Supplementary Table 1. HaploReg 4.1 annotation of 11 SNPs within the *CD40* locus

SNPs in *CD40* locus	Promoter Histone Marks	Enhancer Histone Marks	DNAse	Proteins bound	Motifs changed	Score
rs6074022	1	1	1	1	1	5
rs1883832	1	1	1	1	1	5
rs4810485	1	1	1	1	1	5
rs6032664	1	1			1	3
rs1569723		1	1		1	3
rs4239702	1	1			1	3
rs6065926		1			1	2
rs6032660					1	1
rs2024568					1	1
rs6032662					1	1
rs6032663					1	1

Confirmed fSNPs identified by SNP-seq highlighted in red.

Supplementary Table S2. Mass spectrometry for *CD40* FREP

	rs4810485	non-specific
RBPJ	4	0
	rs6032664	non-specific
RSRC2	7	0
F5GX09	2	0
E7EQU1	2	0
E9PKZ0	2	0
RS9	2	0
RU1C	2	0
H3BM89	2	0
J3QRC4	2	0
	rs6065926	non-specific
FUBP1	5	0
TR150	5	0
MYPT1	3	0
ENL	3	0
FILA2	2	0
A2A2V2	2	0
EXOS9	2	0
ZN638	2	0
M0R0K9	2	0
H0YMA0	2	0
PININ	2	0
ETV6	2	0
PPIL1	2	0
UBP22	2	0
FIP1	2	0

Supplementary Table 3. 148 candidate fSNPs in juvenile idiopathic arthritis

Locus	*SNP*	*Locus*	*SNP*
ANKRD55	*rs71624119*	*IL2RB*	rs228957
ATP8B2/IL6R	*rs8089151*		rs228960
	rs4891036	*IL6*	rs12700391
	rs2481065		rs1581497
	rs12033701		rs1829927
C3ORF1/CD80	*rs4688002*		rs12537614
	rs4687854		rs13311155
	rs62263399		rs13311199
	rs62263404		rs7808457
	rs2276713		rs4722169
	rs3732418		rs56061963
	rs59024323		rs35658589
	rs11720158		rs28572733
	rs1599796	*JAZF1*	rs7786444
CCR1/CCR3	*rs79893749*		rs10280937
	rs58697594		rs7796417
	rs73833032		rs10263857
	rs74433128		rs73300665
	rs76733709		rs740261
	rs145617407		rs10272155
CHR13Q14	*rs12876545*	*LTBR*	rs12354
	rs9533127		rs9669611
	rs9533129	*PRM1/C16ORF75*	rs35342456
COG6	*rs144565908*		rs12927773
	rs9603612		rs1345880
	rs12875311		rs55752638
	rs12876235		rs140470930
	rs9532433		rs12917839
	rs9548932		rs12922090
	rs9532434	*PRR5L*	rs2218565
			rs10768207
ERAP2/LNPEP	*rs2549783*		rs3824946
	rs2927609		rs11033552
	rs2910686		rs4755450
	rs1363908		rs10836538
	rs1216571		rs191318
	rs1216566	*PTPN2*	rs888270

	rs2617435		rs2847260
	rs1423566		rs2847278
	rs2617439		rs2542149
	rs2432142		rs11663253
	rs2910792		rs45450798
	rs2910789		rs8096138
	rs7726445	*PTPN22*	rs2476601
	rs7716222	*RUNX1*	rs8133843
	rs10044354	*RUNX3*	rs4648881
	rs38042		rs6686594
	rs38043	*SH2B3*	rs3184504
	rs38044	*STAT4*	rs11889341
	rs27307		rs4853459
	rs27659		rs8179673
	rs31398		rs10181656
	rs27295	*TYK2*	rs144309607
	rs27747	*UBE2L3*	rs5998509
FAS	*rs2148287*		rs131660
	rs1926192		rs59391722
	rs7069750		rs131665
	rs9658742		rs2266959
HLA-DQB1/HLS-DQA2	*rs111335405*		rs181360
	rs112117693		rs5749485
	rs17427494		rs73166622
	rs112608098		rs5749495
	rs2935907		rs5754238
	rs36030018		rs5998619
IL2/IL21	rs13108723		rs73166632
	rs11575812		rs2070512
	rs2069776		rs5754295
	rs35077420		rs11089629
	rs1383048		rs5754344
	rs34880409		rs4821116
	rs11736927		rs7444
	rs4833830		rs1811069
	rs6814718	*ZFP36L1*	rs12434551
	rs13122213		
	rs13101493		
	rs9996350		

