

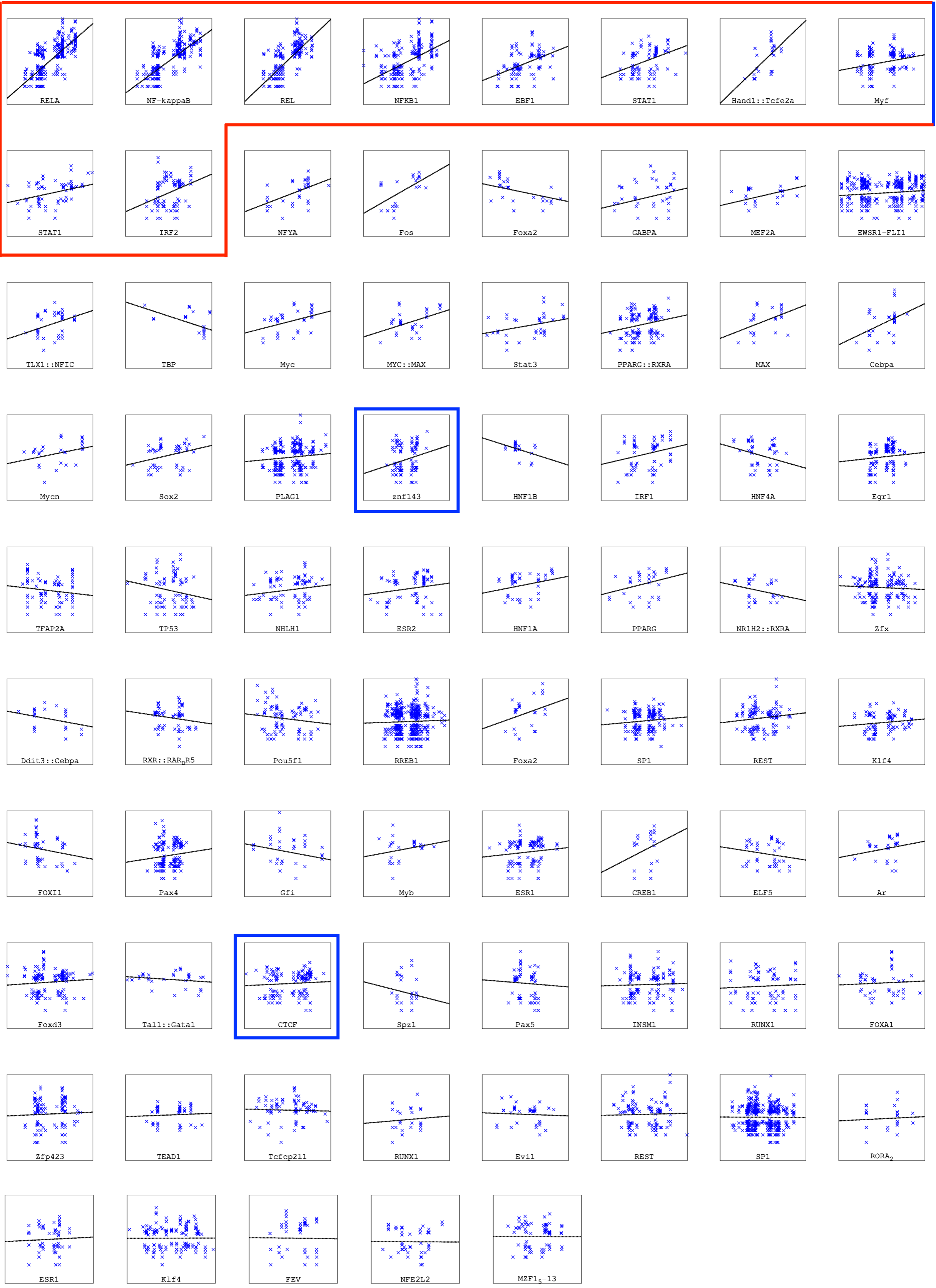
Supplemental Figure Legends

Figure S1 - Correlations between motifs and NFκB binding: Each motif in JASPAR is correlated with NFκB binding; results are ranked by p-value. Statistically significant associated factors (after Bonferroni correction of $n = 78$; $p < 6.41e-4$) are highlighted in red, controls highlighted in blue. As in Supplemental Table 1, the raw results are reported from the JASPAR database: thus, the first four results are variants of the NFκB motif, while two different versions of the STAT1 motif also appear in the significant results.

