}	1.13×10^{-2}	rs1935581	9277.78	PrediXcan
			0.19	1.07 (1.03-1.11)	1.61×10^{-4}	7.40×10^{-3}	rs1935581	9277.78	Modified UTMOST
			0.21	1.13 (1.06-1.21)	3.21×10^{-4}	1.28×10^{-2}	rs1935581	9277.78	JTI
<i>NPM3</i>	10q24.32	protein_coding	0.05	0.91 (0.86-0.96)	1.19×10^{-3}	3.41×10^{-2}	rs3850699	873.14	PrediXcan
<i>GSTO2</i>	10q25.1	protein_coding	0.12	1.08 (1.03-1.13)	1.51×10^{-3}	4.05×10^{-2}	rs34032774	1613.54	PrediXcan
			0.09	1.21 (1.09-1.35)	3.80×10^{-4}	1.46×10^{-2}	rs34032774	1613.54	JTI
<i>AL731566.2</i>	10q26.13	lncRNA	0.05	0.89 (0.83-0.95)	5.60×10^{-4}	1.93×10^{-2}	rs11199874	692.76	Modified UTMOST
			0.08	0.92 (0.87-0.96)	3.49×10^{-4}	1.36×10^{-2}	rs11199874	692.76	JTI
<i>SYT13</i>	11p11.2	protein_coding	0.06	1.19 (1.09-1.3)	9.90×10^{-5}	4.96×10^{-3}	rs59111863	2160.11	Modified UTMOST
			0.06	1.18 (1.07-1.31)	1.50×10^{-3}	4.04×10^{-2}	rs59111863	2160.11	JTI
<i>MDK</i>	11p11.2	protein_coding	0.03	1.15 (1.06-1.26)	1.62×10^{-3}	4.24×10^{-2}	rs59111863	1019.66	PrediXcan
<i>WT1</i>	11p13	protein_coding	0.02	1.12 (1.04-1.2)	1.45×10^{-3}	3.92×10^{-2}	rs12791447	24852.74	JTI
<i>LINC00958</i>	11p15.2	lncRNA	0.18	0.94 (0.91-0.98)	1.79×10^{-3}	4.51×10^{-2}	rs12791447	5427.48	PrediXcan
<i>AP001160.3</i>	11q12.3	lncRNA	0.04	0.82 (0.75-0.88)	4.28×10^{-7}	4.67×10^{-5}	rs2277283	645.06	JTI
<i>SF3B2</i>	11q13.1	protein_coding	0.24	0.96 (0.93-0.98)	6.66×10^{-4}	2.20×10^{-2}	rs12785905	1133.77	PrediXcan
			0.27	0.95 (0.92-0.98)	3.57×10^{-4}	1.38×10^{-2}	rs12785905	1133.77	Modified

									UTMOST
			0.29	0.95 (0.92-0.97)	3.98×10^{-4}	1.49×10^{-2}	rs12785905	1133.77	JTI
<i>SPINDOC</i>	11q13.1	protein_coding	0.1	1.07 (1.03-1.11)	8.62×10^{-4}	2.66×10^{-2}	rs2277283	1672.42	PrediXcan
<i>MAP3K11</i>	11q13.1	protein_coding	0.18	0.94 (0.91-0.98)	8.32×10^{-4}	2.59×10^{-2}	rs2277283	3456.79	PrediXcan
			0.2	0.95 (0.92-0.98)	4.13×10^{-4}	1.54×10^{-2}	rs2277283	3456.79	Modified UTMOST
			0.25	0.96 (0.94-0.98)	1.74×10^{-3}	4.43×10^{-2}	rs2277283	3456.79	JTI
<i>TRPC6</i>	11q22.1	protein_coding	0.02	1.44 (1.2-1.71)	6.50×10^{-5}	3.59×10^{-3}	rs11568818	1079.37	JTI
<i>C11orf1</i>	11q23.1	protein_coding	0.04	0.86 (0.8-0.93)	8.96×10^{-5}	4.61×10^{-3}	rs11214775	2057.52	Modified UTMOST
			0.06	0.91 (0.87-0.96)	4.17×10^{-4}	1.54×10^{-2}	rs11214775	2057.52	JTI
<i>FDXACB1</i>	11q23.1	protein_coding	0.06	0.85 (0.79-0.91)	1.09×10^{-5}	7.89×10^{-4}	rs11214775	2062.40	Modified UTMOST
			0.07	0.87 (0.81-0.94)	1.96×10^{-4}	8.47×10^{-3}	rs11214775	2062.40	JTI
<i>NTM</i>	11q25	protein_coding	0.04	0.86 (0.79-0.93)	1.76×10^{-4}	7.83×10^{-3}	rs878987	3026.00	PrediXcan
			0.1	0.9 (0.85-0.95)	1.85×10^{-4}	8.13×10^{-3}	rs878987	3026.00	Modified UTMOST
			0.06	0.68 (0.55-0.84)	3.18×10^{-4}	1.27×10^{-2}	rs878987	3026.00	JTI
<i>AC092747.4</i>	12p11.23	lncRNA	0.06	1.09 (1.05-1.13)	2.35×10^{-5}	1.52×10^{-3}	rs10845938	12773.12	Modified UTMOST
<i>SOX5</i>	12p12.1	protein_coding	0.08	7.53 (2.31 ⁻²⁴ .57)	8.64×10^{-4}	2.66×10^{-2}	rs10845938	9265.52	JTI
<i>FAM66C</i>	12p13.31	lncRNA	0.05	1.1 (1.04-1.16)	1.09×10^{-3}	3.18×10^{-2}	rs2066827	4538.29	JTI
<i>CSRNP2</i>	12q13.12	protein_coding	0.02	1.18 (1.07-1.29)	7.60×10^{-4}	2.42×10^{-2}	rs902774	1818.91	Modified UTMOST
<i>CERS5</i>	12q13.12	protein_coding	0.07	0.92 (0.87-0.96)	7.61×10^{-4}	2.42×10^{-2}	rs10875943	847.57	PrediXcan

<i>AQP5</i>	12q13.12	protein_coding	0.02	1.1 (1.04-1.17)	4.84×10^{-4}	1.73×10^{-2}	rs10875943	679.64	PrediXcan
<i>BCDIN3D</i>	12q13.12	protein_coding	0.09	0.93 (0.9-0.96)	5.55×10^{-5}	3.15×10^{-3}	rs10875943	555.56	PrediXcan
			0.09	0.92 (0.89-0.96)	2.68×10^{-5}	1.71×10^{-3}	rs10875943	555.56	JTI
<i>AC074032.1</i>	12q13.12	processed_transcript	0.14	0.93 (0.89-0.97)	1.15×10^{-3}	3.32×10^{-2}	rs10875943	829.97	PrediXcan
			0.17	0.95 (0.92-0.98)	1.03×10^{-3}	3.05×10^{-2}	rs10875943	829.97	Modified UTMOST
			0.19	0.95 (0.92-0.98)	1.49×10^{-3}	4.03×10^{-2}	rs10875943	829.97	JTI
<i>DCN</i>	12q21.33	protein_coding	0.04	0.67 (0.53-0.86)	1.27×10^{-3}	3.57×10^{-2}	rs5799921	1378.50	JTI
<i>WASHC3</i>	12q23.2	protein_coding	0.11	0.91 (0.86-0.96)	2.23×10^{-4}	9.47×10^{-3}	rs5799921	12246.18	PrediXcan
			0.13	0.93 (0.89-0.96)	8.00×10^{-5}	4.25×10^{-3}	rs5799921	12246.18	Modified UTMOST
			0.15	0.93 (0.89-0.96)	1.11×10^{-4}	5.48×10^{-3}	rs5799921	12246.18	JTI
<i>KCTD10</i>	12q24.11	protein_coding	0.07	1.15 (1.08-1.23)	1.18×10^{-5}	8.44×10^{-4}	rs10774740	4779.74	PrediXcan
			0.11	1.08 (1.04-1.12)	1.99×10^{-4}	8.55×10^{-3}	rs10774740	4779.74	Modified UTMOST
<i>ATP2A2</i>	12q24.11	protein_coding	0.03	0.87 (0.8-0.95)	1.28×10^{-3}	3.57×10^{-2}	rs10774740	3947.64	JTI
<i>PEBP1</i>	12q24.23	protein_coding	0.1	0.92 (0.88-0.97)	1.54×10^{-3}	4.10×10^{-2}	rs61933115	3489.60	JTI
<i>SUDS3</i>	12q24.23	protein_coding	0.05	0.82 (0.72-0.93)	1.72×10^{-3}	4.41×10^{-2}	rs61933115	3730.13	JTI
<i>AC069234.5</i>	12q24.31	lncRNA	0.02	0.87 (0.8-0.95)	1.92×10^{-3}	4.75×10^{-2}	rs61933115	6057.61	PrediXcan
<i>AL137244.1</i>	13q22.2	lncRNA	0.08	1.07 (1.03-1.11)	8.27×10^{-4}	2.58×10^{-2}	rs9600079	2477.27	PrediXcan
			0.11	1.12 (1.06-1.19)	1.63×10^{-4}	7.42×10^{-3}	rs9600079	2477.27	Modified UTMOST
			0.1	1.08 (1.03-1.13)	7.42×10^{-4}	2.39×10^{-2}	rs9600079	2477.27	JTI
<i>LMO7-AS1</i>	13q22.2	lncRNA	0.36	1.04 (1.02-1.06)	3.88×10^{-4}	1.47×10^{-2}	rs9600079	2450.70	PrediXcan

			0.41	1.04 (1.02-1.07)	1.26×10^{-4}	6.10×10^{-3}	rs9600079	2450.70	Modified UTMOST
			0.42	1.04 (1.02-1.06)	1.72×10^{-4}	7.68×10^{-3}	rs9600079	2450.70	JTI
<i>NOVA1</i>	14q12	protein_coding	0.02	0.78 (0.68-0.9)	6.62×10^{-4}	2.19×10^{-2}	rs1004030	3606.65	PrediXcan
<i>SLC25A21-AS1</i>	14q13.3	protein_coding	0.04	1.12 (1.05-1.19)	2.56×10^{-4}	1.06×10^{-2}	rs11629412	502.80	Modified UTMOST
			0.07	1.11 (1.05-1.17)	3.39×10^{-4}	1.33×10^{-2}	rs11629412	502.80	JTI
<i>AL121790.2</i>	14q21.1	lncRNA	0.07	0.89 (0.84-0.94)	6.99×10^{-5}	3.82×10^{-3}	rs11629412	887.07	PrediXcan
			0.12	0.92 (0.87-0.97)	1.03×10^{-3}	3.05×10^{-2}	rs11629412	887.07	Modified UTMOST
			0.12	0.93 (0.89-0.97)	1.50×10^{-3}	4.03×10^{-2}	rs11629412	887.07	JTI
<i>AL606834.2</i>	14q22.1	lncRNA	0.06	0.92 (0.87-0.97)	1.24×10^{-3}	3.50×10^{-2}	rs8008270	2181.00	JTI
<i>POMT2</i>	14q24.3	protein_coding	0.04	0.9 (0.85-0.96)	2.01×10^{-3}	4.94×10^{-2}	rs8014671	6649.04	PrediXcan
<i>RPS6KL1</i>	14q24.3	protein_coding	0.07	1.08 (1.03-1.13)	4.01×10^{-4}	1.50×10^{-2}	rs8014671	4278.40	Modified UTMOST
			0.1	1.07 (1.03-1.12)	7.80×10^{-4}	2.47×10^{-2}	rs8014671	4278.40	JTI
<i>ZNF839</i>	14q32.31	protein_coding	0.03	1.14 (1.05-1.23)	1.28×10^{-3}	3.57×10^{-2}	rs8014671	31691.46	Modified UTMOST
<i>PPP1R13B</i>	14q32.33	protein_coding	0.07	0.86 (0.78-0.94)	1.21×10^{-3}	3.43×10^{-2}	rs8014671	33107.83	Modified UTMOST
<i>SIVAI</i>	14q32.33	protein_coding	0.06	0.93 (0.89-0.97)	1.67×10^{-3}	4.32×10^{-2}	rs8014671	34127.18	JTI
<i>AL132712.1</i>	14q32.33	lncRNA	0.03	0.89 (0.82-0.96)	1.91×10^{-3}	4.75×10^{-2}	rs8014671	33228.45	JTI
<i>FMNI</i>	15q13.3	protein_coding	0.02	0.85 (0.8-0.91)	3.17×10^{-6}	2.80×10^{-4}	rs4924487	7865.17	Modified UTMOST
<i>MYO5C</i>	15q21.2	protein_coding	0.1	1.12 (1.05-1.2)	4.02×10^{-4}	1.50×10^{-2}	rs33984059	3901.35	JTI

<i>SPPL2A</i>	15q21.2	protein_coding	0.05	0.92 (0.88-0.97)	5.99×10^{-4}	2.03×10^{-2}	rs4775302	4359.70	Modified
			0.08	0.95 (0.93-0.98)	1.34×10^{-3}	3.70×10^{-2}	rs4775302	4359.70	JTI
<i>ISLR2</i>	15q24.1	protein_coding	0.11	1.12 (1.04-1.2)	1.34×10^{-3}	3.70×10^{-2}	rs112293876	7628.01	Modified UTMOST
<i>FAM219B</i>	15q24.1	protein_coding	0.02	1.31 (1.11-1.55)	1.83×10^{-3}	4.58×10^{-2}	rs112293876	8427.69	Modified UTMOST
<i>MPI</i>	15q24.1	protein_coding	0.05	1.1 (1.04-1.16)	5.21×10^{-4}	1.83×10^{-2}	rs112293876	8417.71	Modified UTMOST
<i>AC010931.2</i>	15q24.1	protein_coding	0.05	1.12 (1.05-1.21)	1.15×10^{-3}	3.32×10^{-2}	rs112293876	7653.62	PrediXcan
			0.08	1.12 (1.04-1.21)	1.67×10^{-3}	4.32×10^{-2}	rs112293876	7653.62	Modified UTMOST
<i>RPP25</i>	15q24.2	protein_coding	0.04	0.91 (0.86-0.96)	9.66×10^{-4}	2.91×10^{-2}	rs112293876	8482.12	Modified UTMOST
			0.05	0.95 (0.92-0.98)	1.67×10^{-3}	4.32×10^{-2}	rs112293876	8482.12	JTI
<i>FURIN</i>	15q26.1	protein_coding	0.03	0.77 (0.65-0.9)	1.61×10^{-3}	4.23×10^{-2}	rs112293876	24647.18	Modified UTMOST
			0.03	0.73 (0.6-0.88)	8.25×10^{-4}	2.58×10^{-2}	rs112293876	24647.18	JTI
<i>FES</i>	15q26.1	protein_coding	0.06	1.13 (1.05-1.22)	1.41×10^{-3}	3.84×10^{-2}	rs112293876	24662.28	Modified UTMOST
<i>PRC1-AS1</i>	15q26.1	lncRNA	0.06	1.16 (1.06-1.26)	1.45×10^{-3}	3.93×10^{-2}	rs112293876	24744.93	JTI
<i>AC118658.1</i>	15q26.3	lncRNA	0.02	0.79 (0.7-0.89)	1.71×10^{-4}	7.65×10^{-3}	rs112293876	32438.80	JTI
<i>MAPK3</i>	16p11.2	protein_coding	0.03	1.12 (1.05-1.19)	2.43×10^{-4}	1.02×10^{-2}	rs11863709	27529.15	Modified UTMOST
<i>GDPD3</i>	16p11.2	protein_coding	0.09	1.09 (1.04-1.14)	4.95×10^{-4}	1.75×10^{-2}	rs11863709	27538.45	Modified

									UTMOST
<i>XPO6</i>	16p11.2	protein_coding	0.02	1.22 (1.1-1.37)	3.33×10^{-4}	1.32×10^{-2}	rs11863709	29545.28	Modified UTMOST
			0.03	1.12 (1.05-1.19)	8.83×10^{-4}	2.71×10^{-2}	rs11863709	29545.28	JTI
<i>NPIPA1</i>	16p13.11	protein_coding	0.39	0.96 (0.94-0.98)	8.93×10^{-4}	2.73×10^{-2}	rs11863709	42637.92	PrediXcan
			0.44	0.96 (0.93-0.98)	2.01×10^{-3}	4.94×10^{-2}	rs11863709	42637.92	Modified UTMOST
<i>NPIPA5</i>	16p13.11	protein_coding	0.46	1.06 (1.02-1.09)	1.72×10^{-3}	4.41×10^{-2}	rs11863709	42197.06	Modified UTMOST
<i>HAGH</i>	16p13.3	protein_coding	0.15	0.93 (0.89-0.97)	4.45×10^{-4}	1.61×10^{-2}	rs11863709	55808.96	PrediXcan
			0.16	0.94 (0.9-0.97)	2.73×10^{-4}	1.12×10^{-2}	rs11863709	55808.96	Modified UTMOST
			0.17	0.96 (0.93-0.98)	1.23×10^{-3}	3.47×10^{-2}	rs11863709	55808.96	JTI
<i>NUBP2</i>	16p13.3	protein_coding	0.02	1.13 (1.06-1.21)	2.75×10^{-4}	1.13×10^{-2}	rs11863709	55821.67	Modified UTMOST
<i>TELO2</i>	16p13.3	protein_coding	0.21	1.07 (1.03-1.12)	9.05×10^{-4}	2.76×10^{-2}	rs11863709	56111.23	PrediXcan
			0.28	1.05 (1.02-1.09)	1.04×10^{-3}	3.06×10^{-2}	rs11863709	56111.23	Modified UTMOST
<i>HMOX2</i>	16p13.3	protein_coding	0.12	1.1 (1.06-1.16)	1.92×10^{-5}	1.27×10^{-3}	rs11863709	53129.89	PrediXcan
<i>TMEM204</i>	16p13.3	protein_coding	0.11	0.9 (0.85-0.96)	8.98×10^{-4}	2.75×10^{-2}	rs11863709	56075.89	Modified UTMOST
			0.12	0.88 (0.82-0.95)	7.32×10^{-4}	2.36×10^{-2}	rs11863709	56075.89	JTI
<i>FLYWCH2</i>	16p13.3	protein_coding	0.03	1.25 (1.12-1.4)	9.99×10^{-5}	4.99×10^{-3}	rs11863709	54721.39	Modified UTMOST
			0.03	1.14 (1.07-1.22)	8.95×10^{-5}	4.61×10^{-3}	rs11863709	54721.39	JTI

<i>NLRC3</i>	16p13.3	protein_coding	0.27	0.96 (0.94-0.99)	1.74×10^{-3}	4.43×10^{-2}	rs11863709	54065.54	JTI
<i>EME2</i>	16p13.3	protein_coding	0.04	0.9 (0.84-0.95)	3.34×10^{-4}	1.32×10^{-2}	rs11863709	55831.37	Modified UTMOST
			0.06	0.9 (0.85-0.95)	2.30×10^{-4}	9.71×10^{-3}	rs11863709	55831.37	JTI
<i>NFATC3</i>	16q22.1	protein_coding	0.08	1.07 (1.03-1.12)	8.37×10^{-4}	2.60×10^{-2}	rs12051443	3572.68	Modified UTMOST
<i>ZDHHC7</i>	16q24.1	protein_coding	0.14	0.9 (0.86-0.94)	7.00×10^{-7}	7.19×10^{-5}	rs199737822	2828.89	PrediXcan
			0.18	0.91 (0.88-0.94)	1.23×10^{-7}	1.55×10^{-5}	rs199737822	2828.89	Modified UTMOST
			0.21	0.9 (0.86-0.94)	1.25×10^{-6}	1.20×10^{-4}	rs199737822	2828.89	JTI
<i>AC134312.1</i>	16q24.2	lncRNA	0.06	0.9 (0.84-0.95)	5.42×10^{-4}	1.88×10^{-2}	rs199737822	5942.75	PrediXcan
			0.15	0.85 (0.79-0.93)	1.29×10^{-4}	6.22×10^{-3}	rs199737822	5942.75	Modified UTMOST
			0.16	0.74 (0.63-0.88)	6.42×10^{-4}	2.15×10^{-2}	rs199737822	5942.75	JTI
<i>ATPAF2</i>	17p11.2	protein_coding	0.02	1.16 (1.07-1.25)	2.23×10^{-4}	9.47×10^{-3}	rs142444269	12218.03	PrediXcan
			0.09	1.14 (1.06-1.23)	6.55×10^{-4}	2.18×10^{-2}	rs142444269	12218.03	Modified UTMOST
<i>DRC3</i>	17p11.2	protein_coding	0.09	1.07 (1.03-1.11)	8.44×10^{-4}	2.62×10^{-2}	rs142444269	12222.62	PrediXcan
			0.12	1.17 (1.08-1.26)	1.90×10^{-4}	8.27×10^{-3}	rs142444269	12222.62	Modified UTMOST
<i>TOMIL2</i>	17p11.2	protein_coding	0.03	0.89 (0.85-0.94)	3.09×10^{-5}	1.92×10^{-3}	rs142444269	12351.92	JTI
<i>AC122129.1</i>	17p11.2	lncRNA	0.05	0.82 (0.75-0.9)	4.51×10^{-5}	2.66×10^{-3}	rs142444269	12337.21	Modified UTMOST
			0.06	0.88 (0.84-0.94)	2.50×10^{-5}	1.62×10^{-3}	rs142444269	12337.21	JTI
<i>MED31</i>	17p13.1	protein_coding	0.03	0.93 (0.89-0.97)	5.00×10^{-4}	1.76×10^{-2}	rs28441558	1256.48	PrediXcan