Supplementary Table 4. HaploReg 4.1 annotation of 11 SNPs within the *STAT4* locus

SNPs in *STAT4* locus	Promoter Histone Marks	Enhancer Histone Marks	DNAse	Proteins bound	Motifs changed	Score
rs11889341	1	1			1	3
rs7582694		1	1	1		3
rs4274624		1	1			2
rs7574865		1			1	2
rs8179673		1			1	2
rs10181656			1		1	2
rs4853458					1	1
rs139605600					1	1
rs4853459					1	1
rs7568275					1	1
rs10174238					1	1

Confirmed fSNPs identified by SNP-seq highlighted in red.

Supplementary Table 5. Mass spectrometry for *STAT4* FREP

	Rs10181656	non-specific
H1.2	73	0
DREB	3	0
E7EP32	2	0
BCLF1	2	0
	Rs8179673	non-specific
SATB2	102	0
SATB1	48	0
A0A0A0MS59	10	0
PRP4B	8	0
TYB4	8	0
PDS5A	8	0
CHD4	7	0
M0QZG7	6	0
NSD3	5	0
C9JFR7	5	0
HDGR2	5	0
A8MXP9	4	0
CDC5L	4	0
NOP58	4	0
H0Y3Z3	4	0
SF3B1	4	0
MEF2D	4	0
RIF1	4	0
SFR15	4	0
SFSWA	4	0
H2AY	3	0
FUS	3	0
RBM28	3	0
BCOR	3	0
MTA2	3	0
G3V220	3	0
THYN1	3	0
E9PKP7	2	0
PHF5A	2	0
A0A0A0MSI0	2	0
SREK1	2	0

RPRD2	2	0
ZN609	2	0
SRP09	2	0
DNLI3	2	0
SF3A1	2	0
D6RAT0	2	0
SYTL4	1	0

Supplementary Table 6. Primers used in this paper

SNP-seq for JIA library	G5	/biosg/TCC AGT CAG GTG TGA TGC TC
	G3	CGA GCT TAT CGT CGT CAT CC
	SNP-seq oligonucleotide for HTP	TCC AGT CAG GTG TGA TGC TCTGC TCG GGG ATC CAG GAA TTC ATC TGG AG XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXCT CCA GGG ATG ACG ACG ATA AGC TCG
	SNP-seq for CD40 SNPs	
	2Brs6032660	TCC AGT CAG GTG TGA TGC TCC TGG AGC GTG CCG TTG CAC TCC GGC CTG GGT AAC AAG AGC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs2024568	TCC AGT CAG GTG TGA TGC TCC TGG AGA TGC CCA GGC TGG TCT CGA ACT CCT GAG CTC AAC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs6032662	TCC AGT CAG GTG TGA TGC TCC TGG AGA GGC CAG ATA ATG GGA CGT GAG GAG ATG TTT CCC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs6032663	TCC AGT CAG GTG TGA TGC TCC TGG AGA AAA TTA GCC AGG CAT GGT GGT GCG CGC CTG TAC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs6065926	TCC AGT CAG GTG TGA TGC TCC TGG AGA ATA CAT GGG TAG GAA GTT CTG TGT TGG CTC ATC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs6032664	TCC AGT CAG GTG TGA TGC TCC TGG AGA CAG AAT TGT ATC TCT TGA TCC TGA TTC TCA AAC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs6074022	TCC AGT CAG GTG TGA TGC TCC TGG AGG TGC TGA GTG TCC TCA CGA CAT GGC AGA CAG CTC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs1569723	TCC AGT CAG GTG TGA TGC TCC TGG AGC TTT ACA CCC ACA GCC CAA AAT TCC AAT TTC CTC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs1883832	TCC AGT CAG GTG TGA TGC TCC TGG AGC CTG GTC TCA CCT CGC CAT GGT TCG TCT GCC TCC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs4810485	TCC AGT CAG GTG TGA TGC TCC TGG AGG AGG GCT GTA GAT TCC GGC CTG AAG CCT GGG CAC TCC AGG GAT GAC GAC GAT AAG CTC G
	2Brs4239702	TCC AGT CAG GTG TGA TGC TCC TGG AGT CTT TTA AAA CAA AAA CCA AGA GCA GGC CTG GGC TCC AGG GAT GAC GAC GAT AAG CTC G
Next generation sequencing library	L1	ACACTCTTTCCCTACACGACTCCAGTCAGGTGTGATGCTC
	L2	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACTCCAGT
	R1	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCCGAGCTTATCGTCGTCATCC
	R2	CAAGCAGAAGACGGCATACGAGATXXXXXXXGTGACTGGAGTTCAGACGTGT
	Index sp	GATCGGAAGAGCACACGTCTGAACTCCAGTCAC
	CSP	TGC TCG GGG ATC CAG GAA TTC ATC TGG AG
CRISPR/Cas9	485CRISPR/F	CAC CGT TCC TGC CCA GGC TTC AGG C
	485CRISPR/R	AAA CGC CTG AAG CCT GGG CAG GAA C
	664CRISPR/F	CAC CGA AAA AAG CAC TTT GAG AAT C
	664CRISPR/R	AAA CGA TTC TCA AAG TGC TTT TTT C
	926CRISPR/F	CAC CGA TGG GTA GGA AGT TCT GTG T
	936CRISPR/R	AAA CAC ACA GAA CTT CCT ACC CAT C
	rs8179673CRISPR/F	CACCGAATAAGTATATATTAAATAA
	rs8179673CRISPR/R	AAACTTATTTAATATATACTTATTC
	rs10181656CRISPR/F	CACCGAAAGGAGGGTAGTGGTACAA
	rs10181656CRISPR/R	AAACTTGTACCACTACCCTCCTTTC
make homologous sequence	485FWD set 1	AACAAGAGATGGGTGCAGAG