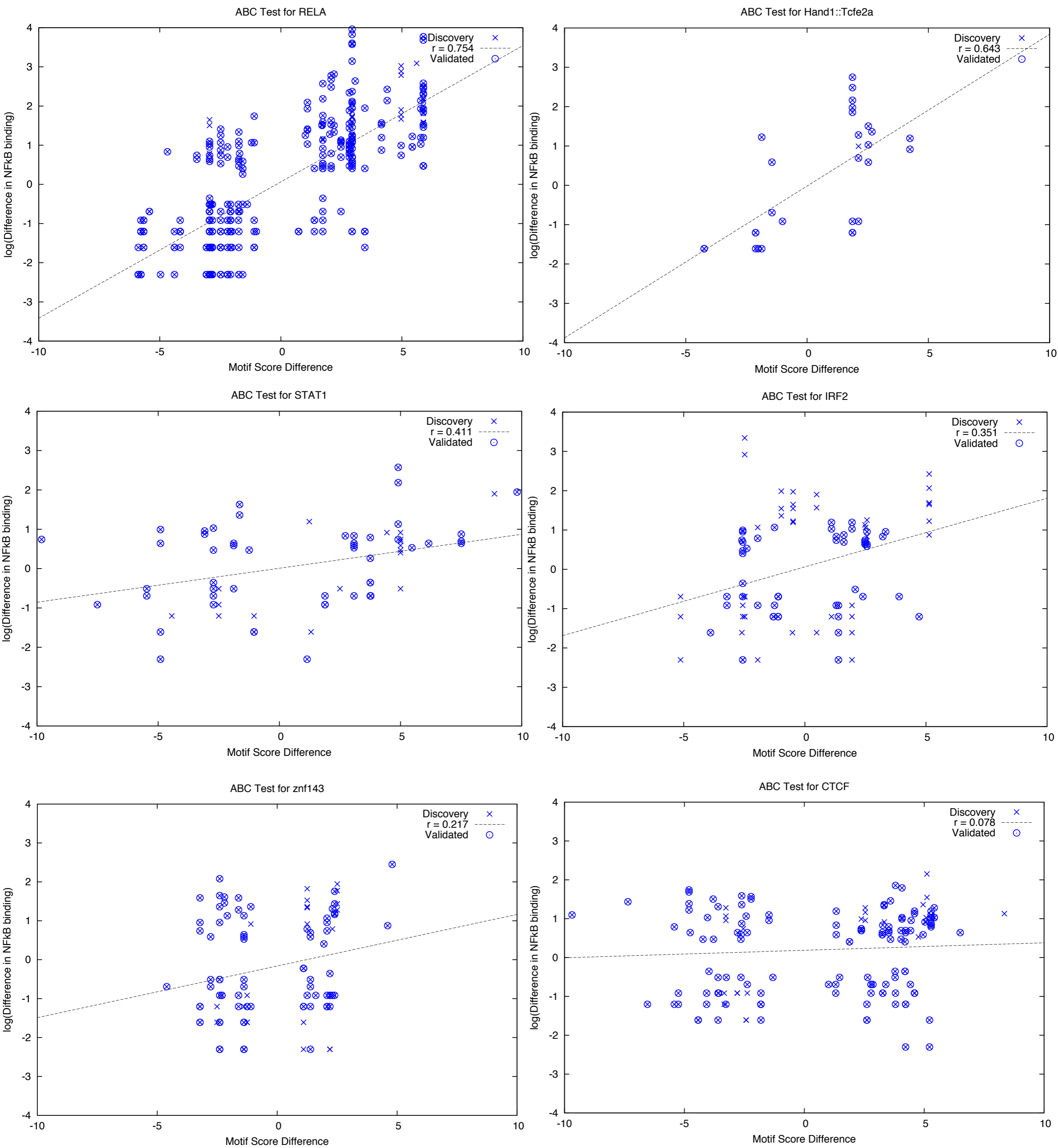
Figure S2 - Detail of motif-binding correlations used in this study: Correlations between NFκB (RELA), Stat1, E2A (Hand1::Tcfe2a), IRF2, ZNF143, and CTCF.

Figure S3 - E-value analysis: The top predictions of interaction transcription factors are not significantly affected by varying the e-value threshold for motif search. In this study, an e-value cutoff of 1000 was used as a trade-off between increased numbers of motifs and motif degeneracy.