<i>SMYD4</i>	17p13.3	protein_coding	0.12	0.92 (0.88-0.96)	4.34×10^{-4}	1.59×10^{-2}	rs461251	1063.62	PrediXcan
<i>FBXL20</i>	17q12	protein_coding	0.09	0.91 (0.85-0.96)	1.72×10^{-3}	4.41×10^{-2}	rs11263763	1311.82	Modified UTMOST
<i>MAPT</i>	17q21.31	protein_coding	0.11	1.08 (1.03-1.13)	1.24×10^{-3}	3.50×10^{-2}	rs138213197	2833.96	Modified UTMOST
<i>CDC27</i>	17q21.32	protein_coding	0.07	0.84 (0.76-0.93)	8.23×10^{-4}	2.58×10^{-2}	rs138213197	1610.64	JTI
<i>LRRC46</i>	17q21.32	protein_coding	0.22	1.07 (1.03-1.11)	9.15×10^{-4}	2.78×10^{-2}	rs138213197	896.71	JTI
<i>ITGB3</i>	17q21.32	protein_coding	0.03	1.18 (1.08-1.29)	3.02×10^{-4}	1.22×10^{-2}	rs138213197	1474.49	Modified UTMOST
<i>AC099850.1</i>	17q22	lncRNA	0.03	1.18 (1.07-1.31)	1.34×10^{-3}	3.70×10^{-2}	rs2680708	727.84	PrediXcan
<i>AC015845.2</i>	17q22	lncRNA	0.02	0.83 (0.74-0.93)	1.51×10^{-3}	4.05×10^{-2}	rs2680708	606.81	JTI
<i>DCAF7</i>	17q23.3	protein_coding	0.02	0.88 (0.82-0.94)	1.51×10^{-4}	7.05×10^{-3}	rs2680708	5171.70	PrediXcan
<i>SLC25A19</i>	17q25.1	protein_coding	0.02	0.7 (0.57-0.87)	9.99×10^{-4}	2.97×10^{-2}	rs6501436	4149.78	JTI
<i>MIF4GD</i>	17q25.1	protein_coding	0.11	0.83 (0.75-0.92)	4.86×10^{-4}	1.73×10^{-2}	rs6501436	4143.02	Modified UTMOST
<i>AC022211.2</i>	17q25.1	lncRNA	0.04	0.91 (0.86-0.96)	1.57×10^{-3}	4.16×10^{-2}	rs6501436	4148.16	Modified UTMOST
<i>AC132938.1</i>	17q25.3	lncRNA	0.1	0.9 (0.86-0.95)	1.94×10^{-4}	8.44×10^{-3}	rs6501436	11219.70	JTI
<i>AC009704.2</i>	18q22.3	lncRNA	0.04	1.15 (1.06-1.25)	5.38×10^{-4}	1.87×10^{-2}	rs10460109	864.16	PrediXcan
			0.04	1.13 (1.06-1.22)	6.30×10^{-4}	2.11×10^{-2}	rs10460109	864.16	JTI
<i>ZNF236</i>	18q23	protein_coding	0.04	0.86 (0.8-0.92)	6.64×10^{-6}	5.09×10^{-4}	rs10460109	1498.40	Modified UTMOST
			0.04	0.81 (0.73-0.88)	5.96×10^{-6}	4.63×10^{-4}	rs10460109	1498.40	JTI
<i>AC018529.1</i>	18q23	lncRNA	0.08	0.91 (0.88-0.95)	6.24×10^{-6}	4.80×10^{-4}	rs10460109	1768.88	PrediXcan
<i>IL12RB1</i>	19p13.11	protein_coding	0.04	0.9 (0.84-0.96)	1.04×10^{-3}	3.06×10^{-2}	rs11666569	955.73	Modified

									UTMOST
			0.03	0.8 (0.69-0.92)	1.64×10^{-3}	4.28×10^{-2}	rs11666569	955.73	JTI
<i>MAU2</i>	19p13.11	protein_coding	0.03	0.83 (0.73-0.93)	1.70×10^{-3}	4.37×10^{-2}	rs11666569	2217.42	Modified UTMOST
<i>TM6SF2</i>	19p13.11	protein_coding	0.06	0.86 (0.79-0.94)	6.97×10^{-4}	2.28×10^{-2}	rs11666569	2161.10	Modified UTMOST
<i>TNPO2</i>	19p13.2	protein_coding	0.05	0.9 (0.84-0.96)	1.53×10^{-3}	4.08×10^{-2}	rs11666569	4404.07	Modified UTMOST
<i>PRDX2</i>	19p13.2	protein_coding	0.08	0.76 (0.64-0.9)	1.36×10^{-3}	3.75×10^{-2}	rs11666569	4306.44	JTI
<i>PLIN3</i>	19p13.3	protein_coding	0.03	0.88 (0.82-0.94)	3.50×10^{-4}	1.36×10^{-2}	rs11666569	12375.72	PrediXcan
<i>AC022148.1</i>	19q13.12	lncRNA	0.04	1.8 (1.38-2.36)	1.69×10^{-5}	1.14×10^{-3}	rs8102476	699.241	Modified UTMOST
			0.04	1.81 (1.39-2.36)	1.23×10^{-5}	8.67×10^{-4}			JTI
<i>ZBTB32</i>	19q13.12	protein_coding	0.04	0.84 (0.77-0.92)	1.76×10^{-4}	7.83×10^{-3}	rs8102476	2540.18	PrediXcan
			0.1	0.91 (0.88-0.95)	2.16×10^{-5}	1.42×10^{-3}	rs8102476	2540.18	Modified UTMOST
			0.1	0.93 (0.9-0.96)	8.53×10^{-5}	4.47×10^{-3}	rs8102476	2540.18	JTI
<i>CLIP3</i>	19q13.12	protein_coding	0.04	0.91 (0.86-0.96)	5.60×10^{-4}	1.93×10^{-2}	rs8102476	2230.05	PrediXcan
<i>ETV2</i>	19q13.12	protein_coding	0.03	0.82 (0.74-0.9)	4.67×10^{-5}	2.73×10^{-3}	rs8102476	2602.97	PrediXcan
			0.08	0.89 (0.84-0.93)	6.93×10^{-6}	5.28×10^{-4}	rs8102476	2602.97	Modified UTMOST
			0.1	0.84 (0.78-0.9)	5.01×10^{-6}	4.09×10^{-4}	rs8102476	2602.97	JTI
<i>COX6B1</i>	19q13.12	protein_coding	0.06	1.14 (1.07-1.21)	2.86×10^{-5}	1.79×10^{-3}	rs8102476	2596.49	PrediXcan
			0.14	1.08 (1.04-1.12)	1.27×10^{-5}	8.92×10^{-4}	rs8102476	2596.49	Modified UTMOST

			0.15	1.08 (1.04-1.12)	4.42×10^{-5}	2.61×10^{-3}	rs8102476	2596.49	JTI
<i>PROSER3</i>	19q13.12	protein_coding	0.13	1.12 (1.06-1.19)	6.05×10^{-5}	3.39×10^{-3}	rs8102476	2486.57	PrediXcan
			0.15	1.07 (1.03-1.11)	1.66×10^{-4}	7.51×10^{-3}	rs8102476	2486.57	Modified UTMOST
<i>ZNF875</i>	19q13.12	protein_coding	0.04	1.13 (1.07-1.2)	2.72×10^{-5}	1.72×10^{-3}	rs8102476	931.87	JTI
<i>LINC01535</i>	19q13.12	lncRNA	0.49	0.96 (0.94-0.99)	1.62×10^{-3}	4.24×10^{-2}	rs8102476	992.80	Modified UTMOST
			0.53	0.97 (0.96-0.99)	1.58×10^{-3}	4.17×10^{-2}	rs8102476	992.80	JTI
<i>ZNF260</i>	19q13.12	protein_coding	0.12	0.93 (0.89-0.97)	1.89×10^{-3}	4.71×10^{-2}	rs8102476	1734.02	JTI
<i>ZNF793-AS1</i>	19q13.12	lncRNA	0.02	0.89 (0.83-0.96)	1.73×10^{-3}	4.42×10^{-2}	rs8102476	747.55	Modified UTMOST
<i>KMT2B</i>	19q13.12	protein_coding	0.04	0.81 (0.73-0.9)	6.20×10^{-5}	3.46×10^{-3}	rs8102476	2526.69	Modified UTMOST
			0.05	0.85 (0.78-0.93)	1.82×10^{-4}	8.00×10^{-3}	rs8102476	2526.69	JTI
<i>MED29</i>	19q13.2	protein_coding	0.02	0.85 (0.78-0.94)	1.10×10^{-3}	3.20×10^{-2}	rs12610267	1137.21	PrediXcan
<i>VASP</i>	19q13.32	protein_coding	0.02	0.85 (0.77-0.93)	6.05×10^{-4}	2.05×10^{-2}	rs61088131	3308.89	JTI
<i>BCAM</i>	19q13.32	protein_coding	0.05	1.17 (1.07-1.27)	3.77×10^{-4}	1.45×10^{-2}	rs61088131	2611.38	JTI
<i>PRRG2</i>	19q13.33	protein_coding	0.03	1.98 (1.48-2.65)	4.40×10^{-6}	3.69×10^{-4}	rs2659124	1270.69	Modified UTMOST
<i>PRR12</i>	19q13.33	protein_coding	0.16	1.08 (1.04-1.12)	1.10×10^{-4}	5.43×10^{-3}	rs2659124	1259.70	Modified UTMOST
			0.21	1.05 (1.02-1.08)	5.95×10^{-4}	2.02×10^{-2}	rs2659124	1259.70	JTI
<i>SIGLEC5</i>	19q13.41	protein_coding	0.08	0.93 (0.89-0.97)	2.45×10^{-4}	1.03×10^{-2}	rs2735839	750.16	PrediXcan
<i>PYGB</i>	20p11.21	protein_coding	0.07	1.12 (1.06-1.18)	9.42×10^{-5}	4.79×10^{-3}	rs11480453	6118.81	PrediXcan
			0.08	1.11 (1.04-1.17)	5.69×10^{-4}	1.95×10^{-2}	rs11480453	6118.81	Modified

									UTMOST
			0.11	1.08 (1.03-1.14)	1.13×10^{-3}	3.28×10^{-2}	rs11480453	6118.81	JTI
<i>ABHD12</i>	20p11.21	protein_coding	0.06	0.89 (0.85-0.94)	7.26×10^{-5}	3.95×10^{-3}	rs11480453	6072.13	Modified UTMOST
			0.06	0.9 (0.85-0.95)	8.33×10^{-5}	4.40×10^{-3}	rs11480453	6072.13	JTI
<i>NINL</i>	20p11.21	protein_coding	0.08	1.1 (1.05-1.15)	1.59×10^{-5}	1.08×10^{-3}	rs11480453	5914.17	PrediXcan
			0.08	1.11 (1.06-1.16)	1.37×10^{-5}	9.49×10^{-4}	rs11480453	5914.17	Modified UTMOST
			0.13	1.08 (1.04-1.11)	5.39×10^{-6}	4.31×10^{-4}	rs11480453	5914.17	JTI
<i>ENTPD6</i>	20p11.21	protein_coding	0.17	0.97 (0.99-0.96)	1.80×10^{-4}	7.95×10^{-3}	rs11480453	6171.18	Modified UTMOST
<i>AL121772.1</i>	20p11.21	lncRNA	0.07	1.07 (1.03-1.11)	3.48×10^{-4}	1.36×10^{-2}	rs11480453	6127.87	PrediXcan
			0.19	1.08 (1.04-1.12)	9.81×10^{-5}	4.94×10^{-3}	rs11480453	6127.87	Modified UTMOST
<i>AL121772.3</i>	20p11.21	lncRNA	0.02	1.25 (1.11-1.41)	2.57×10^{-4}	1.07×10^{-2}	rs11480453	6081.96	Modified UTMOST
<i>AL035252.3</i>	20p11.21	lncRNA	0.04	0.83 (0.75-0.92)	5.64×10^{-4}	1.94×10^{-2}	rs11480453	6137.73	PrediXcan
			0.05	0.86 (0.79-0.93)	2.78×10^{-4}	1.14×10^{-2}	rs11480453	6137.73	Modified UTMOST
			0.1	0.89 (0.83-0.95)	7.43×10^{-4}	2.39×10^{-2}	rs11480453	6137.73	JTI
<i>AL158042.1</i>	20p12.2	lncRNA	0.02	1.14 (1.06-1.22)	3.19×10^{-4}	1.27×10^{-2}	rs11480453	20365.56	Modified UTMOST
			0.05	1.23 (1.11-1.36)	1.33×10^{-4}	6.39×10^{-3}	rs11480453	20365.56	JTI
<i>FOXS1</i>	20q11.21	protein_coding	0.02	0.88 (0.81-0.95)	7.72×10^{-4}	2.44×10^{-2}	rs11480453	915.41	PrediXcan
<i>MYH7B</i>	20q11.22	protein_coding	0.02	0.92 (0.88-0.97)	1.59×10^{-3}	4.19×10^{-2}	rs11480453	2215.69	JTI

FAM83C	20q11.22	protein_coding	0.09	1.11 (1.06-1.16)	1.10×10^{-5}	7.94×10^{-4}	rs11480453	2526.02	PrediXcan
			0.13	1.13 (1.07-1.2)	2.08×10^{-5}	1.37×10^{-3}	rs11480453	2526.02	Modified UTMOST
			0.14	1.08 (1.04-1.12)	4.59×10^{-5}	2.69×10^{-3}	rs11480453	2526.02	JTI
RPRD1B	20q11.23	protein_coding	0.04	0.89 (0.83-0.95)	1.27×10^{-3}	3.56×10^{-2}	rs11480453	5314.44	JTI
DNTTIP1	20q13.12	protein_coding	0.18	1.07 (1.03-1.1)	3.38×10^{-4}	1.33×10^{-2}	rs12480328	5107.35	PrediXcan
			0.22	1.05 (1.02-1.08)	3.03×10^{-4}	1.22×10^{-2}	rs12480328	5107.35	Modified UTMOST
			0.24	1.05 (1.02-1.08)	4.19×10^{-4}	1.54×10^{-2}	rs12480328	5107.35	JTI
SNX21	20q13.12	protein_coding	0.04	1.1 (1.04-1.16)	1.53×10^{-3}	4.08×10^{-2}	rs12480328	5065.47	Modified UTMOST
WFDC3	20q13.12	protein_coding	0.52	1.03 (1.01-1.04)	7.98×10^{-4}	2.51×10^{-2}	rs12480328	5151.34	PrediXcan
			0.46	1.05 (1.02-1.07)	2.82×10^{-4}	1.14×10^{-2}	rs12480328	5151.34	Modified UTMOST
			0.53	1.03 (1.01-1.05)	6.54×10^{-4}	2.18×10^{-2}	rs12480328	5151.34	JTI
WFDC10B	20q13.12	protein_coding	0.26	0.95 (0.93-0.98)	3.18×10^{-4}	1.27×10^{-2}	rs12480328	5214.63	PrediXcan
			0.31	0.94 (0.92-0.97)	2.08×10^{-4}	8.93×10^{-3}	rs12480328	5214.63	Modified UTMOST
			0.33	0.95 (0.92-0.98)	3.22×10^{-4}	1.28×10^{-2}	rs12480328	5214.63	JTI
SLC17A9	20q13.33	protein_coding	0.02	0.89 (0.83-0.95)	3.87×10^{-4}	1.47×10^{-2}	rs2427345	568.44	PrediXcan
GRIK1-AS1	21q21.3	lncRNA	0.03	1.16 (1.06-1.28)	1.69×10^{-3}	4.36×10^{-2}	rs1041449	11780.93	PrediXcan
AP001042.1	21q22.2	lncRNA	0.03	1.23 (1.12-1.36)	2.74×10^{-5}	1.73×10^{-3}	rs1041449	2652.21	Modified UTMOST
AGPAT3	21q22.3	protein_coding	0.03	0.93 (0.89-0.97)	6.71×10^{-4}	2.21×10^{-2}	rs1041449	2383.65	PrediXcan
			0.03	0.62 (0.48-0.79)	1.39×10^{-4}	6.57×10^{-3}	rs1041449	2383.65	Modified

									UTMOST
			0.05	0.86 (0.81-0.91)	2.11×10^{-7}	2.56×10^{-5}	rs1041449	2383.65	JTI
<i>ICOSLG</i>	21q22.3	protein_coding	0.25	1.04 (1.01-1.06)	1.04×10^{-3}	3.06×10^{-2}	rs1041449	2741.45	JTI
<i>FP565260.3</i>	21q22.3	protein_coding	0.17	0.94 (0.9-0.98)	1.91×10^{-3}	4.75×10^{-2}	rs1041449	2741.46	Modified UTMOST
<i>DUSP18</i>	22q12.2	protein_coding	0.04	1.14 (1.07-1.21)	2.24×10^{-5}	1.46×10^{-3}	rs9625483	2159.10	PrediXcan
			0.04	1.1 (1.04-1.17)	5.84×10^{-4}	1.99×10^{-2}	rs9625483	2159.10	Modified UTMOST
<i>LGALS2</i>	22q13.1	protein_coding	0.09	1.14 (1.06-1.22)	7.35×10^{-4}	2.37×10^{-2}	rs9625483	9077.32	PrediXcan
			0.11	1.06 (1.03-1.09)	4.24×10^{-4}	1.56×10^{-2}	rs9625483	9077.32	JTI

Bold genes represent those supported by all three genetic prediction models (PrediXcan, modified UTMOST and JTI).

^a R²: prediction performance (R²) derived using GTEx data. *P* value: derived from association analyses of 79,194 cases and 61,112 controls; associations with FDR-corrected *P* value ≤ 0.05 considered significant;

^b Risk SNPs identified in previous GWAS or fine-mapping studies. The risk SNP closest to the gene is presented.

lncRNA: long noncoding RNAs.

Supplementary Table 3 One hundred and ninety four novel genes located at known susceptibility loci that have not yet been reported

Gene	Region	Classification	R ^{2a}	OR (95% CI)	P-value	P-value after FDR ^a	Closest risk SNPs ^b	Distance to the index SNP (kb)	Model
<i>NTRK1</i>	1q23.1	protein_coding	0.02	0.76 (0.66-0.88)	3.35×10^{-4}	1.32×10^{-2}	rs80237341	1.22	JTI
<i>SH2D2A</i>	1q23.1	protein_coding	0.02	1.29 (1.11-1.5)	7.94×10^{-4}	2.50×10^{-2}	rs80237341	156.12	Modified UTMOST
			0.03	2.98 (1.57-5.68)	9.26×10^{-4}	2.81×10^{-2}			JTI
<i>HDGF</i>	1q23.1	protein_coding	0.04	1.47 (1.23-1.76)	3.25×10^{-5}	2.00×10^{-3}	rs80237341	91.98	JTI
<i>RRNAD1</i>	1q23.1	protein_coding	0.03	0.84 (0.77-0.92)	1.52×10^{-4}	7.07×10^{-3}	rs80237341	413.16	Modified UTMOST
			0.04	0.89 (0.85-0.94)	4.34×10^{-5}	2.58×10^{-3}			JTI
<i>LAMC1-ASI</i>	1q25.3	lncRNA	0.05	0.88 (0.83-0.93)	2.19×10^{-6}	2.00×10^{-4}	rs34295433	75.09	Modified UTMOST
			0.06	0.89 (0.85-0.94)	1.68×10^{-5}	1.14×10^{-3}			JTI
<i>PPP1R15B</i>	1q32.1	protein_coding	0.03	0.84 (0.79-0.9)	6.52×10^{-7}	6.78×10^{-5}	rs138638958	342.15	PrediXcan
			0.02	0.84 (0.79-0.9)	2.23×10^{-7}	2.66×10^{-5}			JTI
<i>RAD54L</i>	1p34.1	protein_coding	0.03	0.81 (0.74-0.9)	5.00×10^{-5}	2.89×10^{-3}	rs544780844	38.29	Modified UTMOST
			0.04	0.87 (0.81-0.95)	8.63×10^{-4}	2.66×10^{-2}			JTI
<i>CLCNKA</i>	1p36.13	protein_coding	0.08	1.12 (1.04-1.19)	1.14×10^{-3}	3.30×10^{-2}	rs10803412	468.54	PrediXcan
			0.08	1.11 (1.05-1.17)	4.19×10^{-4}	1.54×10^{-2}			Modified UTMOST
			0.07	1.09 (1.03-1.14)	1.42×10^{-3}	3.86×10^{-2}			JTI
<i>CLCNKB</i>	1p36.13	protein_coding	0.04	1.17 (1.07-1.27)	3.94×10^{-4}	1.49×10^{-2}	rs10803412	493.44	PrediXcan
			0.07	1.14 (1.07-1.22)	1.06×10^{-4}	5.24×10^{-3}			Modified

									UTMOST
<i>AL450998.2</i>	1p36.21	lncRNA	0.03	1.21 (1.08-1.35)	9.96×10^{-4}	2.97×10^{-2}	rs10803412	216.27	Modified UTMOST
<i>CENPS</i>	1p36.22	protein_coding	0.07	0.89 (0.85-0.94)	1.46×10^{-5}	1.01×10^{-3}	rs636291	43.89	PrediXcan
			0.06	0.91 (0.87-0.95)	3.51×10^{-5}	2.15×10^{-3}	rs636291	43.89	Modified UTMOST
			0.12	0.92 (0.89-0.96)	1.40×10^{-5}	9.67×10^{-4}	rs636291	43.89	JTI
<i>CORT</i>	1p36.22	protein_coding	0.03	1.18 (1.08-1.29)	2.15×10^{-4}	9.20×10^{-3}	rs636291	44.14	JTI
<i>DENND4B</i>	1q21.3	protein_coding	0.05	1.09 (1.03-1.14)	1.25×10^{-3}	3.52×10^{-2}	rs34579442	19.27	PrediXcan
			0.09	1.12 (1.06-1.19)	2.31×10^{-5}	1.50×10^{-3}	rs34579442	19.27	Modified UTMOST
			0.12	1.07 (1.04-1.11)	1.31×10^{-5}	9.15×10^{-4}	rs34579442	19.27	JTI
<i>GABPB2</i>	1q21.3	protein_coding	0.02	1.24 (1.13-1.35)	4.77×10^{-6}	3.95×10^{-4}	rs17599629	439.73	PrediXcan
			0.03	1.12 (1.05-1.18)	2.29×10^{-4}	9.66×10^{-3}	rs17599629	439.73	Modified UTMOST
<i>NUP210L</i>	1q21.3	protein_coding	0.09	1.14 (1.07-1.21)	9.91×10^{-5}	4.96×10^{-3}	rs34579442	227.69	Modified UTMOST
<i>PRUNE1</i>	1q21.3	protein_coding	0.03	0.72 (0.61-0.85)	1.55×10^{-4}	7.17×10^{-3}	rs17599629	349.90	Modified UTMOST
<i>AL512306.2</i>	1q32.1	lncRNA	0.04	1.32 (1.18-1.49)	2.56×10^{-6}	2.30×10^{-4}	rs4245739	79.998	Modified UTMOST
<i>RNF181</i>	2p11.2	protein_coding	0.03	2.25 (1.87-2.72)	4.99×10^{-17}	2.33×10^{-14}	rs3731827	18.67	Modified UTMOST
			0.06	1.35 (1.2-1.51)	2.68×10^{-7}	3.14×10^{-5}	rs3731827	18.67	JTI
<i>AC092155.1</i>	2p15	lncRNA	0.02	5.2 (3.56-7.58)	1.67×10^{-17}	8.26×10^{-15}	rs901532	126.442	JTI