FOR CD40 CRISPR/CAS9		
	485REV set 1	TCACAACCAGGTTCTTCCATTA
	664FWD set 2	GGGAGAGAGGTGTAAAGATAGATAAAG
	664REV set 2	CACTCCTTCGAGGTTCAAAGT
	926FWD set 1	CAGAGCGAGATTCCATCTCAAA
	926REV set 1	CAGTCTCTCTTACCTCCAGTCT
outside homologous seq.	485FWD1-1	CTGCCTTCTTCCAGGGCATCTTG
	664FWD1-1	GACAGATATTTATCAGGCTATTATG
	926FWD1-1	CATGCCACTACACTCCAGCCTG
FREP	FREPbio485G/F	/5Biosg/AAT GAT ACG GCG ACC ACC GAG GAT CCG TGG CTG CTG CAG AAC GGG GGG TGC TGG TGA ATT CTC GTA TGC CGT CTT CTG CTT G
	FREPbio664T/F	/5Biosg/AAT GAT ACG GCG ACC ACC GAG GAT CCA GAA TTG TAT CTC TTG ATC CTG ATT CTC AGA ATT CTC GTA TGC CGT CTT CTG CTT G
	FREPbio926G/F	/5Biosg/AAT GAT ACG GCG ACC ACC GAG GAT CCA TAC ATG GGT AGG AAG TTC TGT GTT GGC TGA ATT CTC GTA TGC CGT CTT CTG CTT G
	FREPbiors8179673T/F	/5Biosg/AAT GAT ACG GCG ACC ACC GAG GAT CCTAAGTATATATTAAATAAAGGTCCATAACCAGA ATT CTC GTA TGC CGT CTT CTG CTT G
	FREPbioRS10181656G/F	/5Biosg/AAT GAT ACG GCG ACC ACC GAG GAT CCATCCAACTCTTCTCAGCCCTTGTACCACTACGA ATT CTC GTA TGC CGT CTT CTG CTT G
3C	Primers for first PCR	
	3c664fwd	atggccaggtcacgcagcctc
	3c664rev	ggtgaagagagagatctctttg
	3c926fwd	cctgaaagcataatgactacaatc
	3c926rev	agctgagctgcctgactctgaca
	3c485fwd	tgcttcactgtcagaatgttctgg
	3c485rev	ttaagggcacatttgcaagtcttg
	Primers for nested PCR	
	3C664N/F	GCAGCCTCTTGAGGTCACAG
	3C664N/R	ATTTACATTTCCTCAATTATTAGGG
	3C926N/F	TGACTACAATCTACCAGAGCAG
	3C926N/R	GAGTTACATTCTATTTATATACCCC
	3C485N/F	CCCTCTCTACCAGGTAAAACTC
	3C485N/R	AAGTCTTGTGGATTCTGCCTC
ChIP	40ChIP194-220	CCC AAG TAC CTG GCT CCT TCA TCC CAG
	40ChIP276-303	GCT TTC CTT GAT ACC ATG GGT CAT TCC
	664 FWD Set 1	CTC GAT TAC TCA CTG GGC TAT G
	664 REV Set 1	AGA ACC AGA GAG GGC AGA TA
	926 FWD Set 1	GGG AAT GTC TTT ATG GAT GTG AAA T
	926 REV Set 1	CAC GAG ACT ACT TTG ATC CTT ACC