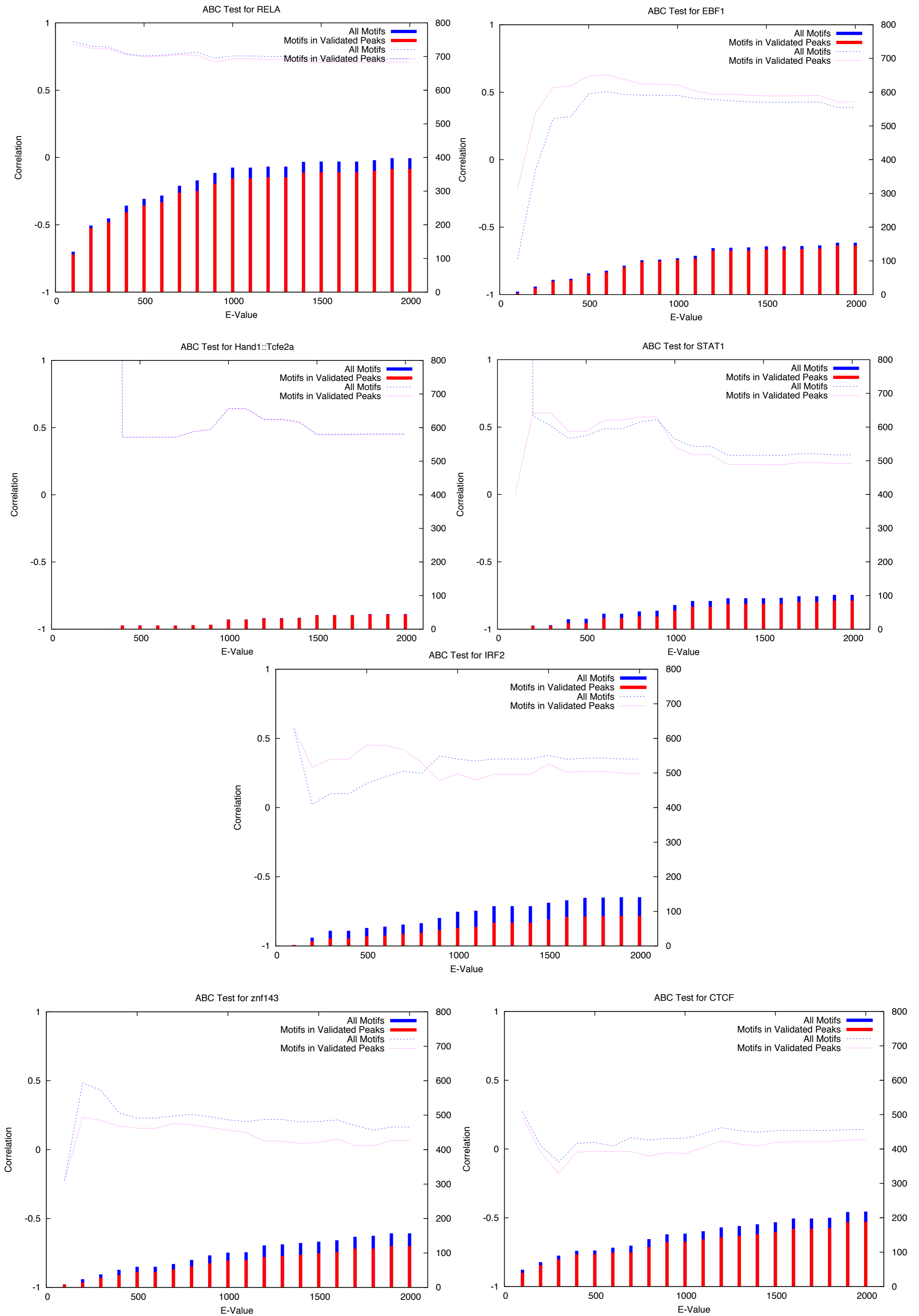
Supplemental
Figure-1 Karczewski



Supplemental Figure-2 Karczewski



Supplemental Figure-3 Karczewski



Supplemental Table S1 - Full ALPHABIT Results: See legend for Supplemental Figure 1. Permutation p-values < 0.05 and those for negative controls (ZNF143 and CTCF) are shown.

Motif	PWM (JASPAR)	Number of Comparisons	Correlation	Correlation P-value	Permutation P-value
RELA	MA0107.1	370	0.754383722	2.93E-69	3.60E-17
NF-kappaB	MA0061.1	357	0.759436711	2.93E-68	1.82E-16
REL	MA0101.1	278	0.744260489	2.67E-50	3.77E-17
NFkB1	MA0105.1	293	0.54320458	6.86E-24	1.11E-07
EBF1	MA0154.1	108	0.475563315	1.98E-07	0.00179532
STAT1	MA0137.1	96	0.426075752	1.50E-05	0.00526991
Hand1::Tcf2a	MA0092.1	29	0.642601809	0.00017071	0.00389256
Myf	MA0055.1	164	0.277858916	0.0003154	0.04383074
STAT1	MA0137.2	72	0.410946491	0.00033609	0.01299369
IRF2	MA0051.1	99	0.350704559	0.00037244	0.01074822
NFYA	MA0060.1	37	0.533014539	0.00068244	0.01082954
Fos	MA0099.1	28	0.596345713	0.00081056	0.02297914
Foxa2	MA0047.2	35	-0.53686258	0.00088413	
GABPA	MA0062.2	52	0.435110502	0.00126591	0.02336707
MEF2A	MA0052.1	32	0.543154758	0.00131652	0.02354683
EWSR1-FLI1	MA0149.1	430	0.153575361	0.00140167	0.02077786
TLX1::NFIC	MA0119.1	54	0.410167078	0.00206757	0.0071996
TBP	MA0108.1	28	-0.54759105	0.0025603	
TBP	MA0108.2	28	-0.54759105	0.0025603	

$\alpha = 0.05$
(6.4E-4)

Myc	MA0147.1	40	0.440253501	0.00447045	
MYC::MAX	MA0059.1	35	0.468737687	0.00450877	
Stat3	MA0144.1	42	0.428211413	0.00466847	0.04269278
PPARG::RXRA	MA0065.2	144	0.223617916	0.00705506	
MAX	MA0058.1	28	0.460591352	0.01364298	
Cebpa	MA0102.1	33	0.417057218	0.01575189	0.02046079
Mycn	MA0104.2	34	0.392058218	0.02183427	
Sox2	MA0143.1	53	0.308016061	0.02484653	
PLAG1	MA0163.1	299	0.129253852	0.02541539	0.03417114
znf143	MA0088.1	101	0.217213312	0.0291157	0.05874526
HNF1B	MA0153.1	25	-0.43319001	0.03053194	
IRF1	MA0050.1	66	0.264025554	0.03218217	
HNF4A	MA0114.1	52	-0.2858358	0.03996022	
Egr1	MA0162.1	126	0.177354289	0.04695172	0.01067904
TFAP2A	MA0003.1	109	-0.19047964	0.04726224	
TP53	MA0106.1	88	-0.19390999	0.07025678	
NHLH1	MA0048.1	85	0.192796785	0.07709335	
ESR2	MA0258.1	75	0.204497945	0.07842332	
HNF1A	MA0046.1	45	0.264897362	0.07865454	
PPARG	MA0066.1	35	0.291920921	0.08883134	
NR1H2::RXRA	MA0115.1	32	-0.30213252	0.09282959	
Zfx	MA0146.1	189	-0.11603457	0.11183379	
Ddit3::Cebpa	MA0019.1	26	-0.31080849	0.12224018	
RXR::RAR_DR5	MA0159.1	73	-0.18213552	0.12301565	