<i>THADA</i>	2p21	protein_coding	0.03	0.88 (0.84-0.92)	4.73×10^{-7}	5.14×10^{-5}	rs28514770	28.10	JTI
<i>LINC01126</i>	2p21	lncRNA	0.04	0.89 (0.82-0.95)	1.36×10^{-3}	3.75×10^{-2}	rs28514770	395.29	PrediXcan
			0.13	0.92 (0.88-0.96)	9.07×10^{-5}	4.66×10^{-3}			JTI
<i>STRADB</i>	2q33.1	protein_coding	0.03	0.83 (0.74-0.93)	1.61×10^{-3}	4.23×10^{-2}	rs59308963	222.09	Modified UTMOST
			0.05	0.82 (0.72-0.93)	1.97×10^{-3}	4.87×10^{-2}	rs59308963	222.09	JTI
<i>AC007879.3</i>	2q33.3	lncRNA	0.03	1.32 (1.17-1.49)	4.80×10^{-6}	3.96×10^{-4}	rs12621900	17.51	PrediXcan
			0.03	1.18 (1.1-1.26)	2.19×10^{-6}	2.00×10^{-4}			Modified UTMOST
			0.09	1.16 (1.09-1.23)	3.48×10^{-6}	3.04×10^{-4}			JTI
<i>FARP2</i>	2q37.3	protein_coding	0.18	0.95 (0.92-0.98)	1.62×10^{-3}	4.24×10^{-2}	rs111770284	277.17	JTI
<i>AC005104.1</i>	2q37.3	lncRNA	0.02	0.76 (0.68-0.86)	5.74×10^{-6}	4.52×10^{-4}	rs111770284	135.432	PrediXcan
			0.04	0.91 (0.87-0.96)	1.57×10^{-4}	7.22×10^{-3}			Modified UTMOST
			0.1	0.85 (0.79-0.91)	5.51×10^{-6}	4.36×10^{-4}			JTI
<i>SEPTIN2</i>	2q37.3	protein_coding	0.32	0.92 (0.89-0.95)	4.74×10^{-8}	6.80×10^{-6}	rs111770284	136.355	PrediXcan
			0.36	0.94 (0.92-0.96)	2.15×10^{-7}	2.58×10^{-5}			Modified UTMOST
			0.37	0.96 (0.94-0.98)	5.29×10^{-6}	4.27×10^{-4}			JTI
<i>ADAMTS9</i>	3p14.1	protein_coding	0.02	1.24 (1.12-1.37)	5.96×10^{-5}	3.34×10^{-3}	rs2660753	172.34	PrediXcan
			0.04	1.24 (1.12-1.37)	4.62×10^{-5}	2.70×10^{-3}	rs2660753	172.34	JTI
<i>FLNB-AS1</i>	3p14.3	lncRNA	0.03	0.87 (0.81-0.94)	2.92×10^{-4}	1.18×10^{-2}	rs2660753	8.09	PrediXcan
			0.06	0.89 (0.84-0.94)	1.63×10^{-4}	7.42×10^{-3}	rs2660753	8.09	Modified UTMOST

			0.09	0.9 (0.86-0.95)	1.36×10^{-4}	6.47×10^{-3}	rs2660753	8.09	JTI
<i>PDE12</i>	3p14.3	protein_coding	0.02	0.81 (0.71-0.92)	1.51×10^{-3}	4.05×10^{-2}	rs2660753	10.57	JTI
<i>AC137630.3</i>	3p21.31	lncRNA	0.04	1.3 (1.14-1.49)	1.43×10^{-4}	6.73×10^{-3}	rs2660753	0.39	JTI
<i>AMT</i>	3p21.31	protein_coding	0.32	0.95 (0.93-0.97)	1.81×10^{-5}	1.22×10^{-3}	rs2660753	5.98	PrediXcan
			0.33	0.95 (0.92-0.97)	5.42×10^{-5}	3.10×10^{-3}	rs2660753	5.98	Modified UTMOST
			0.35	0.96 (0.94-0.98)	5.24×10^{-5}	3.02×10^{-3}	rs2660753	5.98	JTI
<i>DALRD3</i>	3p21.31	protein_coding	0.07	0.9 (0.84-0.95)	4.54×10^{-4}	1.64×10^{-2}	rs2660753	6.81	Modified UTMOST
			0.05	0.82 (0.75-0.91)	1.37×10^{-4}	6.48×10^{-3}	rs2660753	6.81	JTI
<i>GMPPB</i>	3p21.31	protein_coding	0.36	1.05 (1.03-1.08)	1.57×10^{-6}	1.47×10^{-4}	rs2660753	7.11	PrediXcan
			0.38	1.06 (1.04-1.09)	2.03×10^{-6}	1.86×10^{-4}	rs2660753	7.11	Modified UTMOST
			0.4	1.05 (1.03-1.07)	5.43×10^{-6}	4.33×10^{-4}	rs2660753	7.11	JTI
<i>NICNI</i>	3p21.31	protein_coding	0.14	0.92 (0.89-0.95)	4.27×10^{-6}	3.59×10^{-4}	rs2660753	6.38	PrediXcan
			0.16	0.92 (0.89-0.96)	1.87×10^{-5}	1.26×10^{-3}	rs2660753	6.38	Modified UTMOST
			0.2	0.92 (0.88-0.95)	1.05×10^{-5}	7.62×10^{-4}	rs2660753	6.38	JTI
<i>P4HTM</i>	3p21.31	protein_coding	0.04	0.91 (0.87-0.96)	3.25×10^{-4}	1.29×10^{-2}	rs2660753	17.27	PrediXcan
			0.08	0.93 (0.89-0.97)	1.07×10^{-3}	3.12×10^{-2}	rs2660753	17.27	JTI
<i>QRICH1</i>	3p21.31	protein_coding	0.05	1.1 (1.05-1.16)	1.35×10^{-4}	6.45×10^{-3}	rs2660753	64.66	PrediXcan
			0.11	1.09 (1.04-1.13)	3.55×10^{-5}	2.17×10^{-3}	rs2660753	64.66	Modified UTMOST
			0.12	1.08 (1.04-1.12)	1.40×10^{-4}	6.59×10^{-3}	rs2660753	64.66	JTI

<i>RNF123</i>	3p21.31	protein_coding	0.03	1.14 (1.06-1.23)	6.48×10^{-4}	2.16×10^{-2}	rs2660753	32.03	PrediXcan
			0.06	1.09 (1.05-1.14)	4.54×10^{-5}	2.67×10^{-3}	rs2660753	32.03	Modified UTMOST
			0.09	1.08 (1.04-1.12)	6.42×10^{-5}	3.55×10^{-3}	rs2660753	32.03	JTI
<i>SLC26A6</i>	3p21.31	protein_coding	0.06	0.9 (0.84-0.96)	2.01×10^{-3}	4.94×10^{-2}	rs2660753	9.77	Modified UTMOST
<i>TMEM89</i>	3p21.31	protein_coding	0.04	0.94 (0.9-0.97)	4.99×10^{-4}	1.76×10^{-2}	rs2660753	1.10	PrediXcan
			0.06	0.88 (0.81-0.95)	9.49×10^{-4}	2.87×10^{-2}	rs2660753	1.10	Modified UTMOST
			0.07	0.91 (0.86-0.96)	9.56×10^{-4}	2.88×10^{-2}	rs2660753	1.10	JTI
<i>UBA7</i>	3p21.31	protein_coding	0.07	0.84 (0.76-0.94)	1.62×10^{-3}	4.24×10^{-2}	rs2660753	8.74	Modified UTMOST
<i>USP4</i>	3p21.31	protein_coding	0.02	1.26 (1.13-1.41)	3.21×10^{-5}	1.98×10^{-3}	rs2660753	62.88	JTI
<i>SRGAP3</i>	3p25.3	protein_coding	0.03	0.88 (0.81-0.95)	1.05×10^{-3}	3.09×10^{-2}	rs2660753	382.46	Modified UTMOST
			0.04	0.88 (0.81-0.95)	1.04×10^{-3}	3.06×10^{-2}	rs2660753	382.46	JTI
<i>THUMPD3</i>	3p25.3	protein_coding	0.05	1.13 (1.05-1.22)	1.09×10^{-3}	3.18×10^{-2}	rs2660753	23.95	PrediXcan
			0.12	1.08 (1.04-1.12)	1.21×10^{-4}	5.89×10^{-3}	rs2660753	23.95	Modified UTMOST
<i>AC063944.3</i>	3q13.12	lncRNA	0.02	2.67 (1.91-3.73)	9.06×10^{-9}	1.45×10^{-6}	rs1283104	0.53	Modified UTMOST
<i>ACAD9</i>	3q21.3	protein_coding	0.04	1.07 (1.03-1.11)	2.23×10^{-4}	9.47×10^{-3}	rs56325233	36.47	PrediXcan
<i>ACPP</i>	3q22.1	protein_coding	0.11	0.84 (0.78-0.9)	5.79×10^{-7}	6.16×10^{-5}	rs56325233	50.93	PrediXcan
			0.06	0.74 (0.64-0.86)	1.29×10^{-4}	6.22×10^{-3}	rs56325233	50.93	Modified UTMOST

			0.14	0.8 (0.74-0.88)	8.08×10^{-7}	8.09×10^{-5}	rs56325233	50.93	JTI
<i>SOX14</i>	3q22.3	protein_coding	0.02	1.11 (1.04-1.18)	1.26×10^{-3}	3.55×10^{-2}	rs56325233	0.82	JTI
<i>MBNL1-AS1</i>	3q25.1	lncRNA	0.03	1.06 (1.03-1.09)	2.55×10^{-4}	1.06×10^{-2}	rs182314334	6.94	JTI
<i>TRIM59</i>	3q25.33	protein_coding	0.02	1.36 (1.19-1.56)	5.34×10^{-6}	4.29×10^{-4}	rs182314334	53.33	Modified UTMOST
			0.05	1.22 (1.12-1.34)	1.68×10^{-5}	1.14×10^{-3}	rs182314334	53.33	JTI
<i>AC073288.2</i>	3q26.2	lncRNA	0.05	0.56 (0.51-0.61)	1.29×10^{-35}	3.91×10^{-32}	rs11288195	8.10	PrediXcan
			0.09	0.77 (0.73-0.81)	4.40×10^{-26}	5.92×10^{-23}	rs11288195	8.10	Modified UTMOST
			0.11	0.83 (0.8-0.86)	1.78×10^{-25}	2.05×10^{-22}	rs11288195	8.10	JTI
<i>LRR1Q4</i>	3q26.2	protein_coding	0.02	0.78 (0.7-0.88)	2.90×10^{-5}	1.81×10^{-3}	rs71277158	15.85	Modified UTMOST
<i>SKIL</i>	3q26.2	protein_coding	0.03	7.21 (5.78-8.99)	2.36×10^{-68}	1.14×10^{-64}	rs78416326	39.16	Modified UTMOST
			0.03	3.67 (3.21-4.21)	2.98×10^{-77}	1.81×10^{-73}	rs78416326	39.16	JTI
<i>ATP11B</i>	3q26.33	protein_coding	0.11	1.15 (1.06-1.26)	1.06×10^{-3}	3.11×10^{-2}	rs10936632	128.14	JTI
<i>ECE2</i>	3q27.1	protein_coding	0.02	0.85 (0.77-0.94)	1.89×10^{-3}	4.71×10^{-2}	rs10936632	43.38	Modified UTMOST
<i>RASSF6</i>	4q13.3	protein_coding	0.05	14.76 (7.35-29.64)	5.06×10^{-14}	1.67×10^{-11}	rs1894292	137.19	Modified UTMOST
			0.03	1.43 (1.31-1.56)	6.34×10^{-15}	2.36×10^{-12}	rs1894292	137.19	JTI
<i>AC004069.1</i>	4q24	lncRNA	0.02	1.44 (1.34-1.55)	1.55×10^{-23}	1.39×10^{-20}	rs7679673	0.24	JTI
<i>TET2-AS1</i>	4q24	lncRNA	0.03	0.86 (0.8-0.92)	3.94×10^{-5}	2.38×10^{-3}	rs34480284	34.59	Modified UTMOST
<i>LINC01095</i>	4q31.22	lncRNA	0.03	0.89 (0.84-0.95)	6.20×10^{-4}	2.09×10^{-2}	rs72725734	163.83	PrediXcan

			0.06	0.88 (0.83-0.94)	4.32×10^{-5}	2.57×10^{-3}			JTI
REELD1	4q31.22	protein_coding	0.3	1.05 (1.02-1.07)	3.59×10^{-4}	1.39×10^{-2}	rs72725734	270.97	PrediXcan
			0.31	1.04 (1.02-1.07)	1.68×10^{-4}	7.59×10^{-3}			Modified UTMOST
			0.34	1.03 (1.02-1.05)	1.52×10^{-4}	7.07×10^{-3}			JTI
<i>RPS3A</i>	4q31.3	protein_coding	0.03	0.88 (0.83-0.93)	6.21×10^{-6}	4.79×10^{-4}	rs147762399	9.61	JTI
<i>AC116351.2</i>	5p15.33	lncRNA	0.03	0.9 (0.85-0.96)	8.99×10^{-4}	2.75×10^{-2}	rs2242652	273.29	JTI
<i>MRPL36</i>	5p15.33	protein_coding	0.03	1.11 (1.04-1.18)	7.10×10^{-4}	2.31×10^{-2}	rs4975758	89.69	Modified UTMOST
AC025183.1	5p15.33	lncRNA	0.17	0.78 (0.74-0.81)	1.73×10^{-25}	2.05×10^{-22}	rs4975758	6.411	PrediXcan
			0.15	0.62 (0.57-0.68)	1.44×10^{-26}	2.49×10^{-23}			Modified UTMOST
			0.18	0.8 (0.76-0.83)	7.33×10^{-26}	9.35×10^{-23}			JTI
<i>JADE2</i>	5q31.1	protein_coding	0.04	0.69 (0.58-0.83)	5.31×10^{-5}	3.05×10^{-3}	rs10793821	82.71	JTI
<i>FOXP4-AS1</i>	6p21.1	lncRNA	0.03	0.77 (0.71-0.83)	2.58×10^{-10}	4.96×10^{-8}	rs1983891	20.07	JTI
<i>MDFI</i>	6p21.1	protein_coding	0.04	2.63 (1.83-3.79)	2.08×10^{-7}	2.53×10^{-5}	rs6458228	78.19	Modified UTMOST
<i>AL451165.2</i>	6p21.31	lncRNA	0.03	0.7 (0.58-0.86)	6.88×10^{-4}	2.26×10^{-2}	rs9469899	127.88	JTI
<i>TAF11</i>	6p21.31	protein_coding	0.03	1.26 (1.12-1.42)	1.27×10^{-4}	6.15×10^{-3}	rs9469899	62.74	Modified UTMOST
<i>BTNL2</i>	6p21.32	protein_coding	0.05	1.13 (1.07-1.19)	1.54×10^{-5}	1.05×10^{-3}	rs3129859	26.03	Modified UTMOST
			0.11	1.12 (1.06-1.18)	4.09×10^{-5}	2.46×10^{-3}	rs3129859	26.03	JTI
HLA-DMA	6p21.32	protein_coding	0.12	0.94 (0.91-0.97)	9.11×10^{-5}	4.66×10^{-3}	rs9296068	51.82	PrediXcan
			0.16	0.92 (0.88-0.96)	1.52×10^{-4}	7.07×10^{-3}	rs9296068	51.82	Modified

									UTMOST
			0.18	0.94 (0.91-0.98)	8.06×10^{-4}	2.53×10^{-2}	rs9296068	51.82	JTI
<i>HLA-DOB</i>	6p21.32	protein_coding	0.4	1.04 (1.02-1.06)	7.21×10^{-4}	2.33×10^{-2}	rs9296068	203.87	PrediXcan
			0.43	1.03 (1.01-1.05)	1.98×10^{-3}	4.88×10^{-2}	rs9296068	203.87	JTI
<i>KIFC1</i>	6p21.32	protein_coding	0.07	0.92 (0.87-0.97)	1.76×10^{-3}	4.48×10^{-2}	rs9296068	389.01	PrediXcan
			0.07	0.94 (0.9-0.98)	2.00×10^{-3}	4.93×10^{-2}	rs9296068	389.01	JTI
<i>SLC39A7</i>	6p21.32	protein_coding	0.03	1.22 (1.12-1.33)	3.41×10^{-6}	2.99×10^{-4}	rs9296068	183.52	JTI
<i>TAP2</i>	6p21.32	protein_coding	0.15	0.94 (0.91-0.97)	4.63×10^{-4}	1.66×10^{-2}	rs9296068	182.14	Modified UTMOST
<i>TAPBP</i>	6p21.32	protein_coding	0.04	0.9 (0.86-0.95)	6.95×10^{-5}	3.81×10^{-3}	rs9296068	293.47	PrediXcan
			0.1	0.93 (0.89-0.96)	1.36×10^{-4}	6.48×10^{-3}	rs9296068	293.47	Modified UTMOST
			0.11	0.91 (0.86-0.95)	3.72×10^{-5}	2.26×10^{-3}	rs9296068	293.47	JTI
<i>VPS52</i>	6p21.32	protein_coding	0.04	1.3 (1.15-1.48)	4.27×10^{-5}	2.55×10^{-3}	rs9296068	251.13	Modified UTMOST
<i>WDR46</i>	6p21.32	protein_coding	0.03	0.71 (0.59-0.86)	4.26×10^{-4}	1.56×10^{-2}	rs9296068	268.61	Modified UTMOST
<i>ABCF1</i>	6p21.33	protein_coding	0.02	0.88 (0.82-0.95)	1.10×10^{-3}	3.21×10^{-2}	rs12665339	36.28	PrediXcan
			0.04	0.84 (0.77-0.92)	1.96×10^{-4}	8.47×10^{-3}	rs12665339	36.28	Modified UTMOST
			0.07	0.93 (0.89-0.97)	2.72×10^{-4}	1.12×10^{-2}	rs12665339	36.28	JTI
<i>ABHD16A</i>	6p21.33	protein_coding	0.05	1.16 (1.1-1.22)	2.93×10^{-8}	4.30×10^{-6}	rs2596546	341.84	JTI
<i>AL645933.2</i>	6p21.33	lncRNA	0.55	1.03 (1.01-1.05)	1.23×10^{-3}	3.47×10^{-2}	rs2596546	33.89	Modified UTMOST
			0.56	1.03 (1.01-1.04)	1.39×10^{-3}	3.80×10^{-2}	rs2596546	33.89	JTI

<i>C2</i>	6p21.33	protein_coding	0.03	0.71 (0.62-0.81)	2.86×10^{-7}	3.29×10^{-5}	rs3096702	278.88	JTI
<i>C4B</i>	6p21.33	protein_coding	0.1	0.89 (0.85-0.92)	4.02×10^{-9}	6.77×10^{-7}	rs3096702	189.14	Modified UTMOST
			0.06	0.77 (0.7-0.84)	4.31×10^{-9}	7.16×10^{-7}	rs3096702	189.14	JTI
<i>CCHCR1</i>	6p21.33	protein_coding	0.27	0.9 (0.88-0.93)	5.04×10^{-13}	1.45×10^{-10}	rs130067	7.50	PrediXcan
			0.31	0.92 (0.9-0.94)	4.23×10^{-12}	1.10×10^{-9}	rs130067	7.50	Modified UTMOST
			0.32	0.91 (0.89-0.94)	5.23×10^{-11}	1.17×10^{-8}	rs130067	7.50	JTI
<i>DDAH2</i>	6p21.33	protein_coding	0.04	1.49 (1.32-1.67)	3.37×10^{-11}	7.78×10^{-9}	rs2596546	369.01	JTI
<i>DHX16</i>	6p21.33	protein_coding	0.05	5.55 (3.07-10.04)	1.76×10^{-8}	2.72×10^{-6}	rs12665339	39.58	Modified UTMOST
			0.09	1.44 (1.16-1.8)	1.08×10^{-3}	3.17×10^{-2}	rs12665339	39.58	JTI
<i>GTF2H4</i>	6p21.33	protein_coding	0.02	0.93 (0.89-0.97)	7.65×10^{-4}	2.43×10^{-2}	rs12665339	280.65	PrediXcan
<i>HCG20</i>	6p21.33	lncRNA	0.05	1.11 (1.06-1.17)	3.18×10^{-5}	1.97×10^{-3}	rs12665339	158.80	PrediXcan
			0.09	1.1 (1.06-1.14)	1.40×10^{-6}	1.33×10^{-4}	rs12665339	158.80	Modified UTMOST
			0.11	1.1 (1.06-1.15)	6.05×10^{-7}	6.38×10^{-5}	rs12665339	158.80	JTI
<i>HLA-E</i>	6p21.33	protein_coding	0.03	0.89 (0.84-0.95)	1.97×10^{-4}	8.49×10^{-3}	rs12665339	139.25	JTI
<i>IER3</i>	6p21.33	protein_coding	0.02	1.29 (1.15-1.46)	2.92×10^{-5}	1.82×10^{-3}	rs12665339	111.10	Modified UTMOST
<i>LINC00243</i>	6p21.33	processed_transcript	0.04	0.88 (0.82-0.94)	2.84×10^{-4}	1.15×10^{-2}	rs12665339	197.20	Modified UTMOST
<i>LINC02571</i>	6p21.33	lncRNA	0.14	0.94 (0.91-0.97)	5.47×10^{-4}	1.89×10^{-2}	rs2596546	59.97	JTI
<i>MICB</i>	6p21.33	protein_coding	0.23	0.95 (0.93-0.97)	5.89×10^{-7}	6.23×10^{-5}	rs2596546	149.52	PrediXcan
			0.21	0.93 (0.9-0.97)	1.58×10^{-4}	7.26×10^{-3}	rs2596546	149.52	Modified

