

Table S1**Tissue expression data for the 740 AFSC-specific genes**

Category	Term	Count	%	PValue
UP_TISSUE	Liver	119	16.1	5.10E-06
UP_TISSUE	Spleen	60	8.1	9.56E-06
UP_TISSUE	Lung	137	18.6	4.28E-05
UP_TISSUE	Placenta	165	22.4	2.38E-04
UP_TISSUE	Leukocyte	16	2.2	4.68E-04
UP_TISSUE	Lung fibroblast	7	0.9	0.0054
UP_TISSUE	Donated clones	6	0.8	0.0065
UP_TISSUE	Human lung	7	0.9	0.0076
UP_TISSUE	Fibroblast	12	1.6	0.0108
UP_TISSUE	Platelet	33	4.5	0.0135
UP_TISSUE	Brain	333	45.1	0.0150
UP_TISSUE	Macrophage	5	0.7	0.0196
UP_TISSUE	Endometrial adenocarcinoma	5	0.7	0.0222
UP_TISSUE	Chondrocyte	4	0.5	0.0226
UP_TISSUE	Prostate	33	4.5	0.0245
UP_TISSUE	Embryo	22	3.0	0.0254
UP_TISSUE	Hepatoblastoma	4	0.5	0.0358
UP_TISSUE	Fetal kidney	13	1.8	0.0494

Tissue expression data for the 7905 genes overlapping in AFSCs and hESC

Category	Term	Count	%	PValue
UP_TISSUE	Epithelium	1629	20.8	6.31E-124
UP_TISSUE	Uterus	1077	13.7	7.17E-81
UP_TISSUE	Skin	1117	14.2	8.05E-79
UP_TISSUE	Placenta	1831	23.4	4.30E-71
UP_TISSUE	Muscle	545	7.0	3.93E-52
UP_TISSUE	Lung	1406	17.9	2.39E-50
UP_TISSUE	Eye	636	8.1	1.19E-43
UP_TISSUE	Brain	3667	46.8	1.78E-34
UP_TISSUE	Cervix carcinoma	265	3.4	2.69E-33
UP_TISSUE	Umbilical cord blood	235	3.0	2.50E-32
UP_TISSUE	Cervix	329	4.2	4.06E-30
UP_TISSUE	Fetal brain cortex	166	2.1	1.08E-27
UP_TISSUE	Cajal-Retzius cell	154	2.0	1.90E-27
UP_TISSUE	Ovary	489	6.2	2.47E-26
UP_TISSUE	Platelet	345	4.4	1.06E-24
UP_TISSUE	Bone marrow	430	5.5	5.07E-23
UP_TISSUE	Kidney	771	9.8	4.83E-19
UP_TISSUE	Lymph	385	4.9	8.45E-19