Pou5f1	MA0142.1	93	-0.15247707	0.14453898	
RREB1	MA0073.1	605	0.05929357	0.14520069	
Foxa2	MA0047.1	26	0.292747881	0.14668761	
SP1	MA0079.1	189	0.105455032	0.14868856	
REST	MA0138.1	128	0.125928745	0.15666134	
Klf4	MA0039.1	106	0.134629188	0.16884319	
FOXI1	MA0042.1	54	-0.18947497	0.16998922	
Pax4	MA0068.1	165	0.107144441	0.17075598	
Gfi	MA0038.1	37	-0.21896221	0.19290001	
Myb	MA0100.1	27	0.248043147	0.21221822	
ESR1	MA0112.2	112	0.118447258	0.21355506	
CREB1	MA0018.2	25	0.252080951	0.22412692	
ELF5	MA0136.1	43	-0.18691363	0.23007352	
Ar	MA0007.1	31	0.210650297	0.25534004	
Foxd3	MA0041.1	156	0.091480154	0.25604832	
Tal1::Gat a1	MA0140.1	30	-0.21079661	0.26350626	
CTCF	MA0139.1	154	0.07788722	0.33698495	0.19092322
Spz1	MA0111.1	39	-0.14563075	0.37637071	
Pax5	MA0014.1	64	-0.10399292	0.41349023	
INSM1	MA0155.1	147	0.059475626	0.47424981	
RUNX1	MA0002.2	93	0.073621813	0.48309502	
FOXA1	MA0148.1	53	0.075455633	0.59127242	
Zfp423	MA0116.1	124	0.045939488	0.6124024	
TEAD1	MA0090.1	59	0.064506557	0.62740052	
Tcfcp2l1	MA0145.1	87	-0.04772017	0.66072208	
RUNX1	MA0002.1	28	0.082130012	0.67779028	

Evi1	MA0029.1	43	-0.06270672	0.68954525
REST	MA0138.2	129	0.035485261	0.68971786
SP1	MA0079.2	567	-0.01613624	0.70141635
RORA_2	MA0072.1	31	0.068605686	0.71383112
ESR1	MA0112.1	64	0.041444604	0.74505857
Klf4	MA0039.2	175	0.008961942	0.90629896
FEV	MA0156.1	50	-0.01113002	0.93885198
NFE2L2	MA0150.1	46	-0.00961655	0.94942483
MZF1_5- 13	MA0057.1	87	-0.00268926	0.98027752

Supplemental Table 2 - List of Motifs used in this study

Chrom	Motif Start	Motif End	Peak Start	Peak End	Factor	Validated?
4	5758459	5758468	5758214	5758625	EBF1	Val
7	154719874	154719883	154719333	154722620	EBF1	Val
11	72203582	72203591	72201659	72204076	EBF1	Val
10	63395423	63395432	63395394	63396064	EBF1	Val
1	22911452	22911461	22911063	22911998	EBF1	Val
4	908618	908627	907838	909101	EBF1	Val
19	35212855	35212864	35212720	35213525	EBF1	Val
17	24080150	24080159	24079021	24080482	EBF1	Val
3	101556516	101556525	101556323	101556820	EBF1	Val
2	196744091	196744100	196743723	196745214	EBF1	Val
6	161130608	161130617	161129947	161131682	EBF1	Val
2	109628760	109628769	109628559	109629648	EBF1	Val
4	86696739	86696748	86696267	86697998	EBF1	Val
20	11190432	11190441	11190145	11190578	EBF1	Val
1	183642628	183642637	183642237	183642801	EBF1	Val
2	232901240	232901249	232901018	232901509	EBF1	Val
16	10767441	10767450	10767169	10767630	EBF1	Val
19	60588519	60588528	60588359	60589513	EBF1	Val
22	48441201	48441210	48440739	48441458	EBF1	Val
11	44586876	44586885	44586719	44588356	EBF1	Val
19	49942346	49942355	49942036	49944605	EBF1	Val
13	61324434	61324443	61324253	61324682	EBF1	Val
11	74912623	74912632	74911918	74913527	EBF1	Val
7	44639685	44639694	44639278	44640405	EBF1	Val
14	96038350	96038359	96037385	96039390	EBF1	Val
19	2122253	2122262	2122156	2123186	EBF1	Val
1	141832409	141832418	141832156	141832644	EBF1	Val

18	45715054	45715063	45714783	45715240	EBF1	Val
5	7848054	7848063	7847188	7848182	EBF1	Val
11	68595167	68595176	68594783	68595246	EBF1	
8	3169504	3169513	3168502	3169716	EBF1	Val
16	86315946	86315955	86315514	86316614	EBF1	Val
12	120704166	120704175	120704037	120705128	EBF1	Val
8	29286050	29286059	29285733	29286668	EBF1	Val
6	39301950	39301959	39301856	39302782	EBF1	Val
16	10814042	10814051	10813564	10814756	EBF1	Val
16	4297381	4297390	4296629	4298195	EBF1	Val
12	5665535	5665544	5665370	5665991	EBF1	Val
1	234655005	234655014	234654848	234655736	EBF1	Val
6	31433090	31433099	31432303	31433481	EBF1	Val
9	83933248	83933257	83932251	83933285	EBF1	Val
3	16529245	16529254	16526096	16531818	EBF1	Val
6	31347833	31347842	31347151	31348246	EBF1	Val
10	112592934	112592943	112591230	112593526	EBF1	Val
17	8829769	8829778	8829013	8829854	RELA	Val
11	131917202	131917211	131916932	131917348	RELA	Val
6	30188970	30188979	30188560	30189475	RELA	Val
21	46498703	46498712	46497707	46499155	RELA	Val
1	93199129	93199138	93198485	93200283	RELA	Val
8	102287682	102287691	102286860	102288163	RELA	Val
7	99537102	99537111	99535785	99537622	RELA	Val
12	6431404	6431413	6430451	6432260	RELA	Val
2	45370839	45370848	45370457	45371303	RELA	Val
14	33750985	33750994	33750653	33751220	RELA	Val
1	31746898	31746907	31746821	31747983	RELA	Val
8	22988649	22988658	22987698	22988741	RELA	Val