									UTMOST
			0.31	0.96 (0.94-0.98)	2.80×10^{-5}	1.76×10^{-3}	rs2596546	149.52	JTI
<i>NELFE</i>	6p21.33	protein_coding	0.04	1.25 (1.11-1.42)	3.83×10^{-4}	1.46×10^{-2}	rs3096702	265.44	JTI
<i>SAPCD1</i>	6p21.33	protein_coding	0.02	1.1 (1.04-1.17)	1.26×10^{-3}	3.54×10^{-2}	rs3096702	459.70	PrediXcan
<i>SFTA2</i>	6p21.33	protein_coding	0.04	0.8 (0.73-0.88)	9.19×10^{-6}	6.79×10^{-4}	rs12665339	298.72	PrediXcan
<i>STK19</i>	6p21.33	protein_coding	0.05	1.13 (1.06-1.22)	4.19×10^{-4}	1.54×10^{-2}	rs3096702	241.73	PrediXcan
			0.15	1.3 (1.17-1.46)	3.88×10^{-6}	3.30×10^{-4}	rs3096702	241.73	JTI
			0.14	0.94 (0.91-0.98)	9.84×10^{-4}	2.95×10^{-2}	rs130067	16.43	PrediXcan
<i>TCF19</i>	6p21.33	protein_coding	0.18	0.94 (0.91-0.97)	2.87×10^{-4}	1.16×10^{-2}	rs130067	16.43	Modified UTMOST
			0.17	0.92 (0.89-0.96)	1.88×10^{-5}	1.26×10^{-3}	rs130067	16.43	JTI
<i>RPP21</i>	6p22.1	protein_coding	0.02	3.28 (2.25-4.77)	6.57×10^{-10}	1.21×10^{-7}	rs12665339	286.57	Modified UTMOST
AL645939.4	6p22.1	lncRNA	0.1	1.1 (1.05-1.14)	3.79×10^{-6}	3.23×10^{-4}	rs7767188	353.792	PrediXcan
			0.14	1.12 (1.07-1.17)	1.41×10^{-6}	1.33×10^{-4}			Modified UTMOST
			0.16	1.12 (1.07-1.18)	5.47×10^{-6}	4.35×10^{-4}			JTI
<i>MRPL18</i>	6q25.3	protein_coding	0.07	0.89 (0.84-0.94)	1.67×10^{-4}	7.56×10^{-3}	rs651164	361.91	PrediXcan
<i>EVX1</i>	7p15.2	protein_coding	0.03	1.17 (1.06-1.28)	1.06×10^{-3}	3.10×10^{-2}	rs200362064	301.10	JTI
<i>HOTAIRM1</i>	7p15.2	lncRNA	0.3	1.06 (1.03-1.09)	5.72×10^{-5}	3.23×10^{-3}	rs200362064	451.33	PrediXcan
			0.3	1.06 (1.03-1.1)	2.25×10^{-4}	9.51×10^{-3}	rs200362064	451.33	Modified UTMOST
			0.38	1.04 (1.02-1.06)	1.90×10^{-5}	1.27×10^{-3}	rs200362064	451.33	JTI
<i>HOXA2</i>	7p15.2	protein_coding	0.03	0.83 (0.76-0.92)	1.70×10^{-4}	7.64×10^{-3}	rs200362064	448.78	JTI

<i>HOXA-AS2</i>	7p15.2	lncRNA	0.07	1.12 (1.06-1.2)	2.61×10^{-4}	1.08×10^{-2}	rs200362064	417.29	PrediXcan
			0.11	1.11 (1.05-1.18)	5.13×10^{-4}	1.80×10^{-2}	rs200362064	417.29	JTI
<i>CDC47L</i>	7p15.3	protein_coding	0.02	0.85 (0.78-0.92)	1.62×10^{-4}	7.42×10^{-3}	rs35389879	173.66	Modified UTMOST
<i>SP8</i>	7p21.1	protein_coding	0.09	0.87 (0.81-0.93)	1.22×10^{-4}	5.95×10^{-3}	rs12155172	167.99	JTI
<i>AC067817.2</i>	8p11.22	lncRNA	0.03	1.19 (1.08-1.32)	6.95×10^{-4}	2.27×10^{-2}	rs11467	57.47	JTI
<i>CHMP7</i>	8p21.3	protein_coding	0.04	0.77 (0.67-0.87)	4.72×10^{-5}	2.74×10^{-3}	rs2928679	319.46	JTI
<i>TNFRSF10A</i>	8p21.3	protein_coding	0.11	0.92 (0.87-0.96)	7.06×10^{-4}	2.30×10^{-2}	rs2928679	356.34	Modified UTMOST
<i>AF131216.4</i>	8p23.1	lncRNA	0.03	0.83 (0.75-0.92)	3.24×10^{-4}	1.29×10^{-2}	rs2572375	76.47	Modified UTMOST
			0.03	0.75 (0.64-0.88)	5.60×10^{-4}	1.93×10^{-2}			JTI
<i>SLC35G5</i>	8p23.1	protein_coding	0.04	0.88 (0.81-0.95)	1.76×10^{-3}	4.47×10^{-2}	rs2572375	29.06	Modified UTMOST
<i>UBAP2</i>	9p13.3	protein_coding	0.03	2.55 (1.45-4.48)	1.23×10^{-3}	3.47×10^{-2}	rs10122495	0.83	Modified UTMOST
<i>AL356489.2</i>	9p13.3	lncRNA	0.2	1.06 (1.02-1.09)	1.10×10^{-3}	3.20×10^{-2}	rs10122495	348.795	PrediXcan
			0.24	1.05 (1.02-1.08)	1.52×10^{-3}	4.07×10^{-2}			Modified UTMOST
<i>SAXO1</i>	9p22.1	protein_coding	0.06	0.83 (0.78-0.89)	6.36×10^{-8}	8.60×10^{-6}	rs1048169	22.714	Modified UTMOST
			0.06	0.68 (0.6-0.76)	6.96×10^{-11}	1.51×10^{-8}			JTI
<i>CNTRL</i>	9q33.2	protein_coding	0.04	1.47 (1.18-1.84)	6.59×10^{-4}	2.19×10^{-2}	rs1571801	487.49	Modified UTMOST
<i>WDR37</i>	10p15.3	protein_coding	0.09	1.12 (1.05-1.2)	7.69×10^{-4}	2.44×10^{-2}	rs141536087	323.55	JTI

<i>ALOX5</i>	10q11.21	protein_coding	0.08	0.88 (0.83-0.93)	7.91×10^{-6}	5.94×10^{-4}	rs76934034	141.42	Modified UTMOST
<i>AL356608.1</i>	10q24.32	lncRNA	0.04	1.11 (1.04-1.18)	9.29×10^{-4}	2.82×10^{-2}	rs34032774	260.07	PrediXcan
			0.09	1.1 (1.05-1.16)	2.68×10^{-4}	1.11×10^{-2}	rs34032774	260.07	Modified UTMOST
			0.1	1.1 (1.04-1.17)	8.62×10^{-4}	2.66×10^{-2}	rs34032774	260.07	JTI
<i>BORCS7</i>	10q24.32	protein_coding	0.17	1.07 (1.03-1.11)	1.25×10^{-4}	6.10×10^{-3}	rs34032774	209.625	PrediXcan
			0.2	1.06 (1.03-1.09)	4.69×10^{-5}	2.73×10^{-3}			Modified UTMOST
			0.22	1.05 (1.02-1.07)	9.86×10^{-5}	4.96×10^{-3}			JTI
<i>RPARP-AS1</i>	10q24.32	processed_transcript	0.12	1.12 (1.09-1.16)	7.81×10^{-12}	1.93×10^{-9}	rs3850699	193.358	PrediXcan
			0.12	1.15 (1.1-1.21)	9.02×10^{-9}	1.45×10^{-6}			Modified UTMOST
			0.12	1.09 (1.06-1.13)	4.82×10^{-8}	6.83×10^{-6}			JTI
<i>AL158212.2</i>	10q25.2	lncRNA	0.06	0.86 (0.82-0.91)	3.26×10^{-7}	3.68×10^{-5}	rs7094871	0.52	PrediXcan
			0.11	0.86 (0.82-0.91)	5.57×10^{-8}	7.67×10^{-6}			Modified UTMOST
			0.12	0.91 (0.88-0.94)	3.43×10^{-8}	5.01×10^{-6}			JTI
<i>EEFLAKMT2</i>	10q26.13	protein_coding	0.28	1.05 (1.02-1.07)	3.98×10^{-4}	1.49×10^{-2}	rs67609008	160.50	PrediXcan
			0.3	1.05 (1.02-1.08)	1.96×10^{-4}	8.47×10^{-3}	rs67609008	160.50	Modified UTMOST
			0.32	1.04 (1.02-1.07)	2.63×10^{-4}	1.09×10^{-2}	rs67609008	160.50	JTI
<i>MADD</i>	11p11.2	protein_coding	0.04	0.87 (0.82-0.93)	7.85×10^{-5}	4.20×10^{-3}	rs59111863	70.38	JTI
<i>NUPI60</i>	11p11.2	protein_coding	0.04	0.73 (0.63-0.85)	5.59×10^{-5}	3.17×10^{-3}	rs59111863	448.15	JTI
<i>PAC3IN3</i>	11p11.2	protein_coding	0.1	0.93 (0.9-0.97)	4.35×10^{-4}	1.59×10^{-2}	rs59111863	213.97	PrediXcan

<i>AC104237.2</i>	11p15.4	lncRNA	0.07	0.92 (0.88-0.96)	1.63×10^{-4}	7.42×10^{-3}	rs12791447	164.36	JTI
<i>BRSK2</i>	11p15.5	protein_coding	0.03	0.8 (0.73-0.88)	7.42×10^{-6}	5.59×10^{-4}	rs1881502	23.59	JTI
<i>MOB2</i>	11p15.5	protein_coding	0.04	0.81 (0.74-0.89)	8.30×10^{-6}	6.19×10^{-4}	rs1881502	14.97	PrediXcan
			0.03	0.75 (0.68-0.83)	2.10×10^{-8}	3.22×10^{-6}	rs1881502	14.97	Modified UTMOST
			0.09	0.78 (0.71-0.86)	6.38×10^{-7}	6.69×10^{-5}	rs1881502	14.97	JTI
<i>TOLLIP-AS1</i>	11p15.5	lncRNA	0.05	0.93 (0.88-0.97)	1.67×10^{-3}	4.31×10^{-2}	rs1881502	175.58	Modified UTMOST
<i>GSTP1</i>	11q13.2	protein_coding	0.02	0.90 (0.86-0.96)	4.51×10^{-4}	1.63×10^{-2}	rs12785905	402.17	JTI
<i>NDUFV1</i>	11q13.2	protein_coding	0.14	1.08 (1.03-1.13)	6.28×10^{-4}	2.11×10^{-2}	rs12785905	428.04	Modified UTMOST
			0.14	1.08 (1.03-1.12)	9.85×10^{-4}	2.95×10^{-2}	rs12785905	428.04	JTI
<i>NUDT8</i>	11q13.2	protein_coding	0.02	1.12 (1.05-1.2)	4.81×10^{-4}	1.72×10^{-2}	rs12785905	445.44	Modified UTMOST
<i>RHOD</i>	11q13.2	protein_coding	0.29	1.05 (1.02-1.08)	1.93×10^{-3}	4.78×10^{-2}	rs12785905	112.48	Modified UTMOST
			0.3	1.04 (1.02-1.07)	1.97×10^{-3}	4.87×10^{-2}	rs12785905	112.48	JTI
<i>AP003071.1</i>	11q13.3	lncRNA	0.02	0.83 (0.79-0.88)	2.36×10^{-11}	5.50×10^{-9}	rs11228565	102.02	JTI
<i>LINC02701</i>	11q13.3	lncRNA	0.17	1.08 (1.04-1.12)	5.44×10^{-5}	3.10×10^{-3}	rs11228565	336.57	PrediXcan
			0.16	1.07 (1.03-1.11)	7.84×10^{-5}	4.20×10^{-3}	rs11228565	336.57	Modified UTMOST
			0.19	1.07 (1.03-1.1)	9.11×10^{-5}	4.66×10^{-3}	rs11228565	336.57	JTI
<i>AP002360.1</i>	11q13.5	lncRNA	0.02	1.43 (1.24-1.65)	1.01×10^{-6}	9.83×10^{-5}	rs11290954	104.84	JTI
<i>EMSY</i>	11q13.5	protein_coding	0.03	2.06 (1.7-2.49)	2.76×10^{-13}	8.36×10^{-11}	rs11290954	3.526	Modified UTMOST

			0.07	1.81 (1.54-2.12)	3.37×10^{-13}	1.01×10^{-10}			JTI
<i>HTR3A</i>	11q23.2	protein_coding	0.02	0.2 (0.08-0.5)	6.49×10^{-4}	2.17×10^{-2}	rs11214775	53.85	JTI
<i>FAM234B</i>	12p13.1	protein_coding	0.06	0.93 (0.89-0.97)	1.66×10^{-3}	4.31×10^{-2}	rs2066827	424.36	Modified UTMOST
			0.11	0.91 (0.86-0.96)	1.37×10^{-3}	3.75×10^{-2}	rs2066827	424.36	JTI
<i>DUSP16</i>	12p13.2	protein_coding	0.02	1.24 (1.09-1.41)	1.33×10^{-3}	3.69×10^{-2}	rs2066827	155.78	JTI
<i>AC004241.2</i>	12q13.11	lncRNA	0.02	1.53 (1.19-1.96)	8.47×10^{-4}	2.62×10^{-2}	rs80130819	293.48	Modified UTMOST
			0.06	1.13 (1.05-1.21)	6.36×10^{-4}	2.13×10^{-2}	rs80130819	293.48	JTI
<i>ASB8</i>	12q13.11	protein_coding	0.06	1.15 (1.07-1.23)	6.37×10^{-5}	3.54×10^{-3}	rs80130819	155.38	Modified UTMOST
<i>LMBR1L</i>	12q13.12	protein_coding	0.06	0.87 (0.81-0.92)	1.19×10^{-5}	8.48×10^{-4}	rs10875943	171.33	PrediXcan
			0.07	0.87 (0.81-0.93)	8.05×10^{-5}	4.26×10^{-3}	rs10875943	171.33	Modified UTMOST
			0.09	0.86 (0.8-0.92)	5.90×10^{-6}	4.61×10^{-4}	rs10875943	171.33	JTI
<i>TROAP</i>	12q13.12	protein_coding	0.02	1.43 (1.27-1.61)	8.38×10^{-9}	1.37×10^{-6}	rs10875943	49.50	JTI
<i>AC011603.2</i>	12q13.12	lncRNA	0.12	0.92 (0.9-0.95)	3.55×10^{-7}	3.98×10^{-5}	rs10875943	134.358	PrediXcan
			0.16	0.91 (0.88-0.94)	8.75×10^{-7}	8.69×10^{-5}			Modified UTMOST
			0.17	0.91 (0.87-0.94)	7.19×10^{-7}	7.35×10^{-5}			JTI
<i>AC131212.1</i>	12q24.33	lncRNA	0.03	1.14 (1.08-1.2)	1.49×10^{-6}	1.40×10^{-4}	rs7295014	102.30	PrediXcan
<i>MZT1</i>	13q21.33 ^{-22.1}	protein_coding	0.06	1.12 (1.04-1.19)	1.58×10^{-3}	4.16×10^{-2}	rs7327286	411.62	JTI
<i>HAUS4</i>	14q11.2	protein_coding	0.31	1.04 (1.02-1.07)	2.48×10^{-4}	1.04×10^{-2}	rs1004030	120.72	PrediXcan
			0.34	1.03 (1.02-1.05)	2.25×10^{-4}	9.51×10^{-3}	rs1004030	120.72	Modified UTMOST

			0.36	1.04 (1.02-1.06)	1.90×10^{-4}	8.27×10^{-3}	rs1004030	120.72	JTI
<i>RBM23</i>	14q11.2	protein_coding	0.31	0.96 (0.93-0.98)	1.20×10^{-3}	3.43×10^{-2}	rs1004030	82.74	Modified UTMOST
<i>SLC25A21</i>	14q13.3	protein_coding	0.02	0.68 (0.56-0.83)	2.09×10^{-4}	8.95×10^{-3}	rs11629412	9.34	Modified UTMOST
			0.03	0.35 (0.21-0.56)	1.48×10^{-5}	1.02×10^{-3}	rs11629412	9.34	JTI
<i>ERO1A</i>	14q22.1	protein_coding	0.04	0.34 (0.23-0.49)	1.12×10^{-8}	1.76×10^{-6}	rs8008270	209.71	Modified UTMOST
<i>INAFM2</i>	15q15.1	lncRNA	0.04	1.14 (1.05-1.24)	1.29×10^{-3}	3.58×10^{-2}	rs4924487	304.00	Modified UTMOST
			0.06	1.09 (1.03-1.14)	1.52×10^{-3}	4.07×10^{-2}	rs4924487	304.00	JTI
<i>RPUSD2</i>	15q15.1	protein_coding	0.02	0.71 (0.58-0.86)	7.21×10^{-4}	2.33×10^{-2}	rs4924487	56.26	JTI
<i>AC018553.1</i>	16q12.2	lncRNA	0.08	0.91 (0.86-0.96)	8.57×10^{-4}	2.65×10^{-2}	rs13380763	351.97	PrediXcan
<i>IRX5</i>	16q12.2	protein_coding	0.06	0.91 (0.85-0.96)	1.39×10^{-3}	3.80×10^{-2}	rs13380763	286.47	PrediXcan
<i>AC010547.1</i>	16q22.2	lncRNA	0.09	1.24 (1.09-1.42)	9.76×10^{-4}	2.93×10^{-2}	rs12051443	191.49	Modified UTMOST
			0.13	1.07 (1.03-1.12)	1.21×10^{-3}	3.43×10^{-2}	rs12051443	191.49	JTI
<i>LINC01229</i>	16q23.2	lncRNA	0.05	1.36 (1.16-1.59)	1.80×10^{-4}	7.95×10^{-3}	rs28709974	137.63	Modified UTMOST
<i>AC005358.2</i>	17p12	lncRNA	0.04	0.81 (0.73-0.9)	5.39×10^{-5}	3.09×10^{-3}	rs72811270	391.90	Modified UTMOST
			0.07	0.82 (0.74-0.91)	2.81×10^{-4}	1.14×10^{-2}			JTI
<i>CTCI</i>	17p13.1	protein_coding	0.06	0.9 (0.85-0.95)	1.86×10^{-4}	8.13×10^{-3}	rs28441558	348.24	Modified UTMOST
<i>SAT2</i>	17p13.1	protein_coding	0.03	0.83 (0.75-0.92)	4.88×10^{-4}	1.73×10^{-2}	rs28441558	271.92	PrediXcan

<i>TMEM102</i>	17p13.1	protein_coding	0.02	1.33 (1.14-1.56)	3.48×10^{-4}	1.36×10^{-2}	rs28441558	462.12	JTI
<i>MRM3</i>	17p13.3	protein_coding	0.04	1.51 (1.36-1.68)	1.06×10^{-14}	3.89×10^{-12}	rs461251	76.587	Modified UTMOST
<i>TLL6</i>	17q21.32	protein_coding	0.02	1.24 (1.14-1.34)	2.15×10^{-7}	2.58×10^{-5}	rs117576373	73.90	Modified UTMOST
			0.03	1.11 (1.05-1.18)	1.11×10^{-4}	5.48×10^{-3}	rs117576373	73.90	JTI
<i>MKS1</i>	17q22	protein_coding	0.03	1.12 (1.04-1.2)	1.34×10^{-3}	3.70×10^{-2}	rs2680708	159.15	PrediXcan
			0.07	1.17 (1.07-1.28)	7.55×10^{-4}	2.41×10^{-2}	rs2680708	159.15	Modified UTMOST
			0.08	1.16 (1.08-1.24)	7.58×10^{-5}	4.09×10^{-3}	rs2680708	159.15	JTI
<i>AC036176.1</i>	18q21.33	lncRNA	0.1	1.09 (1.04-1.15)	8.08×10^{-4}	2.53×10^{-2}	rs11381388	87.67	Modified UTMOST
			0.09	1.08 (1.03-1.14)	1.87×10^{-3}	4.68×10^{-2}	rs11381388	87.67	JTI
<i>HAUS8</i>	19p13.11	protein_coding	0.05	1.12 (1.05-1.19)	3.88×10^{-4}	1.47×10^{-2}	rs11666569	27.64	Modified UTMOST
			0.07	1.09 (1.04-1.15)	4.14×10^{-4}	1.54×10^{-2}	rs11666569	27.64	JTI
<i>AC011479.3</i>	19q13.13	lncRNA	0.03	1.09 (1.04-1.15)	2.89×10^{-4}	1.17×10^{-2}	rs8102476	58.71	JTI
<i>SIPAIL3</i>	19q13.13	protein_coding	0.12	1.07 (1.04-1.11)	1.23×10^{-5}	8.67×10^{-4}	rs8102476	36.60	PrediXcan
			0.11	1.07 (1.04-1.11)	8.35×10^{-5}	4.40×10^{-3}	rs8102476	36.60	JTI
<i>ZNF781</i>	19q13.12	protein_coding	0.04	1.14 (1.06-1.23)	3.69×10^{-4}	1.42×10^{-2}	rs59710626	110.56	PrediXcan
			0.09	1.07 (1.04-1.11)	9.34×10^{-5}	4.76×10^{-3}			Modified UTMOST
			0.13	1.06 (1.03-1.1)	9.45×10^{-5}	4.79×10^{-3}			JTI
<i>ZNF607</i>	19q13.12	protein_coding	0.07	0.88 (0.84-0.93)	4.75×10^{-6}	3.94×10^{-4}	rs59710626	337.40	Modified UTMOST