UP_TISSUE	Melanoma	202	2.6	2.50E-16
UP_TISSUE	Liver	1023	13.1	4.96E-16
UP_TISSUE	Pancreas	522	6.7	3.20E-15
UP_TISSUE	Teratocarcinoma	311	4.0	3.06E-14
UP_TISSUE	B-cell lymphoma	95	1.2	3.66E-14
UP_TISSUE	Colon	602	7.7	3.30E-13
UP_TISSUE	Duodenum	106	1.4	2.02E-11
UP_TISSUE	Colon carcinoma	119	1.5	4.07E-11
UP_TISSUE	Coronary artery	52	0.7	8.02E-11
UP_TISSUE	Urinary bladder	126	1.6	8.06E-10
UP_TISSUE	Ovarian carcinoma	100	1.3	1.23E-09
UP_TISSUE	Embryo	195	2.5	7.84E-09
UP_TISSUE	Hepatoma	139	1.8	1.02E-08
UP_TISSUE	Fibroblast	86	1.1	1.06E-08
UP_TISSUE	T-cell	183	2.3	1.18E-08
UP_TISSUE	Aorta endothelial cell	60	0.8	1.63E-08
UP_TISSUE	Renal cell carcinoma	46	0.6	4.49E-07
UP_TISSUE	Adipose tissue	105	1.3	4.61E-07
UP_TISSUE	Embryonic kidney	53	0.7	7.48E-07
UP_TISSUE	Mammary carcinoma	65	0.8	8.39E-07
UP_TISSUE	Aorta	79	1.0	3.02E-06
UP_TISSUE	Lung carcinoma	57	0.7	4.02E-06
UP_TISSUE	Fetal brain	384	4.9	4.99E-06
UP_TISSUE	Mammary gland	208	2.7	1.46E-05
UP_TISSUE	Adrenal gland	106	1.4	1.71E-05
UP_TISSUE	Hypothalamus	75	1.0	3.38E-05
UP_TISSUE	Pituitary	84	1.1	7.21E-05
UP_TISSUE	Colon adenocarcinoma	50	0.6	2.47E-04
UP_TISSUE	Uterine endothelium	24	0.3	2.74E-04
UP_TISSUE	Leukemia	42	0.5	4.69E-04
UP_TISSUE	B-cell	139	1.8	6.31E-04
UP_TISSUE	Bladder	46	0.6	8.07E-04
UP_TISSUE	Pituitary tumor	19	0.2	0.0011
UP_TISSUE	Endometrial tumor	29	0.4	0.0018
UP_TISSUE	Human small intestine	44	0.6	0.0025
UP_TISSUE	Hair follicle dermal papilla	20	0.3	0.0026
UP_TISSUE	Hematopoietic stem cell	22	0.3	0.0033
UP_TISSUE	Fetal kidney	95	1.2	0.0033
UP_TISSUE	Promyelocytic leukemia	23	0.3	0.0036
UP_TISSUE	Bone	38	0.5	0.0036
UP_TISSUE	Neuroblastoma	89	1.1	0.0039
UP_TISSUE	Human endometrium carcinoma cell line	14	0.2	0.0042
UP_TISSUE	Osteosarcoma	27	0.3	0.0045
UP_TISSUE	Hepatocyte	27	0.3	0.0045
UP_TISSUE	Mammary cancer	52	0.7	0.0046

UP_TISSUE	Endometrium carcinoma cell line	17	0.2	0.0069
UP_TISSUE	Prostate	267	3.4	0.0105
UP_TISSUE	Adipocyte	18	0.2	0.0135
UP_TISSUE	Amygdala	281	3.6	0.0157
UP_TISSUE	Lung fibroblast	26	0.3	0.0162
UP_TISSUE	Human uterus endothel primary cell culture	9	0.1	0.0170
UP_TISSUE	T cells	9	0.1	0.0170
UP_TISSUE	Retinoblastoma	40	0.5	0.0184
UP_TISSUE	Whole embryo	58	0.7	0.0184
UP_TISSUE	Glioblastoma	15	0.2	0.0195
UP_TISSUE	Erythrocyte	17	0.2	0.0216
UP_TISSUE	Dendritic cell	43	0.5	0.0223
UP_TISSUE	Lung adenocarcinoma	18	0.2	0.0224
UP_TISSUE	Glial tumor	20	0.3	0.0233
UP_TISSUE	Colon mucosa	36	0.5	0.0267
UP_TISSUE	Chondrosarcoma	26	0.3	0.0330
UP_TISSUE	Human colon endothel primary cell culture	8	0.1	0.0331
UP_TISSUE	Choriocarcinoma	18	0.2	0.0350
UP_TISSUE	Pheochromocytoma	20	0.3	0.0352
UP_TISSUE	Salivary gland	56	0.7	0.0366
UP_TISSUE	Endothelial cell	33	0.4	0.0379
UP_TISSUE	Liver cancer	10	0.1	0.0441
UP_TISSUE	Colon endothelium	24	0.3	0.0473
UP_TISSUE	Gastric adenocarcinoma	11	0.1	0.0474
UP_TISSUE	Myeloid leukemia cell	11	0.1	0.0474
UP_TISSUE	Endometrium	47	0.6	0.0492

Tissue expression data for the 1748 hESC-specific genes

Category	Term	Count	%	PValue
UP_TISSUE	Brain	779	44.7	1.03E-04
UP_TISSUE	Myometrium	6	0.3	5.63E-04
UP_TISSUE	Small intestine	49	2.8	5.96E-04
UP_TISSUE	Temporal cortex	4	0.2	0.0121
UP_TISSUE	Heart muscle	6	0.3	0.0298
UP_TISSUE	Insulinoma	7	0.4	0.0366
UP_TISSUE	Teratocarcinoma	62	3.6	0.0366
UP_TISSUE	Amygdala	69	4.0	0.0376