3	123524164	123524173	123523703	123524549	RELA	Val
1	167352150	167352159	167351711	167352499	RELA	Val
1	59648032	59648041	59647770	59648598	RELA	Val
11	30301456	30301465	30300567	30302137	RELA	Val
20	4875884	4875893	4875345	4876174	RELA	Val
8	2230515	2230524	2230386	2230922	RELA	
2	88912551	88912560	88912352	88913656	RELA	
12	128615577	128615586	128615243	128615775	RELA	Val
20	2730008	2730017	2729370	2730324	RELA	
20	30087074	30087083	30085964	30087466	RELA	Val
20	30086374	30086383	30085964	30087466	RELA	Val
20	30087074	30087083	30085964	30087466	RELA	Val
20	30086374	30086383	30085964	30087466	RELA	Val
20	30087074	30087083	30085964	30087466	RELA	Val
20	30086374	30086383	30085964	30087466	RELA	Val
20	30087074	30087083	30085964	30087466	RELA	Val
3	73105156	73105165	73104882	73105474	RELA	Val
1	40014532	40014541	40014410	40014933	RELA	
20	55478416	55478425	55478059	55478627	RELA	Val
17	52478865	52478874	52478264	52479238	RELA	Val
1	204153394	204153403	204153143	204153802	RELA	Val
11	92328918	92328927	92328739	92329102	RELA	Val
12	9711837	9711846	9711062	9711976	RELA	Val
4	86696743	86696752	86696267	86697998	RELA	Val
16	30486245	30486254	30486026	30486606	RELA	Val
6	43300242	43300251	43299741	43300607	RELA	Val
6	30002013	30002022	30001843	30003189	RELA	Val
5	106665707	106665716	106665524	106666460	RELA	Val
3	61481958	61481967	61481430	61482524	RELA	Val

2	68445582	68445591	68445493	68446295	RELA	Val
10	109799611	109799620	109799482	109799811	RELA	Val
6	52362546	52362555	52362155	52363627	RELA	Val
3	64410036	64410045	64409766	64410170	RELA	Val
18	12981388	12981397	12980129	12982328	RELA	Val
7	92101154	92101163	92100678	92102785	RELA	Val
13	61324428	61324437	61324253	61324682	RELA	Val
14	96235354	96235363	96235005	96235843	RELA	Val
11	33358267	33358276	33358019	33358506	RELA	Val
3	120902339	120902348	120901777	120902729	RELA	Val
4	185579268	185579277	185578503	185580343	RELA	Val
2	151762184	151762193	151762001	151762330	RELA	
15	38185227	38185236	38184035	38186844	RELA	Val
3	121482305	121482314	121482140	121482503	RELA	
5	75601939	75601948	75601289	75602203	RELA	Val
10	7773368	7773377	7773136	7773582	RELA	Val
17	72105207	72105216	72104976	72105405	RELA	Val
14	50348849	50348858	50348665	50349663	RELA	Val
5	115131216	115131225	115130825	115131645	RELA	Val
1	12039475	12039484	12039028	12039547	RELA	Val
18	45715060	45715069	45714783	45715240	RELA	Val
11	93961693	93961702	93961338	93961745	RELA	Val
13	20797203	20797212	20797006	20797425	RELA	Val
12	50037788	50037797	50037194	50038231	RELA	Val
17	19599834	19599843	19598576	19600250	RELA	Val
16	87572338	87572347	87570670	87573493	RELA	Val
19	55112475	55112484	55111984	55112858	RELA	Val
1	25245397	25245406	25245179	25245669	RELA	Val
5	83593658	83593667	83593250	83594088	RELA	Val

20	1422397	1422406	1422065	1422568	RELA	Val
1	66640449	66640458	66638940	66641036	RELA	Val
13	30910179	30910188	30910001	30910408	RELA	Val
4	170499353	170499362	170498843	170499765	RELA	Val
22	40675650	40675659	40675197	40676232	RELA	Val
22	40675989	40675998	40675197	40676232	RELA	Val
22	40675650	40675659	40675197	40676232	RELA	Val
22	40675989	40675998	40675197	40676232	RELA	Val
22	40675650	40675659	40675197	40676232	RELA	Val
22	40675989	40675998	40675197	40676232	RELA	Val
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22	40675989	40675998	40675197	40676232	RELA	Val
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22	40675989	40675998	40675197	40676232	RELA	Val
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22	40675989	40675998	40675197	40676232	RELA	Val
12	81923623	81923632	81923394	81924044	RELA	Val
6	14203733	14203742	14203285	14204303	RELA	Val
11	22738484	22738493	22738239	22738716	RELA	Val
7	14721653	14721662	14721463	14721941	RELA	Val
3	110283658	110283667	110282962	110283980	RELA	Val
6	32744204	32744213	32743880	32744639	RELA	Val
10	43410802	43410811	43410308	43411759	RELA	Val
9	109985329	109985338	109985026	109985629	RELA	Val
12	5665528	5665537	5665370	5665991	RELA	Val
7	26354426	26354435	26354128	26354936	RELA	Val
1	167283149	167283158	167282736	167283516	RELA	Val
12	1424302	1424311	1424096	1424504	RELA	Val
3	194099389	194099398	194098956	194099761	RELA	Val
3	14668655	14668664	14667773	14668908	RELA	Val
17	52086424	52086433	52086069	52086681	RELA	Val