Real Time PCR for STAT4	STAT4 FWD set 1	AAGCCTTCGGTAACACTACAG
	STAT4 RWD set 1	TCACTTCGGATTGTTGAGATGG
	SATB2 FWD set 2	GAAGTTGCTGCCCAGTTAAAG
	SATB2 RWD set 2	AGAGGAAGCCCAAAGTGAAG
	H1.2 FWD set 2	AAGAAGAAGGCGGCCAAA
	H1.2 RWD set 2	GAAACTCCGCTACGCTCTTTA
shRNA knockdown	FUBP1(2264)	AAAAggatgcagacgacttgatgTTGGATCCAAcatcaagtcgtctgcatcc
	RSRC2(1550)	AAAAGCTTGCATGGGTGTTGCATTGTTGGATCCAACAATGCAACACCCATGCAAGC
	THRAP3(3651)	AAAAGGACCAAACTGCTTGGATCTTGGATCCAAgatccaagcagtttggtcc
	RBPJ(2057)	AAAAggctggaatacaagttgaaTTGGATCCAAttcaacttgtattccagcc

Supplementary Table 7. Antibodies used in this paper

Antibody (clone)	Manufacturer	Cat#	Usage	Lot number	Website for validation and dilution
FUBP1	GENETEX	GTX104579	WB, ChIP, EMSA-SUPERSHIFTING	40912	http://www.genetex.com/FUBP1-antibody-GTX104579.htmlgoo
CD40 (H-10)	SANTA CRUZ	sc-13128	WB	G1613	https://www.scbt.com/scbt/product/cd40-antibody-h-10
TRAP150	PROTEINTECH	19744-1-AP	WB, EMSA-SUPERSHIFTING	11887	https://www.ptglab.com/results?q=19744-1-ap
TRAP150 (N-18)	SANTA CRUZ	sc-5378	WB, EMSA-SUPERSHIFTING	E1706	https://www.scbt.com/scbt/product/trap150-antibody-n-18?requestFrom=search
RBPJ	ACTIVE MOTIF	61074	WB	13611001	https://www.activemotif.com/catalog/details/61073/rbpj-antibody-mab
RBPJ (1F1)	ACTIVE MOTIF	61505	WB, EMSA-SUPERSHIFTING	31913001	https://www.activemotif.com/catalog/details/61505/rbpj-antibody-mab-clone-1f1
RBPJ	ABCAM	ab25949	ChIP	GR220477-1	http://www.abcam.com/rbpjk-antibody-chip-grade-ab25949.html
TUBULIN	SIGMA	T6074	WB	081M4861	https://www.sigmaaldrich.com/catalog/product/sigma/t6074?lang=en&region=US
RSRC2 (F-16)	SANTA CRUZ	sc-102100	WB, ChIP		https://www.scbt.com/scbt/search?Ntt=sc-102100
RSRC2	GENETEX	GXT45867	WB	812504000	http://www.genetex.com/RSRC2-antibody-C-term-GTX45867.html
HISTIH1C	AVIVA	arp46122_p050	WB	QC16951	https://www.avivasysbio.com/en/hist1h1c-antibody-middle-region-arp46122-p050.html
STAT4 (15A1B41)	BIOLEGEND	660502	WB		https://www.biolegend.com/en-us/products/purified-anti-stat4-antibody-9803
SATB1 (C-6)	SANTA CRUZ	sc-376096	WB	K2712	https://www.scbt.com/scbt/product/satb1-antibody-c-6?requestFrom=search
SATB2 (SATBA4B10)	SANTA CRUZ	sc-81376	WB	C1815	https://www.scbt.com/scbt/product/satb2-antibody-satba4b10?requestFrom=search
PE CD40	R&D	FAB6321P	FACS	LRP0211071	https://www.rndsystems.com/products/human-cd40-tnfrsf5-pe-conjugated-antibody-82111_fab6321p
PE IgG2B	R&D	IC0041P	FACS	LHG1108051	https://www.rndsystems.com/products/mouse-igg2b-pe-conjugated-antibody_ic0041p