

Figure S1. The Kaplan-Meier plots for the associations of different levels of air pollution with the risk of UC in subgroups according to genetic risk and lifestyle.

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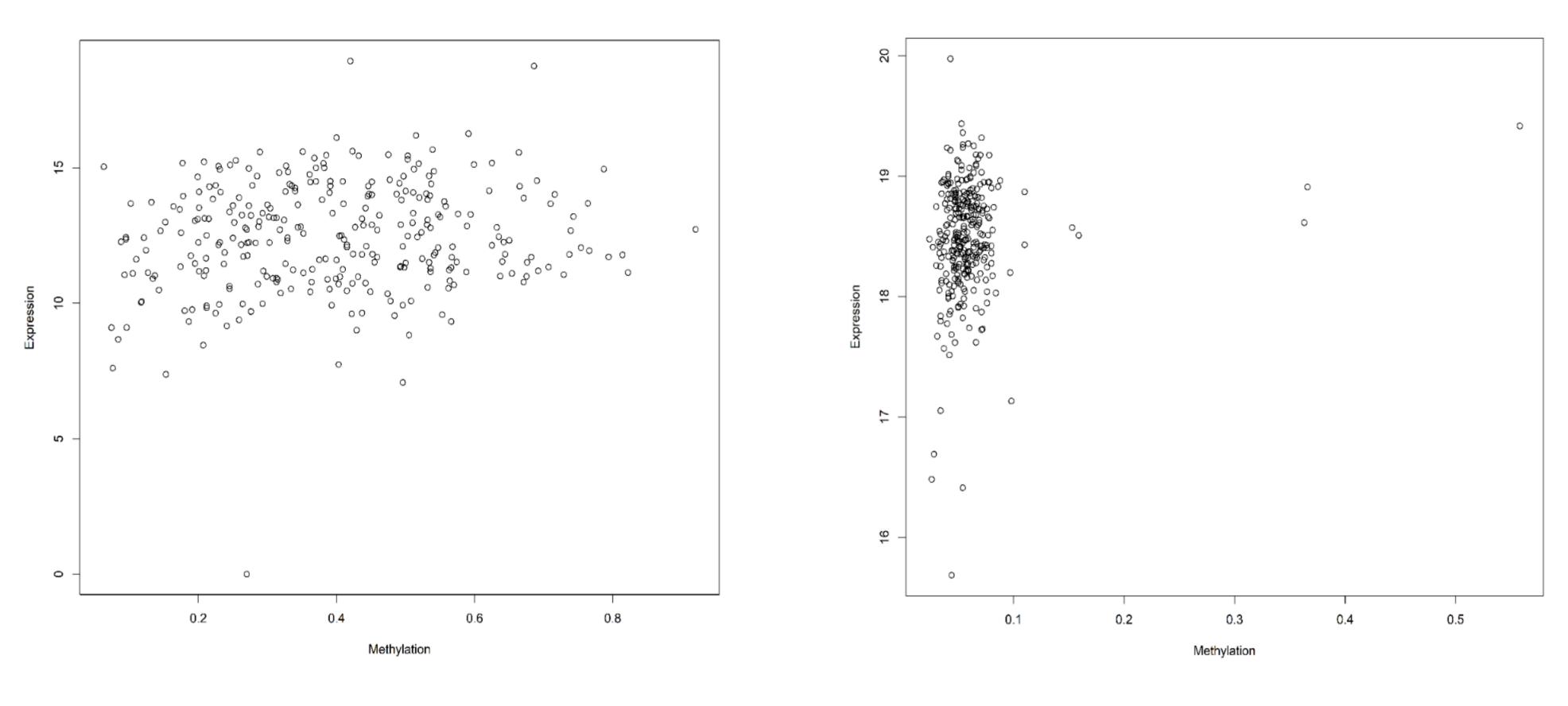


Figure S2. The scatter plot for the DNA methylation and gene expression profiles in colon tissues. A, DNA methylation at cg06547715 and the expression of CXCR2.