5	74285679	74285688	74285425	74285869	RELA	Val
6	139463165	139463174	139462868	139463366	RELA	Val
2	239000141	239000150	238999599	239000769	RELA	Val
1	218460032	218460041	218459501	218461188	RELA	Val
10	126807822	126807831	126807609	126808105	RELA	
7	28546237	28546246	28545634	28546265	RELA	Val
11	62365677	62365691	62363343	62366755	STAT1	Val
15	72274076	72274090	72273888	72274209	STAT1	
1	153099276	153099290	153098752	153100050	STAT1	Val
5	108525704	108525718	108525549	108526035	STAT1	
1	119483879	119483893	119483483	119485250	STAT1	Val
1	16713086	16713100	16712634	16713947	STAT1	Val
2	91681047	91681061	91680651	91681705	STAT1	
3	64409990	64410004	64409766	64410170	STAT1	Val
2	241676525	241676539	241675766	241676916	STAT1	Val
16	31620182	31620196	31619246	31620655	STAT1	Val
12	124485812	124485826	124485123	124486131	STAT1	Val
2	241639358	241639372	241639327	241639664	STAT1	
11	117493986	117494000	117493670	117494224	STAT1	
1	56570387	56570401	56570315	56570938	STAT1	Val
7	26354418	26354432	26354128	26354936	STAT1	Val
11	117578551	117578565	117578504	117579062	STAT1	
2	30560655	30560669	30560420	30561554	STAT1	
15	91007806	91007820	91006974	91008103	STAT1	Val
2	46306785	46306794	46306715	46307886	Hand1::Tcfe2a	Val
1	46011427	46011436	46011250	46011662	Hand1::Tcfe2a	Val
12	131107960	131107969	131107380	131108017	Hand1::Tcfe2a	
12	108400102	108400111	108399313	108400182	Hand1::Tcfe2a	Val
8	72906478	72906487	72905491	72906545	Hand1::Tcfe2a	Val

21	38515921	38515938	38515233	38516017	IRF2	
21	38515995	38516012	38515233	38516017	IRF2	
21	38515921	38515938	38515233	38516017	IRF2	
21	38515995	38516012	38515233	38516017	IRF2	
2	3650123	3650140	3649831	3650344	IRF2	Val
18	4260237	4260254	4259941	4260346	IRF2	
9	123172686	123172703	123172146	123172853	IRF2	Val
6	114060092	114060109	114057271	114060819	IRF2	Val
17	30595649	30595666	30594656	30595886	IRF2	
12	45896954	45896971	45896271	45897102	IRF2	Val
1	56372218	56372235	56371852	56372713	IRF2	Val
18	35966570	35966587	35966173	35966894	IRF2	Val
6	32712864	32712881	32712824	32713457	IRF2	Val
19	6877316	6877333	6877077	6877531	IRF2	Val
6	30002836	30002853	30001843	30003189	IRF2	Val
12	79072228	79072245	79072138	79072573	IRF2	
16	80428049	80428066	80427712	80428894	IRF2	Val
1	204454585	204454602	204454224	204455048	IRF2	Val
6	87964199	87964216	87964110	87964488	IRF2	
14	30394377	30394394	30394230	30394995	IRF2	Val
16	21972920	21972937	21972652	21973055	IRF2	
20	23044534	23044551	23044305	23044707	IRF2	
7	7712604	7712621	7712139	7712899	IRF2	Val
10	94651751	94651768	94651700	94652056	IRF2	
18	5244068	5244085	5243905	5244438	IRF2	
6	30017903	30017920	30017788	30019092	IRF2	Val
10	102446319	102446336	102446237	102446864	IRF2	
12	44858515	44858532	44857029	44858687	IRF2	Val
8	137005032	137005049	137004176	137005425	IRF2	Val

4	142450241	142450258	142450030	142451001	IRF2	
10	15204889	15204906	15204612	15205433	IRF2	Val
4	185488362	185488379	185487814	185488601	IRF2	Val
3	16394834	16394851	16394802	16395964	IRF2	Val
1	99988246	99988265	99987674	99988664	znf143	Val
12	94618334	94618353	94618235	94618715	znf143	
19	16560668	16560687	16558615	16561332	znf143	Val
14	68038910	68038929	68038575	68039142	znf143	
5	124315562	124315581	124315250	124316138	znf143	Val
22	41437619	41437638	41437447	41438258	znf143	Val
14	88867874	88867893	88867464	88868566	znf143	Val
3	10301154	10301173	10300952	10301811	znf143	Val
10	103114464	103114483	103114409	103114841	znf143	Val
8	8783851	8783870	8783837	8784448	znf143	Val
3	114220960	114220979	114220143	114221810	znf143	Val
13	29592553	29592572	29592230	29593009	znf143	Val
20	62303914	62303933	62303483	62304050	znf143	
16	20144450	20144469	20143999	20144497	znf143	Val
6	31692961	31692980	31692746	31693133	znf143	
7	1946271	1946290	1946171	1947215	znf143	Val
2	111700560	111700579	111700531	111701491	znf143	Val
10	109799599	109799618	109799482	109799811	znf143	Val
10	11781085	11781104	11780980	11781837	znf143	Val
1	204454560	204454579	204454224	204455048	znf143	Val
13	93122086	93122105	93121548	93122184	znf143	
11	33358255	33358274	33358019	33358506	znf143	Val
10	71703289	71703308	71702252	71703371	znf143	Val
15	48435222	48435241	48433464	48435387	znf143	Val
17	72105228	72105247	72104976	72105405	znf143	Val