<i>AC022144.1</i>	19q13.2	lncRNA	0.08	1.11 (1.05-1.17)	1.56×10^{-4}	7.22×10^{-3}	rs12610267	485.77	Modified UTMOST
<i>CI9orf33</i>	19q13.2	protein_coding	0.04	1.12 (1.05-1.2)	1.40×10^{-3}	3.82×10^{-2}	rs12610267	50.92	PrediXcan
			0.06	1.24 (1.16-1.33)	1.67×10^{-10}	3.35×10^{-8}	rs12610267	50.92	Modified UTMOST
<i>CEACAM4</i>	19q13.2	protein_coding	0.09	1.09 (1.05-1.13)	8.81×10^{-6}	6.53×10^{-4}	rs74738513	147.51	JTI
<i>ERF</i>	19q13.2	protein_coding	0.03	0.88 (0.82-0.95)	1.79×10^{-3}	4.51×10^{-2}	rs61088131	58.36	JTI
<i>EXOSC5</i>	19q13.2	protein_coding	0.07	0.91 (0.86-0.96)	8.84×10^{-4}	2.71×10^{-2}	rs11672691	82.20	Modified UTMOST
			0.09	0.9 (0.84-0.95)	6.27×10^{-4}	2.11×10^{-2}	rs11672691	82.20	JTI
<i>KCNK6</i>	19q13.2	protein_coding	0.02	0.75 (0.65-0.87)	8.75×10^{-5}	4.53×10^{-3}	rs12610267	74.93	JTI
<i>LIP×10-AS1</i>	19q13.2	lncRNA	0.02	0.39 (0.24-0.66)	4.58×10^{-4}	1.65×10^{-2}	rs61088131	455.56	JTI
<i>TMEM91</i>	19q13.2	protein_coding	0.08	0.9 (0.86-0.95)	1.82×10^{-4}	8.02×10^{-3}	rs11672691	95.60	Modified UTMOST
			0.11	0.93 (0.9-0.97)	6.57×10^{-4}	2.18×10^{-2}	rs11672691	95.60	JTI
<i>YIF1B</i>	19q13.2	protein_coding	0.05	0.89 (0.85-0.94)	1.58×10^{-5}	1.08×10^{-3}	rs12610267	63.18	JTI
<i>DMAC2</i>	19q13.2	protein_coding	0.05	1.18 (1.08-1.28)	2.79×10^{-4}	1.14×10^{-2}	rs11672691	38.965	Modified UTMOST
<i>LINC01480</i>	19q13.2	lncRNA	0.03	0.84 (0.78-0.9)	2.36×10^{-6}	2.13×10^{-4}	rs74738513	57.335	Modified UTMOST
<i>PCAT19</i>	19q13.2	lncRNA	0.04	1.5 (1.38-1.64)	5.39×10^{-20}	3.04×10^{-17}	rs11672691	20.972	PrediXcan
			0.08	1.21 (1.16-1.26)	3.76×10^{-20}	2.22×10^{-17}			Modified UTMOST
			0.11	1.16 (1.12-1.19)	6.81×10^{-22}	4.85×10^{-19}			JTI
<i>AC011473.3</i>	19q13.41	lncRNA	0.03	1.31 (1.17-1.45)	1.00×10^{-6}	9.81×10^{-5}	rs2735839	172.97	PrediXcan

			0.03	1.14 (1.07-1.21)	2.60×10^{-5}	1.67×10^{-3}	rs2735839	172.97	JTI
<i>KLK4</i>	19q13.41	protein_coding	0.02	1.37 (1.18-1.59)	3.88×10^{-5}	2.35×10^{-3}	rs2735839	49.37	Modified UTMOST
<i>EFCAB8</i>	20q11.21	protein_coding	0.02	1.16 (1.08-1.25)	2.23×10^{-5}	1.46×10^{-3}	rs11480453	201.49	Modified UTMOST
			0.07	1.09 (1.03-1.16)	1.79×10^{-3}	4.51×10^{-2}	rs11480453	201.49	JTI
<i>AL121832.1</i>	20q13.33	lncRNA	0.03	1.18 (1.08-1.3)	3.66×10^{-4}	1.42×10^{-2}	rs2427345	9.04	Modified UTMOST
			0.05	1.12 (1.06-1.18)	8.75×10^{-5}	4.53×10^{-3}	rs2427345	9.04	JTI
<i>AL121845.4</i>	20q13.33	lncRNA	0.03	0.89 (0.85-0.94)	4.12×10^{-6}	3.48×10^{-4}	rs6062509	0.83	JTI
<i>FNDC11</i>	20q13.33	protein_coding	0.04	1.79 (1.26-2.53)	1.17×10^{-3}	3.35×10^{-2}	rs6062509	174.50	Modified UTMOST
			0.04	1.08 (1.04-1.13)	1.00×10^{-4}	5.00×10^{-3}	rs6062509	174.50	JTI
<i>GATA5</i>	20q13.33	protein_coding	0.02	1.22 (1.08-1.38)	1.76×10^{-3}	4.47×10^{-2}	rs2427345	35.42	Modified UTMOST
			0.03	1.1 (1.04-1.16)	1.40×10^{-3}	3.82×10^{-2}	rs2427345	35.42	JTI
<i>HELZ2</i>	20q13.33	protein_coding	0.03	1.23 (1.13-1.34)	3.15×10^{-6}	2.80×10^{-4}	rs6062509	156.97	JTI
<i>LAMA5</i>	20q13.33	protein_coding	0.07	0.88 (0.83-0.94)	9.76×10^{-5}	4.94×10^{-3}	rs2427345	73.24	Modified UTMOST
<i>TNFRSF6B</i>	20q13.33	protein_coding	0.06	0.8 (0.72-0.89)	5.30×10^{-5}	3.05×10^{-3}	rs6062509	32.53	JTI
<i>AL022476.1</i>	22q13.2	lncRNA	0.05	1.51 (1.33-1.72)	3.38×10^{-10}	6.40×10^{-8}	rs5759167	51.84	Modified UTMOST
			0.07	1.26 (1.13-1.4)	2.19×10^{-5}	1.44×10^{-3}	rs5759167	51.84	JTI
<i>FAM118A</i>	22q13.31	protein_coding	0.54	1.02 (1.01-1.04)	1.64×10^{-3}	4.28×10^{-2}	rs9615099	6.70	JTI

Bold genes represent those supported by all three genetic prediction models (PrediXcan, modified UTMOST and JTI).

^a R^2 : prediction performance (R^2) derived using GTEx data. P value: derived from association analyses of 79,194 cases and 61,112 controls; associations with FDR-corrected P value ≤ 0.05 considered significant;

^b Risk SNPs identified in previous GWAS or fine-mapping studies. The risk SNP closest to the gene is presented.

lncRNA: long noncoding RNAs.

Supplementary Table 4 Seventy-two genes that have been reported in previous TWAS showing the same directions of effect compared with the current study

Gene	Region	Classification	R ^{2a}	OR (95% CI)	P-value	P-value after FDR ^a	Closest risk SNPs ^b	Model	PMID
<i>ARNT</i>	1q21.3	protein_coding	0.14	0.94 (0.91-0.98)	7.16×10 ⁻⁴	2.32×10 ⁻²	rs17599629	Modified UTMOST	30287866
			0.14	0.93 (0.89-0.96)	7.35×10 ⁻⁵	3.98×10 ⁻³		JTI	
<i>ANXA9</i>	1q21.3	protein_coding	0.02	1.24 (1.15-1.34)	1.58×10 ⁻⁸	2.47×10 ⁻⁶	rs17599629	Modified UTMOST	30287866
<i>CTSS</i>	1q21.3	protein_coding	0.2	0.96 (0.94-0.98)	9.01×10 ⁻⁴	2.75×10 ⁻²	rs17599629	JTI	30287866
									31101764
<i>KCNN3</i>	1q21.3	protein_coding	0.03	0.78 (0.73-0.84)	5.66×10 ⁻¹¹	1.25×10 ⁻⁸	rs34579442	Modified UTMOST	30287866 31101764
<i>ADAM15</i>	1q22	protein_coding	0.02	1.35 (1.23-1.48)	1.59×10 ⁻¹⁰	3.23×10 ⁻⁸	rs4845695	PrediXcan	30287866
			0.05	1.23 (1.16-1.3)	1.94×10 ⁻¹¹	4.57×10 ⁻⁹		JTI	
<i>DCST1-AS1</i>	1q22	lncRNA	0.02	0.75 (0.68-0.83)	9.24×10 ⁻⁸	1.21×10 ⁻⁵	rs4845695	Modified UTMOST	30287866
			0.04	0.81 (0.75-0.88)	4.23×10 ⁻⁷	4.64×10 ⁻⁵		JTI	31101764
<i>MDM4</i>	1q32.1	protein_coding	0.04	0.67 (0.62-0.73)	1.66×10 ⁻²¹	1.12×10 ⁻¹⁸	rs4845695	PrediXcan	30287866

			0.06	0.63 (0.57-0.7)	3.02×10^{-18}	1.56×10^{-15}		Modified UTMOST	
			0.09	0.66 (0.59-0.73)	3.92×10^{-14}	1.32×10^{-11}		JTI	
<i>RAB29</i>	1q32.1	protein_coding	0.13	0.92 (0.89-0.95)	1.80×10^{-6}	1.67×10^{-4}	rs4245739	PrediXcan	30287866
			0.19	0.91 (0.88-0.94)	2.29×10^{-10}	4.44×10^{-8}		Modified UTMOST	31101764
			0.21	0.92 (0.89-0.95)	6.94×10^{-8}	9.29×10^{-6}		JTI	
<i>SLC41A1</i>	1q32.1	protein_coding	0.03	0.82 (0.77-0.88)	2.63×10^{-8}	3.93×10^{-6}	rs1775148	Modified UTMOST	30287866
			0.04	0.82 (0.77-0.87)	3.10×10^{-9}	5.33×10^{-7}		JTI	
<i>GGCX</i>	2p11.2	protein_coding	0.12	0.87 (0.85-0.9)	6.42×10^{-16}	2.55×10^{-13}	rs2028900	PrediXcan	30287866
			0.18	0.84 (0.81-0.87)	2.17×10^{-23}	1.88×10^{-20}		Modified UTMOST	31101764
			0.2	0.84 (0.81-0.87)	5.39×10^{-21}	3.35×10^{-18}		JTI	
<i>WDPCP</i>	2p15	protein_coding	0.05	1.38 (1.29-1.48)	5.57×10^{-20}	3.07×10^{-17}	rs58235267	PrediXcan	31101764
			0.09	1.25 (1.2-1.3)	2.18×10^{-26}	3.30×10^{-23}		Modified UTMOST	30287866
			0.11	1.38 (1.3-1.47)	1.51×10^{-24}	1.46×10^{-21}		JTI	

<i>NOL10</i>	2p25.1	protein_coding	0.04	0.89 (0.84-0.94)	1.12×10^{-4}	5.48×10^{-3}	rs9287719	PrediXcan	30287866
			0.04	0.79 (0.74-0.84)	1.69×10^{-13}	5.25×10^{-11}		Modified UTMOST	
			0.04	0.16 (0.09-0.29)	9.10×10^{-10}	1.62×10^{-7}		JTI	
<i>FLACCI</i>	2q33.1	protein_coding	0.09	0.89 (0.85-0.93)	8.86×10^{-7}	8.77×10^{-5}	rs59308963	PrediXcan	30287866
			0.13	0.90 (0.87-0.94)	2.32×10^{-8}	3.51×10^{-6}		Modified UTMOST	31101764
			0.14	0.92 (0.9-0.95)	2.99×10^{-7}	3.39×10^{-5}		JTI	
<i>CHMP2B</i>	3p11.2	protein_coding	0.06	1.35 (1.27-1.43)	2.82×10^{-24}	2.63×10^{-21}	rs2088396	PrediXcan	31308362
			0.07	1.42 (1.32-1.53)	6.31×10^{-22}	4.63×10^{-19}		Modified UTMOST	31101764
			0.1	1.2 (1.15-1.25)	3.24×10^{-18}	1.64×10^{-15}		JTI	30287866
<i>POUIF1</i>	3p11.2	protein_coding	0.04	1.51 (1.37-1.66)	1.84×10^{-16}	8.26×10^{-14}	rs2088396	Modified UTMOST	31101764
			0.06	1.13 (1.07-1.18)	4.91×10^{-6}	4.03×10^{-4}		JTI	
<i>SIDT1</i>	3q13.2	protein_coding	0.05	0.84 (0.79-0.9)	7.42×10^{-8}	9.83×10^{-6}	rs1283104	PrediXcan	30287866
			0.03	0.56 (0.49-0.65)	3.10×10^{-16}	1.32×10^{-13}		Modified UTMOST	31101764

			0.04	0.58 (0.52-0.65)	4.36×10^{-20}	2.52×10^{-17}		JTI	
<i>RUVBL1</i>	3q21.3	protein_coding	0.07	1.22 (1.16-1.29)	1.40×10^{-14}	5.06×10^{-12}	rs4857837	PrediXcan	30287866
			0.07	1.33 (1.22-1.46)	8.48×10^{-10}	1.52×10^{-7}		Modified UTMOST	
			0.08	1.36 (1.24-1.49)	8.18×10^{-11}	1.75×10^{-8}		JTI	
<i>DHX36</i>	3q25.2	protein_coding	0.16	0.93 (0.9-0.97)	1.20×10^{-4}	5.89×10^{-3}	rs182314334	PrediXcan	31101764
			0.15	0.93 (0.89-0.96)	3.49×10^{-5}	2.14×10^{-3}		Modified UTMOST	
			0.18	0.95 (0.92-0.97)	1.70×10^{-4}	7.62×10^{-3}		JTI	
<i>PRKCI</i>	3q26.2	protein_coding	0.02	1.15 (1.08-1.22)	5.17×10^{-6}	4.19×10^{-4}	rs71277158	JTI	30287866
<i>BMPRI1B</i>	4q22.3	protein_coding	0.05	0.65 (0.6-0.71)	4.14×10^{-23}	3.34×10^{-20}	rs17021918	PrediXcan	30287866
			0.04	0.67 (0.6-0.73)	1.44×10^{-16}	6.59×10^{-14}		Modified UTMOST	
			0.04	0.71 (0.67-0.76)	3.97×10^{-23}	3.32×10^{-20}		JTI	
<i>UHRF1BP1</i>	6p21.31	protein_coding	0.17	1.1 (1.06-1.14)	1.70×10^{-7}	2.10×10^{-5}	rs9469899	PrediXcan	31101764
			0.19	1.09 (1.06-1.12)	2.45×10^{-8}	3.69×10^{-6}		Modified UTMOST	30287866

			0.24	1.06 (1.04-1.08)	1.59×10^{-8}	2.47×10^{-6}		JTI	
<i>AGER</i>	6p21.32	protein_coding	0.07	0.86 (0.81-0.91)	2.79×10^{-7}	3.24×10^{-5}	rs3096702	PrediXcan	31101764
			0.14	0.91 (0.88-0.94)	5.67×10^{-7}	6.05×10^{-5}		Modified UTMOST	
			0.16	0.89 (0.86-0.93)	2.38×10^{-7}	2.83×10^{-5}		JTI	
<i>HLA-DPA1</i>	6p21.32	protein_coding	0.03	1.14 (1.05-1.23)	1.41×10^{-3}	3.84×10^{-2}	rs9296068	Modified UTMOST	31101764
			0.04	1.17 (1.1-1.24)	2.74×10^{-7}	3.19×10^{-5}		JTI	
<i>HLA-DRB5</i>	6p21.32	protein_coding	0.66	1.04 (1.02-1.06)	7.15×10^{-5}	3.90×10^{-3}	rs3129859	Modified UTMOST	31101764
<i>RNF5</i>	6p21.32	protein_coding	0.04	1.19 (1.1-1.28)	5.94×10^{-6}	4.63×10^{-4}	rs3096702	PrediXcan	31101764
			0.09	1.1 (1.06-1.15)	5.05×10^{-6}	4.11×10^{-4}		Modified UTMOST	
			0.12	1.13 (1.08-1.19)	4.07×10^{-7}	4.50×10^{-5}		JTI	
<i>APOM</i>	6p21.33	protein_coding	0.05	1.31 (1.16-1.48)	1.17×10^{-5}	8.39×10^{-4}	rs2596546	JTI	31101764
<i>ATF6B</i>	6p21.33	protein_coding	0.03	1.17 (1.09-1.26)	2.67×10^{-5}	1.71×10^{-3}	rs3096702	PrediXcan	31101764
			0.12	1.07 (1.03-1.12)	5.92×10^{-4}	2.01×10^{-2}		Modified	

								UTMOST	
			0.13	1.07 (1.04-1.1)	3.60×10^{-5}	2.19×10^{-3}		JTI	
C4A	6p21.33	protein_coding	0.24	1.07 (1.04-1.09)	1.91×10^{-7}	2.34×10^{-5}	rs3096702	PrediXcan	31101764
			0.25	1.09 (1.06-1.12)	4.31×10^{-8}	6.22×10^{-6}		Modified UTMOST	
			0.32	1.06 (1.04-1.08)	2.64×10^{-7}	3.11×10^{-5}		JTI	
CYP21A2	6p21.33	protein_coding	0.19	0.92 (0.88-0.95)	5.35×10^{-6}	4.29×10^{-4}	rs3096702	PrediXcan	31101764
			0.14	0.9 (0.86-0.93)	6.39×10^{-8}	8.60×10^{-6}		Modified UTMOST	
			0.19	0.92 (0.87-0.96)	4.75×10^{-4}	1.70×10^{-2}		JTI	
FKBP1	6p21.33	protein_coding	0.02	0.35 (0.2-0.61)	2.21×10^{-4}	9.42×10^{-3}	rs3096702	Modified UTMOST	31101764
FLOT1	6p21.33	protein_coding	0.17	0.93 (0.9-0.95)	1.78×10^{-7}	2.19×10^{-5}	rs12665339	PrediXcan	31308362
			0.16	0.92 (0.89-0.96)	4.96×10^{-6}	4.06×10^{-4}		Modified UTMOST	
			0.19	0.93 (0.91-0.96)	3.62×10^{-7}	4.04×10^{-5}		JTI	
HCG22	6p21.33	lncRNA	0.05	1.15 (1.1-1.2)	9.47×10^{-9}	1.51×10^{-6}	rs130067	Modified	31101764

								UTMOST	
			0.06	1.24 (1.15-1.33)	4.85×10^{-8}	6.83×10^{-6}		JTI	
			0.02	1.75 (1.47-2.08)	3.34×10^{-10}	6.37×10^{-8}		Modified UTMOST	
<i>HCP5</i>	6p21.33	lncRNA	0.05	1.49 (1.29-1.72)	9.50×10^{-8}	1.24×10^{-5}	rs2596546	JTI	31101764
<i>LY6G5C</i>	6p21.33	protein_coding	0.09	1.09 (1.04-1.13)	1.31×10^{-4}	6.29×10^{-3}	rs2596546	PrediXcan	31308362
			0.14	1.08 (1.05-1.12)	1.11×10^{-5}	7.98×10^{-4}		Modified UTMOST	
			0.13	1.07 (1.04-1.11)	5.55×10^{-5}	3.15×10^{-3}		JTI	
<i>PPP1R18</i>	6p21.33	protein_coding	0.04	4.18 (2.7-6.48)	2.00×10^{-10}	3.94×10^{-8}	rs12665339	Modified UTMOST	31101764
			0.09	1.15 (1.1-1.2)	3.93×10^{-9}	6.71×10^{-7}		JTI	
<i>PSORS1C3</i>	6p21.33	lncRNA	0.51	1.02 (1.01-1.04)	1.66×10^{-3}	4.31×10^{-2}	rs130067	PrediXcan	31308362
			0.5	1.05 (1.02-1.07)	4.23×10^{-5}	2.53×10^{-3}		Modified UTMOST	
			0.57	1.03 (1.01-1.05)	1.34×10^{-4}	6.42×10^{-3}		JTI	
<i>VAR2</i>	6p21.33	protein_coding	0.44	1.05 (1.03-1.07)	6.49×10^{-7}	6.78×10^{-5}	rs12665339	PrediXcan	31101764

			0.43	1.06 (1.03-1.08)	2.99×10^{-7}	3.39×10^{-5}		Modified UTMOST	
			0.47	1.05 (1.03-1.07)	1.05×10^{-7}	1.35×10^{-5}		JTI	
<i>ZNRD1</i>	6p22.1	protein_coding	0.06	1.11 (1.06-1.17)	3.33×10^{-6}	2.94×10^{-4}	rs7767188	PrediXcan	31101764
			0.13	1.18 (1.12-1.23)	1.43×10^{-10}	2.99×10^{-8}		Modified UTMOST	
			0.14	1.1 (1.06-1.14)	1.15×10^{-6}	1.11×10^{-4}		JTI	
<i>SESNI</i>	6q21	protein_coding	0.02	1.27 (1.18-1.37)	2.34×10^{-9}	4.05×10^{-7}	rs2273669	PrediXcan	30287866
			0.09	2.2 (1.71-2.84)	1.46×10^{-9}	2.55×10^{-7}		JTI	
<i>ACAT2</i>	6q25.3	protein_coding	0.04	0.73 (0.67-0.8)	5.65×10^{-11}	1.25×10^{-8}	rs651164	Modified UTMOST	30287866
			0.03	0.72 (0.65-0.79)	1.07×10^{-10}	2.26×10^{-8}		JTI	
<i>PNLDC1</i>	6q25.3	protein_coding	0.12	0.88 (0.83-0.94)	7.76×10^{-5}	4.17×10^{-3}	rs651164	PrediXcan	30287866
			0.08	0.84 (0.79-0.89)	7.68×10^{-10}	1.39×10^{-7}		Modified UTMOST	31101764
			0.13	0.87 (0.82-0.92)	5.42×10^{-7}	5.84×10^{-5}		JTI	
<i>SLC22A2</i>	6q25.3	protein_coding	0.05	0.73 (0.68-0.79)	3.92×10^{-16}	1.61×10^{-13}	rs4646284	PrediXcan	30287866