B, DNA methylation at cg16689962 and the expression of AGPAT1.

Tissue	Samples	NES	p-value	m-value	Single-tissue eQTL NES (with 95% CI)	Single-tissue eQTL p-value versus Multi-tissue Posterior Probability					
Liver	208	0.475	2.1e-14	1.00							
🕨 Brain - Substantia nigra	114	0.249	0.006	0.852							
Brain - Cerebellar Hemisphere	175	0.224	6.2e-6	1.00							
Brain - Spinal cord (cervical c-1)	126	0.185	0.09	0.803							
Brain - Hypothalamus	170	0.185	0.008	0.975							
Brain - Putamen (basal ganglia)	170	0.155	3.2e-3	0.980							
Brain - Cerebellum	209	0.135	2.9e-3	0.998							
Kidney - Cortex	73	0.120	0.3	0.663							
Nerve - Tibial	532	0.119	1.3e-8	1.00							
Brain - Frontal Cortex (BA9)	175	0.113	0.02	0.974							
Brain - Nucleus accumbens (basal ganglia)	202	0.104	0.01	0.964							
Brain - Caudate (basal ganglia)	194	0.101	0.03	0.966							
Pituitary	237	0.100	0.04	0.909							
Heart - Left Ventricle	386	0.0931	1.1e-3	0.991							
Adipose - Visceral (Omentum)	469	0.0902	0.008	0.968							
Thyroid	574	0.0895	1.4e-5	1.00	10 -						
Colon - Sigmoid	318	0.0816	0.02	0.972							
Artery - Coronary	213	0.0813	0.09	0.819							
Colon - Transverse	368	0.0810	0.005	0.981	Aaluc)						
Pancreas	305	0.0777	0.03	0.950	Ē						
Brain - Cortex	205	0.0774	0.04	0.939	— <u> </u>						
Brain - Amygdala	129	0.0759	0.4	0.700							
Brain - Hippocampus	165	0.0715	0.06	0.792	Ē						
Lung	515	0.0686	0.005	0.957	<u> </u>						
Heart - Atrial Appendage	372	0.0686	0.03	0.953	Single-tissue						
Cells - EBV-transformed lymphocytes	147	0.0624	0.5	0.683	ž						
Esophagus - Mucosa	497	0.0576	0.01	0.921	÷						
Esophagus - Gastroesophageal Junction	330	0.0531	0.2	0.626	<u>.</u>						
Adipose - Subcutaneous	581	0.0433	0.07	0.569	- ÷						
Stomach	324	0.0386	0.3	0.537							
Small Intestine - Terminal Ileum	174	0.0309	0.4	0.431							
Brain - Anterior cingulate cortex (BA24)	147	0.0307	0.7	0.490		•					
Breast - Mammary Tissue	396	0.0267	0.4	0.283							
Spleen	227	0.0254	0.5	0.442							
Adrenal Gland	233	0.0165	0.8	0.407							
Artery - Aorta	387	0.0149	0.6	0.0900							
Cells - Cultured fibroblasts	483	0.0131	0.6	0.0100							
Ovary	167	0.00602		0.406							
Skin - Sun Exposed (Lower leg)	605	-0.00428		0.406							
Minor Salivary Gland	144	-0.00428		0.00							
Vagina	144	-0.00518		0.412							
Skin - Not Sun Exposed (Suprapubic)						• ~					
Artery - Tibial	517	-0.0110		0.00	I						
-	584	-0.0131		0.00200							
Esophagus - Muscularis Prostate	465	-0.0162		0.00800							
Whole Blood	221	-0.0215		0.104							
	670	-0.0240		0.00							
Uterus	129	-0.0257	0.8	0.424 -							
Muscle - Skeletal	706		0.2	0.00							
Testis	322	-0.106	0.02	0.00100 -							
					0.0 0.2 0.4 0.0 NES	0 0.2 0.4 0.6 0.8 1.0 m-value (Posterior Probability from METASOFT)					

