

Development of super-specific epigenome editing by targeted allele-specific DNA methylation

Additional file 3

Supplementary tables

Supplementary Table 1: List of oligodeoxynucleotide used in sgRNA cloning.

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Supplementary Table 1: List of oligodeoxynucleotide used in sgRNA cloning.

Gene	sgRNA	Description
DAP3	accgGCAGCGTGTGTCGGTCGCCT	DAP3-PAM3 sgRNA sense oligo
DAP3	aaacAGGCGACCGACACACGCTGC	DAP3-PAM3 sgRNA antisense oligo
DAP3	accgCGTGTGTCGGTCGCCTAGGC	DAP3-Seed1 sgRNA sense oligo
DAP3	aaacGCCTAGGCGACCGACACACG	DAP3-Seed1 sgRNA antisense oligo
DAP3	accgCGTGTGTCGGTCGCCTAGTC	DAP3-Seed2 sgRNA sense oligo
DAP3	aaacGACTAGGCGACCGACACACG	DAP3-Seed2 sgRNA antisense oligo
GPD1L	accgCTTGCTGCCCAGGTCACGGG	GPD1L-PAM3 sgRNA sense oligo
GPD1L	aaacCCCGTGACCTGGGCAGCAAG	GPD1L-PAM3 sgRNA antisense oligo
GSPT1	accgTCCATACGGTTCCCATCTCA	GSPT1-PAM3 sgRNA sense oligo
GSPT1	aaacTGAGATGGGAACCGTATGGA	GSPT1-PAM3 sgRNA antisense oligo
GSPT1	accgCCATCTCAAGGGGGTAAGT	GSPT1-Seed11 sgRNA sense oligo
GSPT1	aaacCAGTTACCCCCTTGAGATGG	GSPT1-Seed1 sgRNA antisense oligo
GSPT1	accgCCATCTCAAGTGGGTAAGT	GSPT1-Seed2 sgRNA sense oligo
GSPT1	aaacCAGTTACCCACTTGAGATGG	GSPT1-Seed2 sgRNA antisense oligo
ISG15	accgTGCCTCTCAGCCGCCGGCTT	ISG15-PAM2 sgRNA sense oligo
ISG15	aaacAAGCCGGCGGCTGAGAGGCA	ISG15-PAM2 sgRNA antisense oligo
ISG15	accgTCTCAGCCGCCGGCTTCCGC	ISG15-Seed1 sgRNA sense oligo
ISG15	aaacGCCGAAGCCGGCGGCTGAGA	ISG15-Seed1 sgRNA antisense oligo
ISG15	accgTCTCAGCCGCCGGCTTCCGC	ISG15-Seed2 sgRNA sense oligo
ISG15	aaacGCCGAAGCCGGCGGCTGAGA	ISG15-Seed2 sgRNA antisense oligo
MAPK1	accgGCTGCGGCGCTGCCGGGATA	MAPK1-Seed1 sgRNA sense oligo
MAPK1	aaacTATCCCGGCAGCGCCGCAGC	MAPK1-Seed1 sgRNA antisense oligo
MRPL52	accgCTGCTCAGCATGGCTGCTTT	MRPL52-PAM3 sgRNA sense oligo
MRPL52	aaacAAAGCAGCCATGCTGAGCAG	MRPL52-PAM3 sgRNA antisense oligo
MSH6	accgAAGTTTGGTCCCTTTTCGCTC	MSH6-PAM3 sgRNA sense oligo
MSH6	aaacGAGCGAAAGGGACCAAACCTT	MSH6-PAM3 sgRNA antisense oligo
MYH10	accgGAGCTGTAGGGTTTGTGCTG	MYH10-Seed1 sgRNA sense oligo
MYH10	aaacCAGCACAAACCCTACAGCTC	MYH10-Seed1 sgRNA antisense oligo
NARF	accgCGCCTTCCGCGGTTGTCTCC	NARF-PAM2 sgRNA sense oligo
NARF	aaacGGAGACAACCGCGGAAGGCG	NARF-PAM2 sgRNA antisense oligo
NARF	accgCCGCGGTTGTCTCCAGGCCA	NARF-Seed1 sgRNA sense oligo
NARF	aaacTGGCCTGGAGACAACCGCGG	NARF-Seed1 sgRNA antisense oligo
NARF	accgCCGCGGTTGTCTCCATGCCA	NARF-Seed2 sgRNA sense oligo
NARF	aaacTGGCATGGAGACAACCGCGG	NARF-Seed2 sgRNA antisense oligo
PDE8A	accgCTCCGGGTCTTTGCAGTAGC	PDE8A-PAM2 sgRNA sense oligo
PDE8A	aaacGCTACTGCAAAGACCCGGAG	PDE8A-PAM2 sgRNA antisense oligo
PDE8A	accgTCTTTGCAGTAGCCGGGCCA	PDE8A-Seed1 sgRNA sense oligo
PDE8A	aaacTGGCCCCGGCTACTGCAAAGA	PDE8A-Seed1 sgRNA antisense oligo
PDE8A	accgTCTTTGCAGTAGCCTGGCCA	PDE8A-Seed2 sgRNA sense oligo
PDE8A	aaacTGGCCAGGCTACTGCAAAGA	PDE8A-Seed2 sgRNA antisense oligo
RAF1	accgAGCCCTCTGCCCCGCAGCCG	RAF1-PAM3sgRNA sense oligo
RAF1	aaacCGGCTGCCGGGCAGAGGGCT	RAF1-PAM3 sgRNA antisense oligo
RALB	accgGAGAGAGAAACAGAGGGGGA	RALB-PAM2 sgRNA sense oligo