			0.12	0.63 (0.59-0.69)	3.01×10^{-29}	5.61×10^{-26}		Modified UTMOST	31308362
			0.08	0.46 (0.39-0.53)	1.01×10^{-24}	1.02×10^{-21}		JTI	
<i>SLC22A3</i>	6q25.3	protein_coding	0.06	0.45 (0.42-0.49)	9.09×10^{-103}	7.34×10^{-99}	rs4646284	PrediXcan	30287866
			0.05	0.37 (0.34-0.4)	2.92×10^{-112}	3.54×10^{-108}		JTI	31308362 31101764
<i>WTAP</i>	6q25.3	protein_coding	0.08	0.8 (0.77-0.84)	3.00×10^{-21}	1.97×10^{-18}	rs651164	PrediXcan	30287866
			0.13	0.79 (0.73-0.86)	8.46×10^{-9}	1.38×10^{-6}		Modified UTMOST	31101764
			0.15	0.89 (0.87-0.92)	5.11×10^{-14}	1.67×10^{-11}		JTI	
<i>HIBADH</i>	7p15.2	protein_coding	0.03	0.87 (0.83-0.92)	3.97×10^{-6}	3.36×10^{-4}	rs200362064	PrediXcan	30287866
			0.06	0.9 (0.86-0.94)	1.23×10^{-5}	8.67×10^{-4}		JTI	
<i>BHLHA15</i>	7q21.3	protein_coding	0.05	1.38 (1.31-1.45)	9.80×10^{-35}	2.38×10^{-31}	rs6465657	Modified UTMOST	31308362
			0.06	1.61 (1.5-1.73)	7.61×10^{-41}	3.07×10^{-37}		JTI	30287866 31101764
<i>TECPRI</i>	7q21.3	protein_coding	0.06	2.09 (1.75-2.49)	3.09×10^{-16}	1.32×10^{-13}	rs6465657	Modified	30287866

								UTMOST	
<i>POU5F1B</i>	8q24.21	protein_coding	0.04	1.31 (1.23-1.4)	4.88×10^{-16}	1.97×10^{-13}	rs6983267	Modified UTMOST	31308362
			0.06	1.51 (1.27-1.8)	3.49×10^{-6}	3.04×10^{-4}		JTI	
<i>USP20</i>	9q34.11	protein_coding	0.04	1.25 (1.15-1.35)	7.17×10^{-8}	9.55×10^{-6}	rs1182	Modified UTMOST	31101764
			0.05	1.19 (1.12-1.27)	1.12×10^{-7}	1.44×10^{-5}		JTI	
<i>ARL3</i>	10q24.32	protein_coding	0.05	0.87 (0.82-0.91)	1.15×10^{-7}	1.47×10^{-5}	rs34032774	JTI	30287866
<i>WBP1L</i>	10q24.32	protein_coding	0.02	0.8 (0.75-0.87)	1.03×10^{-8}	1.63×10^{-6}	rs34032774	JTI	31101764
<i>CTBP2</i>	10q26.13	protein_coding	0.08	1.09 (1.05-1.13)	1.29×10^{-6}	1.24×10^{-4}	rs4962416	PrediXcan	31308362
			0.04	1.18 (1.1-1.27)	5.77×10^{-6}	4.53×10^{-4}		JTI	30287866
<i>RAD9A</i>	11q13.2	protein_coding	0.1	1.11 (1.07-1.16)	1.17×10^{-6}	1.13×10^{-4}	rs12785905	PrediXcan	31101764
			0.17	1.12 (1.07-1.16)	2.84×10^{-7}	3.28×10^{-5}		Modified UTMOST	
			0.19	1.1 (1.06-1.14)	7.82×10^{-7}	7.89×10^{-5}		JTI	
<i>TPCN2</i>	11q13.3	protein_coding	0.13	1.21 (1.15-1.26)	2.18×10^{-16}	9.61×10^{-14}	rs11228565	PrediXcan	30287866
			0.09	1.27 (1.22-1.32)	6.82×10^{-37}	2.36×10^{-33}		Modified	

								UTMOST	
			0.13	1.48 (1.39-1.58)	3.87×10^{-32}	8.53×10^{-29}		JTI	
MMP7	11q22.2	protein_coding	0.14	1.15 (1.11-1.19)	1.32×10^{-13}	4.16×10^{-11}	rs11568818	PrediXcan	30287866
			0.14	1.31 (1.24-1.38)	1.38×10^{-20}	8.36×10^{-18}		Modified UTMOST	31101764
			0.11	1.15 (1.11-1.19)	1.00×10^{-13}	3.19×10^{-11}		JTI	
TM7SF3	12p11.23	protein_coding	0.14	1.07 (1.02-1.11)	1.55×10^{-3}	4.11×10^{-2}	rs10845938	PrediXcan	30287866
			0.2	1.06 (1.03-1.09)	4.68×10^{-4}	1.68×10^{-2}		Modified UTMOST	
			0.22	1.04 (1.02-1.07)	5.76×10^{-4}	1.96×10^{-2}		JTI	
DIS3L	15q22.31	protein_coding	0.17	1.06 (1.02-1.1)	1.71×10^{-3}	4.40×10^{-2}	rs112293876	Modified UTMOST	30287866
MPHOSPH6	16q23.3	protein_coding	0.1	1.09 (1.04-1.13)	9.79×10^{-5}	4.94×10^{-3}	rs199737822	Modified UTMOST	30287866
			0.13	1.06 (1.02-1.09)	5.85×10^{-4}	1.99×10^{-2}		JTI	
DDX52	17q12	protein_coding	0.03	1.2 (1.12-1.28)	6.32×10^{-8}	8.60×10^{-6}	rs2229295	PrediXcan	31101764
SYNRG	17q12	protein_coding	0.36	0.96 (0.93-0.98)	4.93×10^{-4}	1.75×10^{-2}	rs2229295	PrediXcan	30287866

			0.39	0.97 (0.95-0.99)	6.89×10^{-4}	2.26×10^{-2}		Modified UTMOST	
			0.39	0.96 (0.94-0.98)	6.67×10^{-4}	2.20×10^{-2}		JTI	
<i>HNF1B</i>	17q12	protein_coding	0.03	61.4 (43.9-85.87)	1.46×10^{-126}	3.54×10^{-122}	rs2229295	JTI	31308362
<i>EIF3K</i>	19q13.2	protein_coding	0.02	0.66 (0.55-0.79)	6.07×10^{-6}	4.70×10^{-4}	rs12610267	Modified UTMOST	31101764
			0.04	0.82 (0.74-0.91)	1.69×10^{-4}	7.59×10^{-3}		JTI	
<i>PPP1R14A</i>	19q13.2	protein_coding	0.11	1.24 (1.19-1.29)	2.90×10^{-25}	3.20×10^{-22}	rs12610267	PrediXcan	31308362
			0.14	1.35 (1.28-1.41)	9.78×10^{-35}	2.38×10^{-31}		Modified UTMOST	31101764
			0.18	1.2 (1.16-1.24)	5.04×10^{-30}	1.02×10^{-26}		JTI	30287866
<i>COMMD7</i>	20q11.21	protein_coding	0.05	0.81 (0.74-0.89)	3.74×10^{-6}	3.21×10^{-4}	rs11480453	JTI	31101764
<i>DNMT3B</i>	20q11.21	protein_coding	0.03	0.82 (0.76-0.89)	7.85×10^{-7}	7.89×10^{-5}	rs11480453	JTI	31101764
<i>GMEB2</i>	20q13.33	protein_coding	0.07	0.86 (0.81-0.91)	1.37×10^{-7}	1.71×10^{-5}	rs6062509	Modified UTMOST	30287866
			0.07	0.89 (0.84-0.94)	5.89×10^{-5}	3.31×10^{-3}		JTI	
<i>LIME1</i>	20q13.33	protein_coding	0.15	0.85 (0.82-0.89)	2.37×10^{-13}	7.27×10^{-11}	rs1058319	PrediXcan	30287866

			0.22	0.81 (0.78-0.85)	2.31×10^{-17}	1.12×10^{-14}		Modified UTMOST	
			0.24	0.87 (0.83-0.9)	1.10×10^{-11}	2.67×10^{-9}		JTI	
<i>TMPRSS2</i>	21q22.3	protein_coding	0.15	1.24 (1.17-1.32)	1.44×10^{-11}	3.42×10^{-9}	rs1041449	PrediXcan	31308362
			0.18	5.6 (3.41-9.21)	1.44×10^{-11}	3.42×10^{-9}		JTI	
<i>TBX1</i>	22q11.21	protein_coding	0.26	0.91 (0.88-0.93)	1.57×10^{-10}	3.22×10^{-8}	rs2238776	PrediXcan	31101764
			0.16	0.05 (0.02-0.12)	7.26×10^{-12}	1.81×10^{-9}		Modified UTMOST	
			0.27	0.87 (0.83-0.91)	1.35×10^{-9}	2.37×10^{-7}		JTI	
<i>MCAT</i>	22q13.2	protein_coding	0.04	0.34 (0.28-0.43)	4.44×10^{-22}	3.36×10^{-19}	rs5751435	JTI	30287866
<i>TSPO</i>	22q13.2	protein_coding	0.02	0.8 (0.75-0.85)	5.75×10^{-12}	1.47×10^{-9}	rs5751435	Modified UTMOST	30287866
			0.03	0.6 (0.51-0.71)	1.34×10^{-9}	2.37×10^{-7}		JTI	
<i>TTLL1</i>	22q13.2	protein_coding	0.05	0.81 (0.76-0.86)	4.55×10^{-13}	1.34×10^{-10}	rs5759167	Modified UTMOST	31101764
			0.07	0.87 (0.82-0.92)	7.39×10^{-7}	7.53×10^{-5}		JTI	

Bold genes represent those supported by all three genetic prediction models (PrediXcan, modified UTMOST and JTI).

^a R²: prediction performance (R²) derived using GTEx data. P value: derived from association analyses of 79,194 cases and 61,112 controls; associations with

FDR-corrected P value ≤ 0.05 considered significant;

^b Risk SNPs identified in previous GWAS or fine-mapping studies. The risk SNP closest to the gene is presented.

lncRNA: long noncoding RNAs.

Supplementary Table 5 Twenty-four genes that have been previous reported as candidate susceptibility genes with the results of both-side direction in TWAS

The present study									Three published TWAS studies			Comparison of results
Gene	Region	Classification	R ^{2a}	OR (95% CI)	P-value	P-value after FDR ^a	Closest risk SNPs ^b	Model	Direction	Training tissue	PMID	
<i>Clorf43</i>	1q21.3	protein_coding	0.02	1.24 (1.08-1.41)	1.99×10 ⁻³	4.89×10 ⁻²	rs34579442	JTI	-	Cross-Tissue	31101764	Inconsistent
									+	NTR.BLOOD.RNAARR, TCGA.PRAD_SP.TUMOR	30287866	Consistent
<i>PM20D1</i>	1q32.1	protein_coding	0.18	1.08 (1.05-1.12)	2.64×10 ⁻⁶	2.36×10 ⁻⁴	rs1775148	S-PrediXcan	-	CMC.BRAIN.RNASEQ,ME TSIM.ADIPOSE.RNASEQ, TCGA.PRAD.TUMOR	30287866	Inconsistent
									+	Cross-Tissue	31101764	Consistent
JTI												
<i>TMEM150A</i>	2p11.2	protein_coding	0.02	1.76 (1.54-2.03)	1.20×10 ⁻¹⁵	4.69×10 ⁻¹³	rs3731827	Modified UTMOST	-	CMC.BRAIN.RNASEQ,ME TSIM.ADIPOSE.RNASEQ,	30287866	Inconsistent

										TCGA.PRAD. TUMOR		
			0.02	2.45 (1.88- 3.2)	4.54×10^{-11}	1.03×10^{-8}		JTI	+	Cross-Tissue	31101764	Consistent
<i>USP39</i>	2p11.2	protein_ coding	0.03	1.5 (1.37- 1.65)	2.97×10^{-17}	1.41×10^{-14}	rs3731827	Modified UTMOST	-	GTEEx.Muscle_ Skeletal, TCGA.PRAD. TUMOR, TCGA.PRAD_ SP.TUMOR	30287866	Inconsistent
			0.04	1.39 (1.27- 1.52)	5.54×10^{-13}	1.58×10^{-10}		JTI	+	Prostate, Cross-Tissue	31101764	Consistent
<i>VAMP5</i>	2p11.2	protein_ coding	0.05	1.25 (1.13- 1.38)	9.36×10^{-6}	6.87×10^{-4}	rs3731827	Modified UTMOST	-	GTEEx.Muscle_ Skeletal, METSIM.ADI POSE.RNASE Q	30287866	Inconsistent
			0.07	1.12 (1.05- 1.19)	4.86×10^{-4}	1.73×10^{-2}		JTI	+	Cross-Tissue	31101764	Consistent
<i>LDAH</i>	2p24.1	protein_ coding	0.05	0.8 (0.75- 0.85)	3.45×10^{-12}	9.09×10^{-10}	rs9306895	144.729	-	Prostate	31101764	Consistent
			0.13	0.87	4.71×10^{-15}	1.78×10^{-12}			+	NTR.BLOOD.	30287866	Inconsistent

				(0.83-0.9)						RNAARR, TCGA.PRAD_SP.TUMOR		
			0.13	0.9 (0.88-0.93)	1.25×10^{-12}	3.48×10^{-10}						
<i>MLPH</i>	2q37.3	protein_coding	0.1	0.87 (0.83-0.91)	2.74×10^{-8}	4.07×10^{-6}	rs7584330	S-PrediXcan	-	Prostate	31101764	Consistent
			0.13	0.23 (0.15-0.35)	3.59×10^{-11}	8.21×10^{-9}		Modified UTMOST	+	GTEX.Prostate, TCGA.PRAD.TUMOR, TCGA.PRAD_SP.TUMOR	30287866	Inconsistent
			0.14	0.81 (0.76-0.85)	7.11×10^{-13}	2.00×10^{-10}		JTI				
<i>CFAP44</i>	3q13.2	protein_coding	0.06	1.21 (1.15-1.27)	2.38×10^{-12}	6.34×10^{-10}	rs1283104	PrediXcan	+	Cross-Tissue	31101764	Consistent
			0.09	1.15 (1.11-1.19)	2.93×10^{-14}	1.04×10^{-11}		Modified UTMOST	-	GTEX.Stomach, Whole_Blood, NTR.BLOOD. RNAARR, YFS.BLOOD.	30287866	Inconsistent
			0.16	1.13 (1.09-1.17)	4.68×10^{-13}	1.37×10^{-10}		JTI				
<i>GPR160</i>	3q26.2	protein_coding	0.02	0.67 (0.58-0.78)	5.41×10^{-8}	7.54×10^{-6}	rs71277158	JTI	-	Cross-Tissue	31101764	Consistent
									+	GTEX.Stomach, Whole_Blood,	30287866	Inconsistent

										NTR.BLOOD. RNAARR, YFS.BLOOD.		
<i>PPA2</i>	4q24	protein_ coding	0.11	1.06 (1.03- 1.1)	7.45×10^{-4}	2.39×10^{-2}	rs3448028 4	Modified UTMOST	-	CMC.BRAIN. RNASEQ, TCGA.PRAD_ SP.TUMOR, GTEEx.Brain_C ortex, Esophagus_Ga stroesophageal _Junction, Heart_Atrial_ Appendage, Lung, Muscle_Skelet al, Testis, CMC.BRAIN. RNASEQ, TCGA.PRAD_ SP.TUMOR,	30287866	Inconsistent
			0.15	1.09 (1.05- 1.13)	9.60×10^{-6}	7.03×10^{-4}		JTI	+	prostate tissue	31308362	Consistent
<i>IRX4</i>	5p15.33	protein_ coding	0.36	0.87 (0.85-	4.10×10^{-25}	4.32×10^{-22}	rs4975758	S-PrediXc an	+	TCGA.PRAD. TUMOR,	30287866	Inconsistent

				0.89)						TCGA.PRAD_			
			0.38	0.75 (0.71- 0.79)	3.90×10^{-26}	5.56×10^{-23}		Modified UTMOST	-	Prostate	31101764	Consistent	
			0.37	0.89 (0.87- 0.91)	1.83×10^{-26}	2.96×10^{-23}		JTI					
<i>FOXP4</i>	6p21.1	protein_ coding	0.02	0.25 (0.18- 0.35)	3.29×10^{-16}	1.37×10^{-13}	rs1983891	Modified UTMOST	+	GTEX.Esophag us_Mucosa	30287866	Inconsistent	
									-	Prostate	31101764	Consistent	
									-	prostate tissue	31308362		
<i>SNRPC</i>	6p21.31	protein_ coding	0.03	0.84 (0.77- 0.92)	1.46×10^{-4}	6.85×10^{-3}	rs9469899	S-PrediXc an	-	Cross-Tissue	31101764	Consistent	
									+	GTEX.Adipose _Subcutaneous , Artery_Tibial, Brain_Caudate _basal_ganglia ,Esophagus_M ucosa,Esophag us_Muscularis, Muscle_Skelet al,Nerve_Tibia	30287866	Inconsistent	
													JTI

				0.93)						l,Skin_Sun_Ex posed_Lower_ leg, Thyroid, METSIM.ADI POSE.RNASE Q,YFS.BLOO D.RNAARR		
<i>RGS17</i>	6q25.2	protein_ coding	0.12	1.23 (1.18- 1.28)	1.21×10^{-21}	8.38×10^{-19}	rs3968480	S-PrediXc an	-	CMC.BRAIN. RNASEQ, GTEX.Adipose _Subcutaneous ,Cells_Transfo rmed_fibroblas ts,Esophagus_ Mucosa,Thyroi d,TCGA.PRA D.TUMOR, TCGA.PRAD_ SP.TUMOR	30287866	Inconsistent
			0.16	1.18 (1.14- 1.23)	3.64×10^{-21}	2.32×10^{-18}		Modified UTMOST	+	Prostate, Cross-Tissue	31101764	Consistent
			0.16	2.88 (2.3-3 .61)	9.76×10^{-20}	5.26×10^{-17}		JTI				
AC0937	7q21.3	lncRNA	0.16	0.92	2.46×10^{-7}	2.91×10^{-5}	rs6465657	PrediXcan	-	Cross-Tissue	31101764	Consistent

99.1				(0.9-0.95)								
			0.15	0.88 (0.85-0.91)	3.85×10^{-14}	1.31×10^{-11}		Modified UTMOST		GTEEx.Adipose _Subcutaneous , Artery_Tibial, Brain_Caudate _basal_ganglia ,Esophagus_M ucosa,Esophag us_Muscularis, Muscle_Skelet al,Nerve_Tibia l,Skin_Sun_Ex posed_Lower_ leg, Thyroid, METSIM.ADI POSE.RNASE Q,YFS.BLOO D.RNAARR	30287866	Inconsistent
			0.22	0.92 (0.9-0.94)	3.77×10^{-14}	1.31×10^{-11}	JTI	+				
HAUS6	9p22.1	protein_ coding	0.04	0.68 (0.61-0.76)	7.95×10^{-12}	1.95×10^{-9}	rs1048169	Modified UTMOST	-	Cross-Tissue	31101764	Consistent
			0.06	0.82	6.92×10^{-9}	1.14×10^{-6}		JTI	+	GTEEx.Adipose	30287866	Inconsistent

				(0.77-0.88)							_Subcutaneous, Adipose_Visceral_Omentum, Artery_Aorta, Artery_Tibial, Breast_Mammary_Tissue, Cells_Transformed_fibroblasts, Esophagus_Muscularis, Nerve_Tibial, Ovary, Thyroid, TCGA.PRAD. TUMOR		
<i>C9orf78</i>	9q34.11	protein_coding	0.04	0.87 (0.81-0.94)	1.74×10^{-4}	7.75×10^{-3}	rs1182	S-PrediXcan	-	Cross-Tissue	31101764	Consistent	
			0.1	0.86 (0.81-0.91)	4.78×10^{-8}	6.82×10^{-6}		Modified UTMOST	+	GTEX.Adipose_Subcutaneous, Lung, Nerve_Tibial, Skin_Not_Sun_Exposed_Suprapubic,	30287866	Inconsistent	
			0.14	0.89 (0.85-0.94)	2.82×10^{-5}	1.77×10^{-3}		JTI					

										Skin_Sun_Exp osed_Lower_le g, Stomach, Testis,Thyroid, Whole_Blood, METSIM.ADI POSE.RNASE Q,TCGA.PRA D.TUMOR		
<i>MFSD13</i> <i>A</i>	10q24.3 2	protein_ coding	0.38	1.08 (1.05- 1.1)	1.91×10^{-12}	5.14×10^{-10}	rs3850699	PrediXcan	+	Prostate, Cross-Tissue	31101764	Consistent
			0.39	1.09 (1.06- 1.11)	1.32×10^{-12}	3.64×10^{-10}		Modified UTMOST	-	GTEx.Adipose _Subcutaneous , Lung, Nerve_Tibial, Skin_Not_Sun _Exposed_Sup rapubic, Skin_Sun_Exp osed_Lower_le g, Stomach, Testis,Thyroid, Whole_Blood, METSIM.ADI POSE.RNASE	30287866	Inconsistent
			0.39	1.08 (1.05- 1.1)	1.79×10^{-12}	4.87×10^{-10}		JTI				

