

1 **Supplementary Data 3**

Supplementary Table 5. Transcription factors binding sites (TF-BS) used for the SP sensors.

TF Target	TF-BS Names	TFBS Sequences (5' to 3')	Reference/ Repository Databank
IRF4/BATF	IL10P1 ^a (IL10)	TGACTCACAACGAAA	Li et al., 2012 ^c
	IL10P2 ^a (IL10)	GCAGTCAATTTAGAAA	Li et al., 2012
	IL10P3 (IL10)	ACGAAACTGAGACAT	SELEX
	AP1	TGAGTCA	Li et al., 2012
	CTLA4 ^a	TGTACTCAACTTGAAA	Li et al., 2012
	BRAF	TGAGTCAAAATGAGA	Li et al., 2012
	CON1 ^b (GAAA)	CGAAACCGAAACT	JASPAR
	IKZF2 ^a	ACAGTCAGAATGAAA	Li et al., 2012
MAF	CD69	ATAATTGCTGATGTAATGT	TRANSFAC
	SPATA20	ATATTTGCTGAATTAAATC	TRANSFAC
	STAT3	AAATGTGCTGACTCAGAGA	TRANSFAC
	RNF212	AATAGTGCTGATGCTGTGT	TRANSFAC
GATA3	GATA3-A ^b	AGATAAGA	SELEX
	GATA3-B ^b	AAAGATAAGA	TRANSFAC
	GATA3-C ^b	ACTTAGAGATTTTATCCGCGTAAC	TRANSFAC
NR4A2	CON1 ^b	TGACCTTTAAAGGTCA	SELEX
	CON2 ^b	AGGTCAACTTGTGACCT	SELEX
	MSH4	TCTAAAGGTCA	SELEX

	MZB1 (MZB1 - A SLC23A1 – A)	AGGTCACAAGGTGACCT	SELEX
	NEG1 (NEGR1)	TTTAAAGGTCA	SELEX
	PRD2 (PRDM2-A)	TGACCTTTAAAGATCA	SELEX
EOMES	CON1 ^b	TAAAAGGTGTGAAAATT	TRANSFAC
	CON2 ^b	CCGGAGGTGTGCGCTC	TRANSFAC
	CXCR5	TGAAAGGTGTGAAAACA	TRANSFAC
	HAS3	AAGGTGTGAAAAA	SELEX
	HEY2A (HEY2- A)	TAACGCCTTAAAATGTGTGA	SELEX
	TMEM9B	GGGGAGGTGTTGCCTA	TRANSFAC
IKZF2	B4GA (B4GALT3)	TTTAGGGATAA	TRANSFAC
	CCDC (CCDC91)	ATAAGGAAAAA	TRANSFAC
	CON1 ^b	TTAAGGAAAAA	TRANSFAC
	TMEM (TMEM17)	TATAGGGATAA	TRANSFAC

Notes:

a: AICE - AP1–IRF composite elements^c.

b: Consensus sequence for those specific TFs.

c: Li, P. *et al.* BATF-JUN is critical for IRF4-mediated transcription in T cells. *Nature* **490**, 543–546 (2012).