(B)

Tissue	Samples	NES	p-value	m-value	Single-tissue eQTL NES (with 95% CI)			ngle-tissue eQTL p-va ulti-tissue Posterior P		
Kidney - Cortex	73	0.184	0.4	0.742						
💛 Brain - Cerebellum	209	0.0812	0.4	0.558						
 Brain - Anterior cingulate cortex (BA24) 	147	0.0710	0.5	0.547						
😑 Brain - Cortex	205	0.0393	0.6	0.645						
Stomach	324	0.0392	0.5	0.470						Ť
🖲 Vagina	141	0.0340	0.5	0.388		12 -				

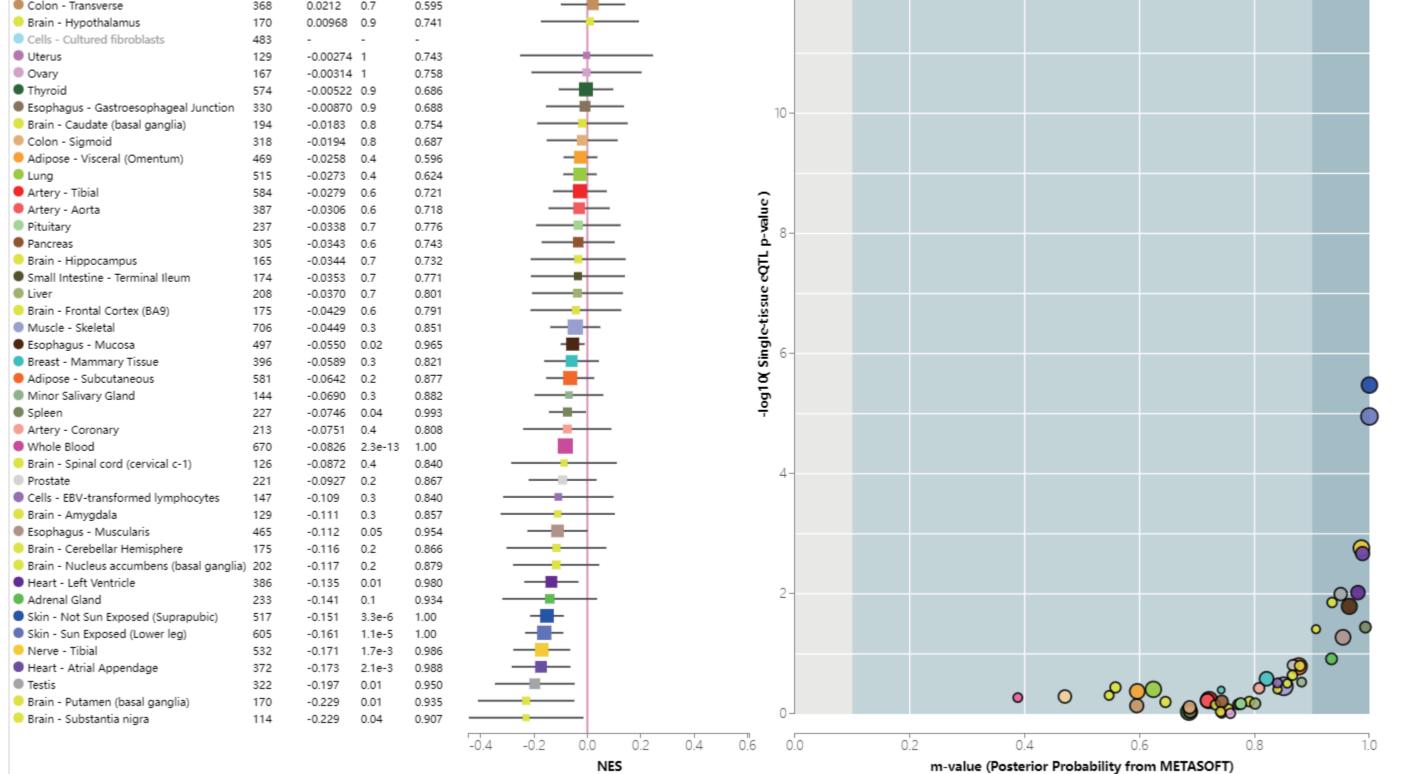
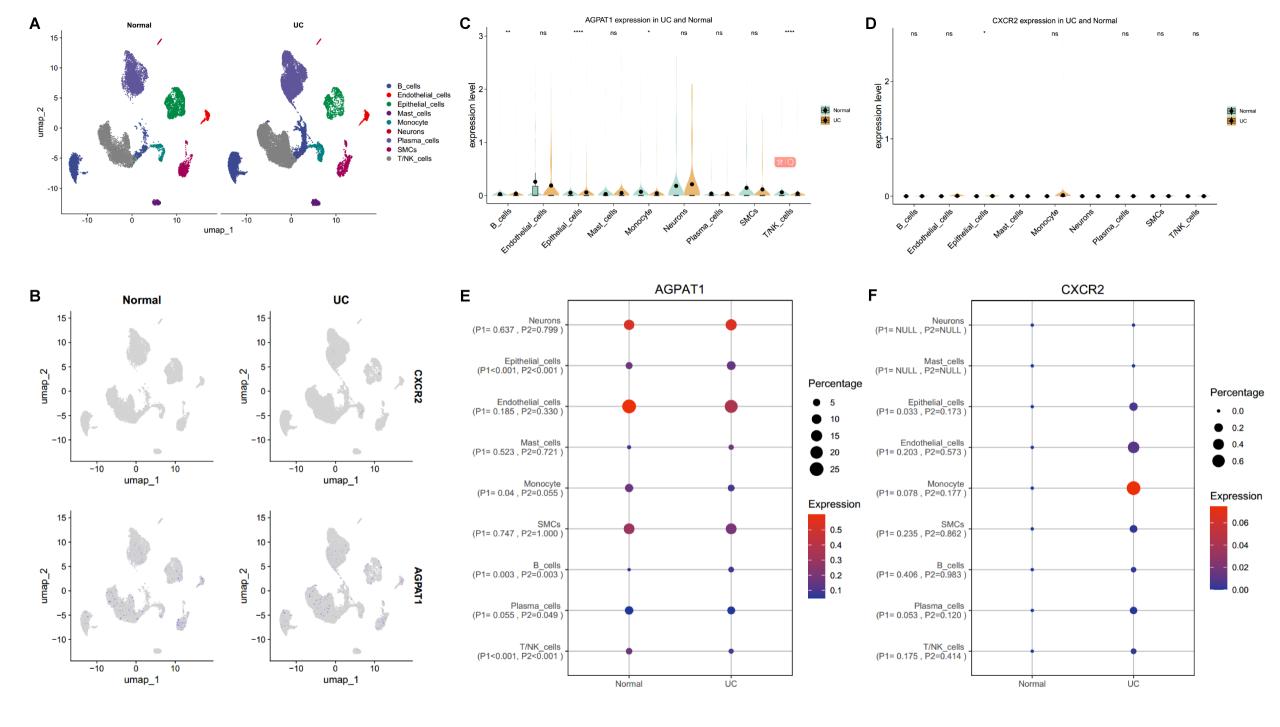


Figure S3. Single-tissue eQTL plot of rs3132934 (A, cg16689962, AGAPT1) and rs4133195 (B, cg06547715, CXCR2).



Supplementary Figure 4. The single cell RNA sequencing analysis of AGPAT1 and CXCR2 in intestinal cells. A, the annotation of cell types in intestinal. B, the global expression of AGPAT1 and CXCR2 in intestinal. C, the expression of AGAPT1 in specific intestinal cells. D, the expression of CXCR2 in specific intestinal cells. E, the percentage and expression differences of AGPAT1 in specific cells. F, the percentage and expression differences of CXCR2 in specific of CXCR2 in specific cells.