

Table S1

Area under curve (AUC) values for the ROC curves representing sensitivity and specificity of footprint detection for several transcription factors. AUC values at increasing false positive rates (FPR) are computed independently for each motif before and after correction. For all factors except SP1, bias correction improved our ability to accurately predict footprints using protein interaction quantification (PIQ), especially at low to moderate FPR. SP1 motifs often appear in promoters and coincide with binding sites for other factors, which may explain its high AUC and the increase in false positives caused by other detectable footprints after correction.

Transcription factor	Motif	AUC (FPR < 0.05)		AUC (FPR < 0.1)		AUC (FPR < 0.2)		AUC	
		Original	Bias corrected	Original	Bias corrected	Original	Bias corrected	Original	Bias corrected
CTCF	known1	0.0633	0.102	0.1423	0.1961	0.2657	0.3449	0.7416	0.7975
CTCF	known2	0.0257	0.048	0.068	0.1015	0.1558	0.2191	0.6897	0.7521
CTCF	disc1	0.0491	0.0695	0.1006	0.1347	0.2102	0.272	0.6947	0.7564
CTCF	disc2	0.131	0.2088	0.2395	0.3194	0.3673	0.4521	0.7803	0.8317
CTCF	disc3	0.0741	0.1012	0.1216	0.1682	0.2725	0.3273	0.7203	0.7567
CTCF	disc4	0.0924	0.1215	0.1573	0.1945	0.2617	0.3008	0.681	0.7296
CTCF	disc5	0.0555	0.0857	0.132	0.1808	0.2597	0.3151	0.7258	0.7655
CTCF	disc6	0.1066	0.1088	0.1465	0.1612	0.2332	0.2522	0.6474	0.6646
CTCF	disc7	0.0751	0.0884	0.1301	0.1624	0.2307	0.2803	0.6837	0.7284
CTCF	disc8	0.0773	0.1035	0.1556	0.2005	0.2915	0.3453	0.7095	0.7526
CTCF	disc9	0.0602	0.0821	0.1272	0.1625	0.2348	0.2862	0.703	0.7525
CTCF	disc10	0.0291	0.0435	0.0701	0.1033	0.1809	0.2161	0.6416	0.6712
RAD21	disc9	0.0228	0.0252	0.0751	0.0802	0.1552	0.178	0.6716	0.675
RAD21	disc3	0.0077	0.0162	0.0467	0.0592	0.1463	0.157	0.6505	0.66
RAD21	disc2	0.0354	0.0419	0.1028	0.1155	0.2079	0.2224	0.6689	0.6865
RAD21	disc4	0.0668	0.0814	0.1251	0.144	0.2274	0.2489	0.6895	0.7002
RAD21	disc5	0.0859	0.1013	0.1618	0.1843	0.276	0.2979	0.7054	0.7213
RAD21	disc6	0.0499	0.0614	0.1058	0.1302	0.2226	0.2534	0.694	0.7136
RAD21	disc8	0.0824	0.1016	0.1581	0.1831	0.2812	0.3144	0.7195	0.7322
RAD21	disc7	0.0631	0.0774	0.134	0.1656	0.2575	0.2933	0.7032	0.7294
RAD21	disc10	0.0903	0.1103	0.179	0.1999	0.319	0.3403	0.7474	0.7628
RAD21	disc1	0.0636	0.0831	0.1475	0.1731	0.2793	0.3083	0.738	0.7554
EP300	disc4	0.1816	0.147	0.3356	0.3438	0.5037	0.526	0.8328	0.855
EP300	disc9	0.274	0.2519	0.4604	0.373	0.6133	0.5296	0.8893	0.863
EP300	disc7	0.2488	0.2925	0.3608	0.4035	0.5152	0.5388	0.8545	0.8466
EP300	disc10	0.2939	0.2518	0.4338	0.3935	0.5858	0.5393	0.8618	0.827
EP300	disc3	0.2786	0.2831	0.3792	0.3906	0.4988	0.5112	0.815	0.8069

