

**S1 Table. Estimates of cross-tissue and tissue-specific local  $h^2$ .** Expression levels derived by Orthogonal Tissue Decomposition and  $h^2$  estimated using the `--reml-no-constrain` method.

tissue	n	avg $h^2$	avg SE	% $P < 0.05$	num $P < 0.05$	num expressed
Cross-tissue	450	0.059	0.034	35.4	6003	16951
Adipose - Subcutaneous	298	0.017	0.035	10.3	1747	16951
Adrenal Gland	126	0.037	0.076	10.2	1731	16951
Artery - Aorta	198	0.022	0.053	10.2	1733	16951
Artery - Coronary	119	0.048	0.084	12.2	2066	16951
Artery - Tibial	285	0.022	0.038	13.3	2262	16951
Brain - Anterior cingulate cortex (BA24)	72	0.037	0.139	8.6	1451	16951
Brain - Caudate (basal ganglia)	100	0.042	0.096	9.8	1659	16951
Brain - Cerebellar Hemisphere	89	0.046	0.113	10.2	1730	16951
Brain - Cerebellum	103	0.041	0.096	10.8	1825	16951
Brain - Cortex	96	0.053	0.101	10.6	1803	16951
Brain - Frontal Cortex (BA9)	92	0.037	0.105	8.4	1418	16951
Brain - Hippocampus	81	0.033	0.115	7.6	1292	16951
Brain - Hypothalamus	81	0.020	0.119	7.8	1321	16951
Brain - Nucleus accumbens (basal ganglia)	93	0.040	0.104	8.9	1511	16951
Brain - Putamen (basal ganglia)	82	0.033	0.112	7.8	1323	16951
Breast - Mammary Tissue	183	0.020	0.053	7.7	1307	16951
Cells - EBV-transformed lymphocytes	115	0.045	0.081	10.8	1833	16951
Cells - Transformed fibroblasts	272	0.019	0.037	10.6	1805	16951
Colon - Sigmoid	124	0.024	0.081	9.0	1530	16951
Colon - Transverse	170	0.022	0.058	8.6	1462	16951
Esophagus - Gastroesophageal Junction	127	0.029	0.078	8.9	1512	16951
Esophagus - Mucosa	242	0.026	0.047	13.7	2319	16951
Esophagus - Muscularis	219	0.024	0.050	11.0	1871	16951
Heart - Atrial Appendage	159	0.031	0.064	9.4	1601	16951
Heart - Left Ventricle	190	0.025	0.056	11.2	1894	16951
Liver	98	0.036	0.098	8.9	1506	16951
Lung	279	0.018	0.038	10.7	1819	16951
Muscle - Skeletal	361	0.020	0.031	13.1	2223	16951
Nerve - Tibial	256	0.026	0.042	13.3	2250	16951
Ovary	85	0.043	0.105	7.8	1323	16951
Pancreas	150	0.036	0.068	11.6	1969	16951
Pituitary	87	0.044	0.113	9.4	1590	16951
Skin - Not Sun Exposed (Suprapubic)	196	0.041	0.056	19.2	3249	16951
Skin - Sun Exposed (Lower leg)	303	0.027	0.038	17.3	2939	16951
Small Intestine - Terminal Ileum	77	0.046	0.118	7.9	1340	16951
Spleen	89	0.062	0.106	10.7	1820	16951
Stomach	171	0.020	0.056	8.3	1406	16951
Testis	157	0.042	0.068	14.0	2378	16951
Thyroid	279	0.024	0.039	13.3	2250	16951
Whole Blood	339	0.025	0.033	17.7	3004	16951