										Q,TCGA.PRA D.TUMOR		
<i>TLCD3A</i>	17p13.3	protein_ coding	0.05	0.77 (0.72- 0.82)	3.78×10^{-14}	1.31×10^{-11}	rs461251	PrediXcan	-	prostate tissue	31308362	Consistent
			0.11	0.86 (0.82- 0.9)	5.26×10^{-12}	1.36×10^{-9}		JTI	+	GTEEx.Adipose _Subcutaneous , Lung, Nerve_Tibial, Skin_Not_Sun _Exposed_Sup rapubic, Skin_Sun_Exp osed_Lower_le g, Stomach, Testis,Thyroid, Whole_Blood, METSIM.ADI POSE.RNASE Q,TCGA.PRA D.TUMOR	30287866	Inconsistent
<i>POLI</i>	18q21.2	protein_ coding	0.25	0.93 (0.9-0 .95)	6.61×10^{-7}	6.85×10^{-5}	rs8093601	S-PrediXc an	-	Prostate, Cross-Tissue	31101764	Consistent
			0.27	0.92 (0.9-0	5.55×10^{-8}	7.67×10^{-6}		Modified UTMOST	+	NTR.BLOOD. RNAARR,	30287866	Inconsistent

										Thyroid, Whole_Blood, METSIM.ADI POSE.RNASE Q,YFS.BLOO D.RNAARR, TCGA.PRAD_ SP.TUMOR		
<i>MYO9B</i>	19p13.1 1	protein_ coding	0.05	1.29 (1.19- 1.41)	4.08×10^{-9}	6.82×10^{-7}	rs1166656 9	S-PrediXc an	-	Prostate, Cross-Tissue	31101764	Inconsistent
			0.09	1.23 (1.14- 1.32)	2.84×10^{-8}	4.20×10^{-6}		Modified UTMOST				
			0.09	1.83 (1.46- 2.29)	1.30×10^{-7}	1.63×10^{-5}		JTI	+	NTR.BLOOD. RNAARR	30287866	Consistent
<i>PM20D1</i>	1q32.1	protein_ coding	0.18	1.08 (1.05- 1.12)	2.64×10^{-6}	2.36×10^{-4}	rs1775148	S-PrediXc an	-	CMC.BRAIN. RNASEQ,ME TSIM.ADIPO SE.RNASEQ, TCGA.PRAD. TUMOR	30287866	Inconsistent
			0.23	1.09 (1.06- 1.13)	5.97×10^{-10}	1.10×10^{-7}		Modified UTMOST				
			0.25	1.06 (1.04- 1.08)	2.19×10^{-8}	3.34×10^{-6}		JTI	+	Cross-Tissue	31101764	Consistent

<i>TMEM150A</i>	2p11.2	protein_coding	0.02	1.76 (1.54-2.03)	1.20×10^{-15}	4.69×10^{-13}	rs3731827	Modified UTMOST	-	CMC.BRAIN. RNASEQ,ME TSIM.ADIPO SE.RNASEQ, TCGA.PRAD. TUMOR	30287866	Inconsistent
			0.02	2.45 (1.88-3.2)	4.54×10^{-11}	1.03×10^{-8}		JTI	+	Cross-Tissue	31101764	Consistent
<i>USP39</i>	2p11.2	protein_coding	0.03	1.5 (1.37-1.65)	2.97×10^{-17}	1.41×10^{-14}	rs3731827	Modified UTMOST	-	GTEX.Muscle_ Skeletal, TCGA.PRAD. TUMOR, TCGA.PRAD_ SP.TUMOR	30287866	Inconsistent
			0.04	1.39 (1.27-1.52)	5.54×10^{-13}	1.58×10^{-10}		JTI				
<i>VAMP5</i>	2p11.2	protein_coding	0.05	1.25 (1.13-1.38)	9.36×10^{-6}	6.87×10^{-4}	rs3731827	Modified UTMOST	-	GTEX.Muscle_ Skeletal, METSIM.ADI POSE.RNASE Q	30287866	Inconsistent
			0.07	1.12 (1.05-1.19)	4.86×10^{-4}	1.73×10^{-2}		JTI				

<i>PPA2</i>	4q24	protein_coding	0.11	1.06 (1.03-1.1)	7.45×10^{-4}	2.39×10^{-2}	rs3448028 4	Modified UTMOST	-	CMC.BRAIN. RNASEQ, TCGA.PRAD_ SP.TUMOR, GTEx.Brain_C ortex, Esophagus_Ga stroesophageal _Junction, Heart_Atrial_ Appendage, Lung, Muscle_Skelet al, Testis, CMC.BRAIN. RNASEQ, TCGA.PRAD_ SP.TUMOR,	30287866	Inconsistent
			0.15	1.09 (1.05-1.13)	9.60×10^{-6}	7.03×10^{-4}		JTI				
<i>IRX4</i>	5p15.33	protein_coding	0.36	0.87 (0.85-0.89)	4.10×10^{-25}	4.32×10^{-22}	rs4975758	S-PrediXc an	+	TCGA.PRAD. TUMOR, TCGA.PRAD_ SP.TUMOR	30287866	Inconsistent
			0.38	0.75 (0.71-0.79)	3.90×10^{-26}	5.56×10^{-23}		Modified UTMOST				
			0.37	0.89	1.83×10^{-26}	2.96×10^{-23}		JTI				

				(0.87-0.91)						-	Prostate	31101764	Consistent			
<i>FOXP4</i>	6p21.1	protein_coding	0.02	0.25 (0.18-0.35)	3.29×10^{-16}	1.37×10^{-13}	rs1983891	Modified UTMOST	+	GTEX.Esophagus_Mucosa	30287866	Inconsistent				
									-	Prostate	31101764	Consistent				
									-	prostate tissue	31308362					
<i>RGS17</i>	6q25.2	protein_coding	0.12	1.23 (1.18-1.28)	1.21×10^{-21}	8.38×10^{-19}	rs3968480	S-PrediXcan	-	CMC.BRAIN.RNASEQ, GTEX.Adipose_Subcutaneous, Cells_Transformed_fibroblasts, Esophagus_Mucosa, Thyroid, TCGA.PRAD.TUMOR, TCGA.PRAD_SP.TUMOR	30287866	Inconsistent				
								0.16					1.18 (1.14-1.23)	3.64×10^{-21}	2.32×10^{-18}	Modified UTMOST
								0.16					2.88 (2.3-3.61)	9.76×10^{-20}	5.26×10^{-17}	JTI
								+					Prostate, Cross-Tissue	31101764	Consistent	
<i>GEMIN4</i>	17p13.3	protein_coding	0.06	0.82 (0.77-0.87)	4.50×10^{-10}	8.39×10^{-8}	rs461251	JTI	+	GTEX.Colon_Transverse, TCGA.PRAD.TUMOR	30287866	Inconsistent				
									-	Prostate tissue	31308362	Consistent				

<i>VPS53</i>	17p13.3	protein_coding	0.42	0.96 (0.94-0.98)	7.61×10^{-5}	4.10×10^{-3}	rs684232	S-PrediXcan	+	CMC.BRAIN.RNASEQ,GTEX.Brain_Caudate_basal_ganglia,Brain_Cortex,Stomach,TCGA.PRAD_SP.TUMOR	30287866	Inconsistent
			0.47	0.96 (0.94-0.98)	8.64×10^{-5}	4.50×10^{-3}		Modified UTMOST	-	prostate tissue	31308362	Consistent
			0.51	0.96 (0.93-0.98)	2.10×10^{-4}	8.97×10^{-3}		JTI				
<i>GEMIN4</i>	17p13.3	protein_coding	0.06	0.82 (0.77-0.87)	4.50×10^{-10}	8.39×10^{-8}	rs461251	JTI	+	GTEX.Colon_Transverse,TCGA.PRAD.TUMOR	30287866	Inconsistent
									-	Prostate tissue	31308362	Consistent
<i>VPS53</i>	17p13.3	protein_coding	0.42	0.96 (0.94-0.98)	7.61×10^{-5}	4.10×10^{-3}	rs684232	S-PrediXcan	+	CMC.BRAIN.RNASEQ,GTEX.Brain_Caudate_basal_ganglia,Brain_Cortex,Stomach,TCGA.PRAD_	30287866	Inconsistent

										SP.TUMOR		
			0.47	0.96 (0.94- 0.98)	8.64×10^{-5}	4.50×10^{-3}		Modified UTMOST	-	prostate tissue	31308362	Consistent
			0.51	0.96 (0.93- 0.98)	2.10×10^{-4}	8.97×10^{-3}		JTI				
<i>UQCCI</i>	20q11.2 2	protein_ coding	0.02	1.12 (1.07- 1.17)	1.35×10^{-6}	1.28×10^{-4}	rs1148045 3	JTI	-	TCGA.PRAD_ SP.TUMOR	30287866	Inconsistent
									+	Cross-Tissue	31101764	Consistent

^a R²: prediction performance (R²) derived using GTEx data. *P* value: derived from association analyses of 79,194 cases and 61,112 controls; associations with FDR-corrected *P* value ≤ 0.05 considered significant;

^b Risk SNPs identified in previous GWAS or fine-mapping studies. The risk SNP closest to the gene is presented.

Supplementary Table 6 Sixteen genes that have been previously reported as candidate susceptibility genes in TWAS with different directions compared with those in the current analyses

The present study									Three published TWAS studies	
Gene	Region	Classification	R ^{2a}	OR (95% CI)	P-value	P-value after FDR ^a	Closest risk SNPs ^b	Model	Training tissue	PMID
<i>HAX1</i>	1q21.3	protein_coding	0.04	0.88 (0.82-0.94)	3.71×10 ⁻⁴	1.43×10 ⁻²	rs34579442	Modified UTMOST	GTEx.Heart_Left_Ventri cle	30287866
			0.05	0.93 (0.89-0.97)	1.77×10 ⁻³	4.48×10 ⁻²		JTI		
<i>ZBTB7B</i>	1q21.3	protein_coding	0.02	1.42 (1.28-1.58)	1.47×10 ⁻¹⁰	3.05×10 ⁻⁸	rs4845695	Modified UTMOST	CMC.BRAIN.RNASEQ, NTR.BLOOD.RNAARR	30287866
			0.03	1.24 (1.15-1.33)	4.01×10 ⁻⁹	6.77×10 ⁻⁷		JTI		
<i>NUCKS1</i>	1q32.1	protein_coding	0.05	1.13 (1.07-1.18)	1.81×10 ⁻⁶	1.67×10 ⁻⁴	rs4245739	S-PrediXcan	GTEx.Esophagus_Muco sa, METSIM.ADIPOSE.RN ASEQ, GTEx.Thyroid, GTEx.Testis, YFS.BLOOD.RNAARR, GTEx.Brain_Caudate_ba sal_ganglia, GTEx.Brain_Cerebellum , GTEx.Stomach, GTEx.Heart_Atrial_App endage, GTEx.Heart_Left_Ventri cle,	30287866
			0.08	1.23 (1.15-1.32)	7.09×10 ⁻¹⁰	1.29×10 ⁻⁷		Modified UTMOST		
			0.09	1.17 (1.11-1.22)	1.79×10 ⁻¹⁰	3.56×10 ⁻⁸		JTI		

									GTEX.Skin_Sun_Exposed_Lower_leg, GTEX.Adipose_Subcutaneous, GTEX.Prostate, GTEX.Lung, GTEX.Nerve_Tibial, GTEX.Esophagus_Muscularis, GTEX.Skin_Not_Sun_Exposed_Suprapubic, GTEX.Artery_Aorta, GTEX.Brain_Putamen_basal_ganglia, GTEX.Artery_Tibial, GTEX.Pituitary, GTEX.Breast_Mammary_Tissue, TCGA.PRAD_SP.TUMOR	
<i>TMEM17</i>	2p15	protein_coding	0.04	1.11 (1.06-1.17)	1.05×10^{-5}	7.62×10^{-4}	rs7591218	Modified UTMOST	GTEX.Esophagus_Mucosa, METSIM.ADIPOSE.RNASEQ	30287866
			0.07	1.11 (1.05-1.17)	5.07×10^{-4}	1.79×10^{-2}		JTI		
<i>PDK1</i>	2q31.1	protein_coding	0.04	1.46 (1.3-1.64)	1.60×10^{-10}	3.23×10^{-8}	rs12151618	Modified UTMOST	GTEX.Heart_Atrial_Appendage	30287866
			0.04	1.26 (1.15-1.37)	3.80×10^{-7}	4.22×10^{-5}		JTI		

<i>CASP8</i>	2q33.1	protein_coding	0.06	1.06 (1.03-1.1)	7.21×10^{-5}	3.93×10^{-3}	rs34925593	JTI	Adipose_Subcutaneous, Adipose_Visceral_Omentum, Brain_Cerebellar_Hemisphere, Brain_Cerebellum, Brain_Frontal_Cortex_BA9, Breast_Mammary_Tissue, Cells_Transformed_fibroblasts, Colon_Transverse, Lung, Muscle_Skeletal, Pancreas, Stomach, Whole_Blood, METSIM. ADIPOSE.RNASEQ, NTR.BLOOD.RNAARR	30287866
<i>MBNL1</i>	3q25.1	protein_coding	0.03	1.32 (1.21-1.43)	6.13×10^{-11}	1.34×10^{-8}	rs18231433 4	S-PrediXcan	CMC.BRAIN.RNASEQ, GTEx.Cells_EBV-transformed_lymphocytes, TCGA.PRAD.TUMOR	30287866
			0.04	1.26 (1.1-1.45)	7.83×10^{-4}	2.48×10^{-2}		JTI		
<i>IGF2R</i>	6q25.3	protein_coding	0.03	1.22 (1.12-1.34)	1.28×10^{-5}	8.97×10^{-4}	rs651164	Modified UTMOST	TCGA.PRAD.SP.TUMOR	30287866
<i>TOR1A</i>	9q34.11	protein_coding	0.07	0.88 (0.83-0.93)	1.91×10^{-5}	1.27×10^{-3}	rs1182	Modified UTMOST	GTEx.Brain_Cerebellum, Colon_Transverse, Esophagus_Mucosa, Pancreas, Stomach, Thyroid, Whole_Blood, TCGA.PRAD.TUMOR	30287866

<i>SUFU</i>	10q24.3 2	protein_coding	0.02	1.89 (1.57-2.26)	6.29×10^{-12}	1.59×10^{-9}	rs3850699	Modified UTMOST	GTEx.Esophagus_Mucosa,Esophagus_Muscularis, Skin_Sun_Exposed_Lower_leg	30287866
			0.03	1.66 (1.42-1.94)	3.57×10^{-10}	6.71×10^{-8}		JTI		
<i>TUBA1C</i>	12q13.1 2	protein_coding	0.02	0.87 (0.8-0.94)	4.42×10^{-4}	1.61×10^{-2}	rs10875943	JTI	GTEx.Skin_Sun_Exposed_Lower_leg,TCGA.PRAD.TUMOR,TCGA.PRAD_SP.TUMOR,TCGA.PRAD_SP.TUMOR	30287866
<i>SUPT4H1</i>	17q22	protein_coding	0.05	1.19 (1.1-1.28)	8.12×10^{-6}	6.07×10^{-4}	rs2680708	Modified UTMOST	GTEx.Brain_Putamen_basal_ganglia	30287866
			0.06	1.1 (1.06-1.15)	3.68×10^{-6}	3.19×10^{-4}		JTI		
<i>ARFRP1</i>	20q13.3 3	protein_coding	0.02	1.73 (1.53-1.96)	2.75×10^{-18}	1.45×10^{-15}	rs6062509	Modified UTMOST	CMC.BRAIN.RNASEQ,TCGA.PRAD.TUMOR,TCGA.PRAD_SP.TUMOR	30287866
<i>RTEL1</i>	20q13.3 3	protein_coding	0.02	1.51 (1.36-1.67)	3.50×10^{-15}	1.35×10^{-12}	rs6062509	Modified UTMOST	GTEx.Testis, METSIM.ADIPOSE.RNASEQ	30287866
			0.09	1.15 (1.11-1.18)	3.40×10^{-22}	2.66×10^{-19}		JTI		
<i>ZGPAT</i>	20q13.3 3	protein_coding	0.04	1.5 (1.23-1.83)	8.76×10^{-5}	4.53×10^{-3}	rs6062509	JTI	TCGA.PRAD.TUMOR	30287866
<i>ARFGAP3</i>	22q13.2	protein_coding	0.08	1.08 (1.03-1.13)	1.27×10^{-3}	3.56×10^{-2}	rs5759167	S-PrediXcan	GTEx.Artery_Tibial	30287866
			0.09	1.08 (1.03-1.13)	9.64×10^{-4}	2.91×10^{-2}		Modified UTMOST		

		0.11	1.08 (1.03-1.12)	3.94×10^{-4}	1.49×10^{-2}	JTI	
--	--	------	------------------	-----------------------	-----------------------	-----	--

^a R^2 : prediction performance (R^2) derived using GTEx data. P value: derived from association analyses of 79,194 cases and 61,112 controls; associations with FDR-corrected P value ≤ 0.05 considered significant;

^b Risk SNPs identified in previous GWAS or fine-mapping studies. The risk SNP closest to the gene is presented.

Supplementary Table 7 One hundred and fifty-two genes showing differential expression in tumor vs normal prostate samples with directions of effect consistent with those in TWAS analyses

Gene name	Region	Classification	FC	<i>P</i> -value after FDR ^a
<i>SV2A</i>	1q21.2	protein_coding	-1.95	1.06×10^{-11}
<i>ZBTB7B</i>	1q21.3	protein_coding	1.51	2.72×10^{-12}
<i>C1orf43</i>	1q21.3	protein_coding	1.20	1.76×10^{-8}
<i>PRUNE1</i>	1q21.3	protein_coding	-1.14	8.37×10^{-7}
<i>ARNT</i>	1q21.3	protein_coding	-1.17	1.25×10^{-5}
<i>DENND4B</i>	1q21.3	protein_coding	1.22	4.74×10^{-5}
<i>KCNN3</i>	1q21.3	protein_coding	-1.52	2.63×10^{-4}
<i>CTSS</i>	1q21.3	protein_coding	-1.24	7.49×10^{-3}
<i>ADAM15</i>	1q22	protein_coding	1.36	4.51×10^{-8}
<i>HDGF</i>	1q23.1	protein_coding	1.25	2.40×10^{-10}
<i>NTRK1</i>	1q23.1	protein_coding	-2.63	3.79×10^{-4}
<i>SLC41A1</i>	1q32.1	protein_coding	-1.02	6.08×10^{-3}
<i>PPP1R15B</i>	1q32.1	protein_coding	-1.11	0.01
<i>YBX1</i>	1p34.2	protein_coding	1.05	0.04
<i>RPA2</i>	1p35.3	protein_coding	-1.10	1.31×10^{-3}
<i>PLA2G2A</i>	1p36.13	protein_coding	3.40	1.24×10^{-4}
<i>CORT</i>	1p36.22	protein_coding	1.63	3.13×10^{-3}
<i>TMEM150A</i>	2p11.2	protein_coding	1.22	6.97×10^{-6}
<i>CEP68</i>	2p14	protein_coding	-1.63	4.53×10^{-14}
<i>TMEM17</i>	2p15	protein_coding	1.16	9.96×10^{-3}

<i>LDAH</i>	2p24.1	protein_coding	-1.73	2.84×10^{-11}
<i>SLC20A1</i>	2q13	protein_coding	1.12	1.35×10^{-3}
<i>PDE11A</i>	2q31.2	protein_coding	-1.42	3.04×10^{-3}
<i>CASP8</i>	2q33.1	protein_coding	1.22	3.51×10^{-4}
<i>CASP10</i>	2q33.1	protein_coding	-1.27	2.10×10^{-3}
<i>EFHD1</i>	2q37.1	protein_coding	-2.45	7.14×10^{-10}
<i>SEPTIN2</i>	2q37.3	protein_coding	-1.26	2.77×10^{-11}
<i>HDLBP</i>	2q37.3	protein_coding	1.24	3.01×10^{-10}
<i>PDE12</i>	3p14.3	protein_coding	-1.09	4.77×10^{-3}
<i>AMT</i>	3p21.31	protein_coding	-1.87	3.42×10^{-12}
<i>RNF123</i>	3p21.31	protein_coding	1.19	4.19×10^{-10}
<i>UBA7</i>	3p21.31	protein_coding	-1.26	6.88×10^{-5}
<i>GMPPB</i>	3p21.31	protein_coding	1.19	9.62×10^{-3}
<i>SRGAP3</i>	3p25.3	protein_coding	-1.15	0.04
<i>THUMPD3</i>	3p25.3	protein_coding	1.05	0.04
<i>CFAP44</i>	3q13.2	protein_coding	1.47	4.88×10^{-5}
<i>RUVBL1</i>	3q21.3	protein_coding	1.63	4.98×10^{-18}
<i>ACAD9</i>	3q21.3	protein_coding	1.14	7.77×10^{-6}
<i>ACPP</i>	3q22.1	protein_coding	-1.84	1.07×10^{-3}
<i>SOX14</i>	3q22.3	protein_coding	3.47	5.56×10^{-3}
<i>DHX36</i>	3q25.2	protein_coding	-1.08	4.12×10^{-3}
<i>TRIM59</i>	3q25.33	protein_coding	1.41	2.00×10^{-5}
<i>LRR1Q4</i>	3q26.2	protein_coding	-1.27	1.70×10^{-3}
<i>ATP11B</i>	3q26.33	protein_coding	1.37	2.37×10^{-5}

