

**Cross-Sample Validation Summary Statistics
(Donor-Level Pseudobulk Spearman Correlation)**

Atlas	Signature	N Targets	Median ρ	Mean ρ	Std ρ	Min ρ	Max ρ	% Significant	% Positive
Cima	CYTOSIG	43	0.114	0.097	0.266	-0.479	0.673	72.1%	58.1%
Cima	LINCYTOSIG	156	0.131	0.156	0.280	-0.420	0.776	71.8%	69.2%
Cima	SECACT	1161	0.191	0.193	0.264	-0.644	0.920	76.3%	76.1%
Inflammation Main	CYTOSIG	33	0.321	0.207	0.369	-0.555	0.788	90.9%	69.7%
Inflammation Main	LINCYTOSIG	123	0.188	0.195	0.305	-0.565	0.758	83.7%	76.4%
Inflammation Main	SECACT	805	0.188	0.193	0.290	-0.682	0.859	85.1%	72.8%
Inflammation Val	CYTOSIG	33	0.253	0.210	0.373	-0.563	0.797	75.8%	69.7%
Inflammation Val	LINCYTOSIG	123	0.201	0.179	0.318	-0.724	0.776	69.1%	71.5%
Inflammation Val	SECACT	805	0.180	0.178	0.305	-0.720	0.873	66.7%	70.3%
Inflammation Ext	CYTOSIG	42	0.135	0.086	0.444	-0.653	0.800	76.2%	59.5%
Inflammation Ext	LINCYTOSIG	155	0.100	0.106	0.409	-0.867	0.835	64.5%	56.8%
Inflammation Ext	SECACT	1118	0.097	0.134	0.338	-0.787	0.936	49.4%	64.1%
Scatlas Normal	CYTOSIG	1013	0.145	0.127	0.394	-1.000	0.975	29.9%	64.3%
Scatlas Normal	LINCYTOSIG	3781	0.115	0.104	0.401	-1.000	1.000	30.1%	61.7%
Scatlas Normal	SECACT	27154	0.307	0.275	0.390	-1.000	1.000	40.9%	75.6%
Scatlas Cancer	CYTOSIG	295	0.212	0.219	0.324	-0.800	1.000	62.0%	74.9%
Scatlas Cancer	LINCYTOSIG	1079	0.137	0.159	0.364	-0.900	1.000	52.1%	63.9%
Scatlas Cancer	SECACT	7809	0.363	0.336	0.328	-1.000	1.000	71.2%	85.6%
Gtex	CYTOSIG	43	0.211	0.248	0.247	-0.246	0.614	100.0%	81.4%
Gtex	LINCYTOSIG	156	0.159	0.147	0.309	-0.635	0.744	98.7%	66.0%
Gtex	SECACT	1132	0.395	0.379	0.281	-0.493	0.869	98.1%	89.8%
Tcga	CYTOSIG	41	0.238	0.249	0.188	-0.226	0.611	92.7%	92.7%
Tcga	LINCYTOSIG	152	0.205	0.201	0.292	-0.468	0.736	98.0%	74.3%
Tcga	SECACT	1085	0.415	0.399	0.198	-0.362	0.823	98.8%	97.1%