4	183967538	183967557	183966591	183967830	znf143	Val
4	2908815	2908834	2906916	2909597	znf143	Val
10	5928325	5928344	5928002	5928707	znf143	Val
3	38596236	38596255	38596194	38596767	znf143	Val
12	102846265	102846284	102846176	102849452	znf143	Val
5	9179543	9179562	9178977	9180028	znf143	Val
10	5934640	5934659	5934107	5934846	znf143	Val
1	176801759	176801778	176801543	176802453	znf143	
22	21607297	21607316	21607222	21608397	znf143	Val
6	137093516	137093535	137093460	137094018	znf143	Val
10	133426127	133426146	133425503	133426551	znf143	Val
18	3236460	3236479	3235720	3239158	znf143	Val
3	13038588	13038607	13036858	13040175	znf143	Val
4	1980763	1980781	1980238	1981251	CTCF	Val
15	97313903	97313921	97313005	97314267	CTCF	Val
5	135446215	135446233	135445576	135446678	CTCF	Val
15	19963626	19963644	19962301	19964022	CTCF	Val
15	19962390	19962408	19962301	19964022	CTCF	Val
15	19963626	19963644	19962301	19964022	CTCF	Val
15	19962390	19962408	19962301	19964022	CTCF	Val
15	19963626	19963644	19962301	19964022	CTCF	Val
10	79141432	79141450	79139547	79141636	CTCF	Val
3	169717924	169717942	169717913	169718651	CTCF	Val
8	145080547	145080565	145079784	145080733	CTCF	Val
4	102159496	102159514	102159020	102160586	CTCF	Val
13	46140754	46140772	46139940	46140838	CTCF	Val
17	59378029	59378047	59376818	59378179	CTCF	Val
18	30156836	30156854	30156164	30157019	CTCF	Val
22	48704838	48704856	48704727	48706145	CTCF	Val

18	54344846	54344864	54343814	54345265	CTCF	
4	908613	908631	907838	909101	CTCF	Val
1	197317553	197317571	197317311	197317947	CTCF	
1	109090743	109090761	109090392	109091681	CTCF	Val
16	46096456	46096474	46096054	46096890	CTCF	Val
2	60962321	60962339	60961258	60962972	CTCF	Val
1	38228468	38228486	38227725	38228692	CTCF	Val
3	159295815	159295833	159294838	159296173	CTCF	Val
2	58942904	58942922	58942766	58943370	CTCF	Val
10	15073498	15073516	15073368	15073787	CTCF	Val
19	6877208	6877226	6877077	6877531	CTCF	Val
11	75542067	75542085	75540697	75542471	CTCF	Val
6	32742272	32742290	32742154	32742754	CTCF	
1	85183118	85183136	85182958	85183878	CTCF	Val
12	130143039	130143057	130142821	130144202	CTCF	Val
17	1457178	1457196	1456173	1457880	CTCF	Val
17	68521343	68521361	68521029	68521444	CTCF	Val
20	11309083	11309101	11308671	11309442	CTCF	Val
10	1675742	1675760	1675233	1675935	CTCF	Val
17	38821452	38821470	38821044	38822737	CTCF	Val
17	38822215	38822233	38821044	38822737	CTCF	Val
17	38821452	38821470	38821044	38822737	CTCF	Val
19	55706500	55706518	55705800	55706824	CTCF	Val
12	25286028	25286046	25285512	25286064	CTCF	Val
11	26586508	26586526	26585912	26587123	CTCF	Val
11	26586381	26586399	26585912	26587123	CTCF	Val
11	26586508	26586526	26585912	26587123	CTCF	Val
11	26586381	26586399	26585912	26587123	CTCF	Val
20	36988185	36988203	36987959	36988688	CTCF	Val

11	65576245	65576263	65575886	65576657	CTCF	Val
11	75203836	75203854	75203086	75205951	CTCF	Val
19	2122250	2122268	2122156	2123186	CTCF	Val
1	40279106	40279124	40277139	40279630	CTCF	Val
2	223433920	223433938	223433665	223434498	CTCF	Val
11	120831356	120831374	120831352	120832141	CTCF	
1	112335588	112335606	112335383	112335887	CTCF	Val
8	135802068	135802086	135800705	135802296	CTCF	Val
11	64394052	64394070	64393166	64394118	CTCF	Val
2	132749784	132749802	132748611	132750204	CTCF	
9	136890285	136890303	136889645	136890573	CTCF	Val
17	6858415	6858433	6857204	6860063	CTCF	Val
2	129581185	129581203	129580342	129581492	CTCF	
3	120524363	120524381	120524071	120525570	CTCF	Val
3	136000780	136000798	136000361	136000962	CTCF	
16	10822865	10822883	10822085	10823149	CTCF	Val
17	14203382	14203400	14203209	14203823	CTCF	Val
17	68198268	68198286	68198122	68198542	CTCF	