EP300	disc8	0.2167	0.1931	0.3683	0.3836	0.5627	0.5504	0.8913	0.853
EP300	disc1	0.4215	0.3993	0.4968	0.4996	0.5851	0.6035	0.8643	0.862
EP300	disc6	0.1781	0.2664	0.2545	0.3294	0.3704	0.4362	0.7563	0.7381
EP300	disc2	0.269	0.2763	0.3584	0.373	0.4684	0.4535	0.8066	0.7621
EP300	known1	0.2914	0.3068	0.419	0.4349	0.5484	0.5777	0.8572	0.8567
EP300	disc5	0.3336	0.3881	0.4689	0.4968	0.6019	0.6104	0.8665	0.8523
MAFK	disc1	0.1067	0.1357	0.1443	0.1993	0.2305	0.3212	0.6098	0.6467
MAFK	known8	0.153	0.1175	0.1919	0.2126	0.2407	0.296	0.6115	0.6059
MAFK	known5	0.0571	0.0737	0.0882	0.1225	0.1485	0.1967	0.5657	0.5571
MAFK	known7	0.0987	0.1745	0.1437	0.2408	0.2131	0.3198	0.6221	0.6452
MAFK	known9	0	0.0208	0	0.1236	0.0694	0.1982	0.4446	0.5658
MAFK	known6	0.0915	0.1452	0.1319	0.1944	0.241	0.2865	0.5747	0.6075
REST	known4	0.1141	0.1394	0.1625	0.2091	0.2297	0.3171	0.6062	0.6678
REST	disc7	0.5769	0.619	0.6691	0.7362	0.7606	0.8119	0.9151	0.9219
REST	disc9	0.4511	0.4936	0.5646	0.6068	0.6669	0.7091	0.8749	0.8971
REST	known1	0.2122	0.2645	0.2989	0.3432	0.4174	0.4556	0.7529	0.7741
REST	disc3	0.3642	0.4028	0.4404	0.4832	0.5089	0.5592	0.7713	0.7936
REST	disc2	0.2921	0.3335	0.3453	0.3841	0.4072	0.4482	0.6995	0.7399
REST	known2	0.6703	0.7316	0.7335	0.7903	0.8163	0.8424	0.9215	0.9258
REST	known3	0.2434	0.2991	0.3249	0.3716	0.4101	0.4568	0.7518	0.7767
REST	disc1	0.1498	0.1534	0.216	0.2198	0.3104	0.3292	0.7197	0.7371
REST	disc10	0.2927	0.3397	0.3818	0.4544	0.5041	0.5817	0.7957	0.8256
REST	disc6	0.4966	0.5313	0.6286	0.6606	0.7237	0.752	0.8716	0.8743
REST	disc8	0.4406	0.494	0.5259	0.5895	0.6138	0.6736	0.8283	0.8486
REST	disc5	0.345	0.3431	0.4323	0.446	0.5209	0.5577	0.7755	0.7953
REST	disc4	0.4915	0.5247	0.5721	0.6037	0.6441	0.6897	0.8551	0.8825
SP1	known5	0.8253	0.8119	0.8571	0.8488	0.899	0.8976	0.964	0.9639
SP1	disc3	0.7061	0.6787	0.8064	0.7874	0.8774	0.863	0.9634	0.9556
SP1	disc1	0.3968	0.3639	0.6364	0.6134	0.7924	0.7764	0.9507	0.9453
SP1	disc2	0.6354	0.6085	0.7323	0.701	0.8119	0.7846	0.9439	0.9296
SP1	known4	0.5001	0.4651	0.6957	0.664	0.8208	0.7985	0.9518	0.9448
SP1	known8	0.6569	0.6091	0.7516	0.7186	0.8411	0.8178	0.953	0.9462
SP1	known2	0.6887	0.6551	0.7982	0.7769	0.8743	0.8578	0.9644	0.9589
SP1	known7	0.5722	0.5555	0.7253	0.7057	0.8296	0.8156	0.9533	0.9498
SP1	known6	0.5018	0.4922	0.7217	0.6946	0.8433	0.8291	0.9535	0.951
SP1	known1	0.7937	0.7802	0.8414	0.8304	0.8895	0.876	0.9636	0.9568