<i>MAEA</i>	4p16.3	protein_coding	1.14	2.13×10^{-5}
<i>UNC5C</i>	4q22.3	protein_coding	-2.45	5.21×10^{-7}
<i>PPA2</i>	4q24	protein_coding	1.26	1.43×10^{-8}
<i>CYP2U1</i>	4q25	protein_coding	1.05	0.02
<i>MRPL36</i>	5p15.33	protein_coding	1.40	4.83×10^{-8}
<i>JADE2</i>	5q31.1	protein_coding	-1.46	2.09×10^{-10}
<i>GDF9</i>	5q31.1	protein_coding	1.38	3.27×10^{-4}
<i>NDST1</i>	5q33.1	protein_coding	1.16	0.02
<i>CNPY3</i>	6p21.1	protein_coding	1.27	2.49×10^{-3}
<i>UHRF1BP1</i>	6p21.31	protein_coding	1.28	1.15×10^{-4}
<i>TAF11</i>	6p21.31	protein_coding	1.07	0.03
<i>SLC39A7</i>	6p21.32	protein_coding	1.38	1.98×10^{-8}
<i>VAR52</i>	6p21.33	protein_coding	1.42	3.01×10^{-10}
<i>LY6G5C</i>	6p21.33	protein_coding	1.68	3.26×10^{-9}
<i>SAPCD1</i>	6p21.33	protein_coding	2.45	4.95×10^{-9}
<i>C4A</i>	6p21.33	protein_coding	2.51	3.03×10^{-8}
<i>STK19</i>	6p21.33	protein_coding	1.30	1.05×10^{-7}
<i>TCF19</i>	6p21.33	protein_coding	-1.18	2.14×10^{-6}
<i>HLA-E</i>	6p21.33	protein_coding	-1.28	3.27×10^{-6}
<i>DDAH2</i>	6p21.33	protein_coding	1.23	2.67×10^{-3}
<i>MICB</i>	6p21.33	protein_coding	-1.27	2.74×10^{-3}
<i>SFTA2</i>	6p21.33	protein_coding	-2.18	0.01
<i>NELFE</i>	6p21.33	protein_coding	1.17	0.01
<i>ATF6B</i>	6p21.33	protein_coding	1.07	0.03

<i>PRSS16</i>	6p22.1	protein_coding	-2.22	8.87×10^{-15}
<i>RPP21</i>	6p22.1	protein_coding	1.28	9.93×10^{-4}
<i>ZNRD1</i>	6p22.1	protein_coding	1.16	4.69×10^{-3}
<i>RIPK1</i>	6p25.2	protein_coding	-1.05	0.04
<i>C6orf163</i>	6q15	protein_coding	1.70	7.02×10^{-5}
<i>NCOA7</i>	6q22.32	protein_coding	-1.49	8.26×10^{-4}
<i>RGS17</i>	6q25.2	protein_coding	1.75	2.32×10^{-4}
<i>SLC22A2</i>	6q25.3	protein_coding	-2.79	2.09×10^{-7}
<i>SLC22A3</i>	6q25.3	protein_coding	-1.52	2.06×10^{-4}
<i>IGF2R</i>	6q25.3	protein_coding	1.23	5.14×10^{-3}
<i>HOXA2</i>	7p15.2	protein_coding	-1.79	0.03
<i>CDCA7L</i>	7p15.3	protein_coding	-1.27	1.39×10^{-5}
<i>TECPRI</i>	7q21.3	protein_coding	1.38	5.87×10^{-7}
<i>BHLHA15</i>	7q21.3	protein_coding	1.94	2.40×10^{-5}
<i>DOCK5</i>	8p21.2	protein_coding	-1.37	8.17×10^{-5}
<i>CHMP7</i>	8p21.3	protein_coding	-1.19	1.96×10^{-7}
<i>POU5F1B</i>	8q24.21	protein_coding	2.58	2.84×10^{-14}
<i>THEM6</i>	8q24.3	protein_coding	1.43	2.18×10^{-7}
<i>UBAP2</i>	9p13.3	protein_coding	1.24	2.62×10^{-7}
<i>UNC13B</i>	9p13.3	protein_coding	1.24	1.55×10^{-4}
<i>SAXO1</i>	9p22.1	protein_coding	-2.25	0.05
<i>TXN</i>	9q31.3	protein_coding	1.76	1.40×10^{-14}
<i>CFAP157</i>	9q34.11	protein_coding	2.56	3.16×10^{-10}
<i>PTRH1</i>	9q34.11	protein_coding	1.53	1.38×10^{-7}

<i>BRD3</i>	9q34.2	protein_coding	1.19	1.98×10^{-3}
<i>WDR37</i>	10p15.3	protein_coding	1.20	7.89×10^{-4}
<i>ZNF22</i>	10q11.21	protein_coding	1.17	7.84×10^{-4}
<i>HKDC1</i>	10q22.1	protein_coding	-1.14	6.46×10^{-3}
<i>PLAC9</i>	10q22.3	protein_coding	-2.17	1.57×10^{-9}
<i>WBP1L</i>	10q24.32	protein_coding	-1.24	1.23×10^{-8}
<i>ARL3</i>	10q24.32	protein_coding	-1.09	6.39×10^{-3}
<i>EEF1AKMT2</i>	10q26.13	protein_coding	1.16	5.04×10^{-4}
<i>CTBP2</i>	10q26.13	protein_coding	1.12	0.02
<i>NUP160</i>	11p11.2	protein_coding	-1.23	9.66×10^{-6}
<i>MOB2</i>	11p15.5	protein_coding	-1.04	0.04
<i>GSTP1</i>	11q13.2	protein_coding	-4.07	4.75×10^{-19}
<i>NUDT8</i>	11q13.2	protein_coding	3.55	1.26×10^{-9}
<i>RAD9A</i>	11q13.2	protein_coding	1.40	5.87×10^{-7}
<i>NDUFV1</i>	11q13.2	protein_coding	1.22	5.41×10^{-3}
<i>TROAP</i>	12q13.12	protein_coding	3.80	6.06×10^{-18}
<i>DCN</i>	12q21.33	protein_coding	-2.02	5.90×10^{-7}
<i>ATP2A2</i>	12q24.11	protein_coding	-1.22	1.36×10^{-5}
<i>RBM23</i>	14q11.2	protein_coding	-1.09	4.98×10^{-5}
<i>NOVA1</i>	14q12	protein_coding	-1.63	1.28×10^{-3}
<i>ERO1A</i>	14q22.1	protein_coding	-1.48	2.15×10^{-8}
<i>ZNF839</i>	14q32.31	protein_coding	1.17	5.59×10^{-5}
<i>MYO5C</i>	15q21.2	protein_coding	1.21	3.95×10^{-3}
<i>SPPL2A</i>	15q21.2	protein_coding	-1.12	0.01

<i>MPI</i>	15q24.1	protein_coding	1.33	4.63×10^{-10}
<i>FAM219B</i>	15q24.1	protein_coding	1.25	7.26×10^{-9}
<i>XPO6</i>	16p11.2	protein_coding	1.69	5.20×10^{-17}
<i>TELO2</i>	16p13.3	protein_coding	1.60	1.10×10^{-13}
<i>HMOX2</i>	16p13.3	protein_coding	1.27	2.72×10^{-7}
<i>NUBP2</i>	16p13.3	protein_coding	1.23	2.14×10^{-3}
<i>FLYWCH2</i>	16p13.3	protein_coding	1.18	0.03
<i>IRX5</i>	16q12.2	protein_coding	-1.31	1.07×10^{-3}
<i>ATPAF2</i>	17p11.2	protein_coding	1.24	3.98×10^{-7}
<i>SMYD4</i>	17p13.3	protein_coding	-1.38	6.71×10^{-9}
<i>MRM3</i>	17p13.3	protein_coding	1.24	2.95×10^{-5}
<i>FBXL20</i>	17q12	protein_coding	-1.09	7.93×10^{-3}
<i>TLL6</i>	17q21.32	protein_coding	2.43	1.04×10^{-11}
<i>ZNF652</i>	17q21.32	protein_coding	1.48	2.34×10^{-8}
<i>CDC27</i>	17q21.32	protein_coding	-1.15	2.18×10^{-5}
<i>LRRC46</i>	17q21.32	protein_coding	1.90	0.02
<i>MKS1</i>	17q22	protein_coding	1.14	1.04×10^{-4}
<i>TM6SF2</i>	19p13.11	protein_coding	-1.21	9.03×10^{-3}
<i>CLIP3</i>	19q13.12	protein_coding	-2.61	6.67×10^{-14}
<i>ZNF875</i>	19q13.12	protein_coding	1.38	9.86×10^{-10}
<i>COX6B1</i>	19q13.12	protein_coding	1.23	0.04
<i>SIPA1L3</i>	19q13.13	protein_coding	1.42	9.80×10^{-9}
<i>KCNK6</i>	19q13.2	protein_coding	-1.16	0.02
<i>ERF</i>	19q13.2	protein_coding	-1.16	0.04

<i>BCAM</i>	19q13.32	protein_coding	1.96	8.04×10^{-13}
<i>KLK4</i>	19q13.41	protein_coding	1.72	5.13×10^{-6}
<i>EFCAB8</i>	20q11.21	protein_coding	1.71	0.01
<i>WFDC10B</i>	20q13.12	protein_coding	-3.25	7.07×10^{-4}
<i>HELZ2</i>	20q13.33	protein_coding	1.67	5.63×10^{-9}
<i>RTEL1</i>	20q13.33	protein_coding	1.25	1.12×10^{-5}
<i>LAMA5</i>	20q13.33	protein_coding	-1.20	0.02
<i>ARFRP1</i>	20q13.33	protein_coding	1.19	0.02
<i>TMPRSS2</i>	21q22.3	protein_coding	1.34	4.84×10^{-3}
<i>ICOSLG</i>	21q22.3	protein_coding	1.21	6.20×10^{-3}
<i>ARFGAP3</i>	22q13.2	protein_coding	1.27	4.06×10^{-5}
<i>FAM118A</i>	22q13.31	protein_coding	1.32	0.03

P value: associations with FDR-corrected *P* value ≤ 0.05 considered significant

Supplementary Table 8 151 CpG sites showing biologically significant differential methylation levels between prostate tumor and tumor adjacent normal samples

Gene Symbol	Probe ID	r ^a	P ^a	P-value after FDR ^a	Method
<i>GSTP1</i>	cg06928838	-0.37	0.03	0.20	Spearman
	cg09038676	-0.46	5.70×10 ⁻³	0.05	Spearman
	cg11566244	-0.40	0.02	0.13	Pearson
	cg22224704	-0.44	9.93×10 ⁻³	0.07	Pearson
	cg26250609	-0.30	0.08	0.32	Spearman
<i>XPO6</i>	cg00468395	0.13	0.45	0.77	Spearman
<i>CLIP3</i>	cg22719241	0.08	0.66	0.88	Spearman
<i>TELO2</i>	cg26751513	-0.34	0.05	0.24	Spearman
<i>AMT;NICN1</i>	cg02251567	-0.83	1.10×10⁻⁹	1.65×10⁻⁷	Pearson
	cg05924489	-0.80	1.38×10⁻⁸	5.23×10⁻⁷	Pearson
	cg14184400	-0.80	1.14×10⁻⁸	5.23×10⁻⁷	Pearson
	cg15246085	-0.80	1.38×10⁻⁸	5.23×10⁻⁷	Pearson
	cg17877071	-0.79	3.05×10⁻⁸	8.34×10⁻⁷	Pearson
	cg20191453	-0.79	3.31×10⁻⁸	8.34×10⁻⁷	Pearson
	cg21926782	-0.78	4.98×10⁻⁸	1.07×10⁻⁶	Pearson
<i>LDAH (C2orf43)</i>	cg20248458	-0.52	1.65×10 ⁻³	0.02	Pearson
<i>HDLBP</i>	cg07030287	-0.31	0.08	0.32	Spearman
	cg13145289	-0.45	8.17×10 ⁻³	0.07	Pearson
<i>VAR52</i>	cg00933603	-0.70	3.78×10⁻⁶	6.34×10⁻⁵	Pearson
	cg02149965	-0.52	1.78×10 ⁻³	0.02	Pearson
	cg06879746	0.04	0.81	0.96	Spearman

	cg27057509	-0.07	0.68	0.88	Spearman
	cg02306936	0.11	0.55	0.80	Spearman
<i>AMIGO3;RNF123</i>	cg03719380	0.09	0.62	0.86	Spearman
	cg22993195	-0.09	0.62	0.86	Spearman
<i>EFHD1</i>	cg02806452	-0.04	0.81	0.96	Spearman
<i>ZNF875 (HKR1)</i>	cg12147799	0.04	0.82	0.96	Spearman
<i>PLAC9</i>	cg08435131	0.07	0.69	0.88	Spearman
<i>SMYD4</i>	cg16616918	-0.69	6.20×10⁻⁶	9.36×10⁻⁵	Pearson
<i>SIPA1L3</i>	cg21281463	-0.12	0.50	0.78	Spearman
<i>SLC39A7</i>	cg03600823	-0.29	0.09	0.35	Spearman
	cg05200373	-0.11	0.55	0.80	Spearman
	cg08133228	-0.13	0.47	0.77	Spearman
	cg08660395	-0.13	0.45	0.77	Spearman
	cg08846245	-0.22	0.22	0.58	Spearman
	cg10673265	-0.14	0.43	0.77	Spearman
	cg13747899	-0.02	0.89	0.97	Spearman
	cg14348706	-0.18	0.30	0.68	Spearman
	cg15105576	0.01	0.94	0.98	Spearman
	cg17435901	-0.21	0.23	0.58	Spearman
<i>ZNF652</i>	cg07164631	-0.28	0.11	0.37	Spearman
<i>C4A;C4B</i>	cg11433081	0.15	0.39	0.77	Spearman
<i>ADAM15;EFNA4</i>	cg13069100	0.72	1.75×10⁻⁶	3.31×10⁻⁵	Pearson
<i>STK19;DOM3Z</i>	cg01883966	0.07	0.68	0.88	Spearman
	cg05626376	-0.12	0.50	0.78	Spearman

	cg12456973	0.02	0.90	0.97	Spearman
	cg15063771	0.00	1.00	1.00	Spearman
	cg15965006	0.03	0.89	0.97	Spearman
	cg17339327	-0.02	0.92	0.97	Spearman
	cg19864808	-0.03	0.88	0.97	Spearman
	cg26029547	-0.06	0.74	0.90	Spearman
<i>HMOX2</i>	cg06605704	-0.15	0.39	0.77	Spearman
<i>HLA-E</i>	cg09326440	-0.16	0.38	0.76	Spearman
	cg12700271	-0.31	0.08	0.32	Spearman
	cg21176130	-0.12	0.48	0.77	Spearman
<i>KLK4</i>	cg08697116	-0.40	0.02	0.13	Spearman
	cg11976052	-0.26	0.13	0.42	Spearman
	cg26827876	-0.27	0.12	0.40	Spearman
	cg27128734	-0.38	0.03	0.17	Spearman
<i>RTEL1</i>	cg05358404	0.11	0.54	0.80	Spearman
	cg20597143	-0.06	0.76	0.91	Spearman
<i>TRIM59</i>	cg15618978	0.45	8.06×10^{-3}	0.06	Spearman
<i>MAEA</i>	cg03096285	0.12	0.48	0.77	Spearman
<i>CDC27</i>	cg10910775	-0.12	0.51	0.78	Spearman
<i>BHLHA15</i>	cg20061890	-0.26	0.14	0.45	Spearman
<i>MRM3 (RNMTL1)</i>	cg07479618	-0.08	0.66	0.88	Spearman
	cg17094593	-0.02	0.92	0.97	Spearman
	cg25521254	0.03	0.85	0.96	Spearman
<i>CFAP44 (WDR52)</i>	cg07054641	-0.17	0.33	0.71	Spearman

	cg11921736	-0.13	0.45	0.77	Spearman
	cg24199400	-0.15	0.40	0.77	Spearman
<i>UBA7</i>	cg13343687	-0.48	3.76×10^{-3}	0.04	Pearson
	cg19381811	-0.47	5.24×10^{-3}	0.05	Pearson
<i>C6orf163</i>	cg25658884	-0.33	0.06	0.27	Spearman
<i>DOCK5</i>	cg03458012	0.29	0.09	0.35	Spearman
	cg05039382	0.01	0.97	0.99	Spearman
<i>SLC22A3</i>	cg09226986	-0.18	0.30	0.68	Spearman
<i>CASP8</i>	cg20608990	-0.44	8.85×10^{-3}	0.07	Pearson
<i>NTRK1;INSRR</i>	cg01357370	-0.18	0.30	0.68	Spearman
	cg03888033	-0.02	0.91	0.97	Spearman
	cg11793699	-0.13	0.48	0.77	Spearman
	cg16438688	-0.19	0.29	0.68	Spearman
<i>WFDC10B</i>	cg11783356	0.24	0.16	0.47	Spearman
<i>IRX5</i>	cg01901262	-0.32	0.07	0.30	Spearman
	cg09492451	-0.10	0.56	0.80	Spearman
	cg10824810	-0.46	6.19×10^{-3}	0.05	Spearman
<i>DDAH2</i>	cg00941576	0.19	0.28	0.68	Spearman
	cg01066220	0.13	0.46	0.77	Spearman
	cg04074004	0.08	0.66	0.88	Spearman
	cg08021615	0.36	0.04	0.20	Spearman
	cg08509383	0.14	0.44	0.77	Spearman
	cg09632273	0.09	0.61	0.86	Spearman
	cg14016554	0.18	0.30	0.68	Spearman

	cg14293129	0.25	0.16	0.46	Spearman
	cg16359915	0.16	0.37	0.76	Spearman
	cg19008099	0.15	0.41	0.77	Spearman
	cg23348155	0.11	0.52	0.79	Spearman
	cg25095032	0.07	0.70	0.88	Spearman
	cg26111283	0.28	0.11	0.37	Spearman
	cg26978172	0.14	0.43	0.77	Spearman
<i>MYO5C</i>	cg24590708	-0.20	0.25	0.63	Spearman
<i>ZNRD1;NCRNA00171</i>	cg06155771	-0.24	0.17	0.47	Spearman
	cg07468289	-0.33	0.05	0.26	Spearman
<i>IGF2R</i>	cg03064642	-0.13	0.45	0.77	Spearman
	cg09555124	-0.02	0.93	0.97	Spearman
	cg23746600	-0.04	0.84	0.96	Spearman
<i>SLC41A1</i>	cg09790270	0.30	0.09	0.33	Spearman
<i>ARL3</i>	cg06361405	-0.17	0.35	0.73	Spearman
	cg24435571	-0.17	0.35	0.73	Spearman
<i>TM6SF2</i>	cg14021871	0.12	0.51	0.78	Spearman
<i>GMPPB</i>	cg00589488	-0.08	0.67	0.88	Spearman
<i>SFTA2</i>	cg15992932	0.01	0.97	0.99	Spearman
	cg25784359	-0.34	0.05	0.24	Spearman
<i>NELFE (RDBP);SKIV2L;MIR1236</i>	cg01734628	-0.09	0.61	0.86	Spearman
	cg08810053	0.06	0.72	0.89	Spearman
<i>EFCAB8</i>	cg01047613	0.25	0.16	0.47	Spearman
	cg01845111	-0.13	0.45	0.77	Spearman

	cg25292098	0.07	0.71	0.89	Spearman
<i>LAMA5</i>	cg12382846	-0.03	0.86	0.96	Spearman
	cg15782228	-0.35	0.04	0.22	Spearman
	cg18668449	0.00	1.00	1.00	Spearman
<i>ARFRP1</i>	cg08554554	0.28	0.11	0.37	Spearman
<i>NDST1</i>	cg04091768	0.22	0.21	0.58	Spearman
	cg06677890	0.07	0.70	0.88	Spearman
	cg07672051	-0.01	0.96	0.99	Spearman
	cg16674484	0.11	0.54	0.80	Spearman
<i>CTBP2</i>	cg08203849	-0.27	0.13	0.41	Spearman
	cg09872760	-0.17	0.34	0.73	Spearman
	cg13292607	0.02	0.89	0.97	Spearman
	cg18744792	0.04	0.81	0.96	Spearman
	cg22548109	0.21	0.23	0.58	Spearman
	cg23992194	-0.38	0.03	0.17	Spearman
<i>ATF6B;FKBPL</i>	cg09149894	-0.49	3.42×10^{-3}	0.03	Pearson
	cg22302772	-0.14	0.42	0.77	Spearman
	cg26467536	0.16	0.38	0.76	Spearman
<i>YBX1</i>	cg07603685	-0.06	0.73	0.89	Spearman
<i>SRGAP3</i>	cg12669543	-0.53	1.30×10^{-3}	0.02	Pearson
	cg21386647	-0.18	0.32	0.70	Spearman
	cg23958524	-0.36	0.04	0.21	Spearman
<i>MOB2 (HCCA2)</i>	cg00367424	0.20	0.26	0.64	Spearman
	cg01607530	-0.02	0.92	0.97	Spearman

	cg02248763	0.04	0.84	0.96	Spearman
	cg06524570	0.13	0.46	0.77	Spearman
	cg08269485	-0.13	0.45	0.77	Spearman
	cg13365972	0.22	0.21	0.57	Spearman
	cg16941568	0.28	0.10	0.37	Spearman
	cg19749898	0.08	0.65	0.88	Spearman
	cg23598212	0.06	0.72	0.89	Spearman
	cg26395193	0.03	0.85	0.96	Spearman
<i>SAXO1 (FAM154A)</i>	cg14553740	-0.25	0.15	0.45	Spearman

^a *P* value: derived from 34 prostatic tumor tissue samples and paired normal prostatic tissue samples.

Supplementary Table 9 Pathway enrichment analyses of associated protein-coding genes

Gene	Top canonical pathways	Related diseases and disorders	Molecular and Cellular Functions	Top networks
449 protein-coding genes with FDR-corrected significant associations	Antigen Presentation Pathway ($P = 1.08 \times 10^{-9}$); Th1 Pathway ($P = 6.36 \times 10^{-5}$); T Cell Exhaustion Signaling Pathway ($P = 8.72 \times 10^{-5}$); Allograft Rejection Signaling ($P = 1.54 \times 10^{-4}$); OX40 Signaling Pathway ($P = 1.96 \times 10^{-4}$).	Cancer; Organismal Injury and Abnormalities; Endocrine System Disorders; Gastrointestinal Disease; Connective Tissue Disorders	Cell Death and Survival; Cell Cycle; Gene Expression; Cellular Development; Cellular Growth and Proliferation	Gene Expression, Hereditary Disorder, Metabolic Disease; Cell Cycle, Cell Morphology, Free Radical Scavenging; Cellular Assembly and Organization, Hair and Skin Development and Function, Cell Death and Survival; Cell Cycle, DNA Replication, Recombination, and Repair, Cellular Assembly and Organization