Supplemental Table 3 - Individual ANOVA Results for Predictive Linear Models**Individual models:**

Model	Res. Df	RSS	Δ Df	Δ Sum of Sq	F	Pr(>F)
ZNF143 + CTCF (Controls)	1227	99247				
Controls + EBF1	1226	87983	1	11264	156.96	5.71E-34
Controls + E2A	1226	89646	1	9600.9	131.3	5.96E-29
Controls + STAT1	1226	73007	1	26240	440.64	7.98E-84
Controls + IRF2	1226	82771	1	16476	244.04	2.61E-50

“Full” model:

Factor	Estimate	Std. Error	t value	Pr(> t)	95% Confidence Int	
ebf_ratio	0.092	0.009	10.079	5.27E-23	0.074	0.110
stat1_ratio	0.489	0.037	13.233	1.85E-37	0.417	0.562
e2a_ratio	0.162	0.033	4.862	1.31E-06	0.097	0.228
irf2_ratio	0.190	0.028	6.712	2.92E-11	0.135	0.246
ctcf_ratio	0.002	0.004	0.601	0.548	-0.005	0.010
znf143_ratio	-0.005	0.005	-1.004	0.315	-0.014	0.005

Supplemental Table 4 - Co-Expression of Transcription Factors

Factor	Correlation	95 % Confidence Interval		p-value (Empirical)
IRF2	0.3813	0.3639	0.3983	0.04
STAT1	0.3621	0.3445	0.3795	0.04
EBF1	0.3240	0.3058	0.3419	0.06
CTCF	0.1178	0.0979	0.1376	0.19
E2A	0.1091	0.0891	0.1289	0.22
ZNF143	0.0821	0.0621	0.1022	0.25
Mean Random	-0.0265			
SD Random	0.1952			
Sample Size	100			

Supplemental Table 5 - Functional Enrichment of Overlapping TF Binding Sites

Factor	Term	Raw P-Value	FDR Q-Val	Fold Enrichment
IRF2 (not STAT1)	cell-cell signaling	9.92E-05	0.711	2.001613
IRF2 (not STAT1)	synaptic transmission	0.001012	0.907	2.354839
IRF2 (not STAT1)	positive regulation of lymphocyte mediated immunity	0.012195	1	2.060484
IRF2 (not STAT1)	negative regulation of protein transport	0.012195	1	2.060484
IRF2 (not STAT1)	regulation of G-protein coupled receptor protein signaling pathway	0.013597	1	2.354839
IRF2 (not STAT1)	positive regulation of cell cycle	0.013597	1	2.354839
IRF2 (not STAT1)	cellular biogenic amine metabolic process	0.013597	1	2.354839
IRF2 (not STAT1)	anterior/posterior pattern formation	0.013597	1	2.354839
IRF2 (not STAT1)	segmentation	0.013597	1	2.354839
IRF2 (not STAT1)	response to calcium ion	0.025643	1	2.018433
IRF2 (not STAT1)	negative regulation of intracellular protein transport	0.025643	1	2.018433
IRF2 (not STAT1)	negative regulation of intracellular transport	0.025643	1	2.018433
IRF2 (not STAT1)	regulation of chromosome organization	0.025643	1	2.018433
IRF2 (not STAT1)	negative regulation of Wnt receptor signaling pathway	0.025643	1	2.018433

IRF2 (not STAT1)	protein heterooligomerization	0.025643	1	2.018433
IRF2 (not STAT1)	negative regulation of nucleocytoplasmic transport	0.025643	1	2.018433
IRF2 (not STAT1)	membrane depolarization	0.032219	1	2.354839
IRF2 (not STAT1)	digestive system development	0.032219	1	2.354839
IRF2 (not STAT1)	regulation of canonical Wnt receptor signaling pathway	0.032219	1	2.354839
IRF2 (not STAT1)	protein K63-linked deubiquitination	0.032219	1	2.354839
STAT1 (not IRF2)	activation of protein kinase activity	0.007973	1	3.328125
STAT1 (not IRF2)	tube development	0.01015	1	2.329687
STAT1 (not IRF2)	tissue morphogenesis	0.020858	1	2.117898
STAT1 (not IRF2)	morphogenesis of an epithelium	0.024635	1	2.21875
STAT1 (not IRF2)	T cell activation	0.024635	1	2.21875
STAT1 (not IRF2)	regulation of cytokine production	0.024635	1	2.21875
STAT1 (not IRF2)	T cell proliferation	0.02683	1	3.328125
STAT1 (not IRF2)	regulation of cytokine biosynthetic process	0.02683	1	3.328125
STAT1 (not IRF2)	regulation of interferon-gamma production	0.02683	1	3.328125
STAT1 (not IRF2)	vitamin biosynthetic process	0.02683	1	3.328125

STAT1 (not IRF2)	water-soluble vitamin biosynthetic process	0.02683	1	3.328125
STAT1 (not IRF2)	water-soluble vitamin metabolic process	0.02683	1	3.328125
STAT1 (not IRF2)	tube morphogenesis	0.028272	1	2.377232
STAT1 (not IRF2)	lymphocyte proliferation	0.030424	1	2.6625
STAT1 (not IRF2)	leukocyte proliferation	0.030424	1	2.6625
STAT1 (not IRF2)	mononuclear cell proliferation	0.030424	1	2.6625