RALB	aaacTCCCCCTCTGTTTCTCTCTC	RALB-PAM2 sgRNA antisense oligo
TTC41P	accgAAGGGGCGGTCCCACGTGTG	TTC41P-PAM3 sgRNA sense oligo
TTC41P	aaacCACACGTGGGACCGCCCCTT	TTC41P-PAM3 sgRNA antisense oligo
TYK2	accgGGCGGCACTCTCATTTGGTCC	TYK2-Seed1 sgRNA antisense oligo
TYK2	aaacGGACCAATGAGAGTGCCGCC	TYK2-Seed1 sgRNA antisense oligo

Supplementary Table 2: List of primers used for multi-sgRNA cloning.

Primer	Sequence
PB905	GGCTACGAAGACTATGCCCCAACTCATCAATGTATCT
PB906	TTCTACGAAGACCCCATAAATTTACGAGCTTTCTGG
PB907	GGCTACGAAGACTATATGCCAAACTCATCAATGTATCT
PB908	TTCTACGAAGACCCAGTTAATTTACGAGCTTTCTGG
PB909	GGCTACGAAGACTAAACTCCAAACTCATCAATGTATCT
PB910	TTCTACGAAGACCCGAATAATTTACGAGCTTTCTGG
PB911	GGCTACGAAGACTAATTCCCAAACATCATCAATGTATCT
PB912	TTCTACGAAGACCCCCTAAATTTACGAGCTTTCTGG
PB913	GGCTACGAAGACTATAGGCCAAACTCATCAATGTATCT
PB914	TTCTACGAAGACCCCGTTAATTTACGAGCTTTCTGG
PB915	GGCTACGAAGACTAAACGCCAAACTCATCAATGTATCT
PB916	TTCTACGAAGACCTCTGAATTTACGAGCTTTCTGG

Supplementary Table 3: List of target specific primers used for amplifying bisulfite treated gDNA samples.

Gene	Primer name	Sequence
DAP3 FP	NR405	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN ATAGATTTTTTTTTGTAGTTTTAGGAYG
DAP3 RP	NR406	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGAG AATTAACAACAACAAAAACAC
GPD1L FP	NR193	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATGGTTAAGGATTTGGTGGAG
GPD1L RP	NR194	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATC CTATTAAACTTAAATTTTCTTCCT
GPD1L FP	NR361	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN ATGGGTAAAGGATTTGGTGGAG
GPD1L RP	NR362	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTTATC CTATTAAACTTAAATTTTCTTCCT
GSPT1 FP	NR395	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATTAAAYGTTTATTTAAATGATTTTTG
GSPT1 RP	NR407	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATA ACCCACATAACRTAAAAATACRATC
ISG15 FP	PB372	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN AGAGCTTAGGTGTTTTTAGGGTGTTGG
ISG15 RP	PB373	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNAGCATCACAACTCCTATACTAACAAAAATAAAT
ISG15 FP	PB376	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN GACATTTAGGTGTTTTTAGGGTGTTGG
ISG15 RP	PB377	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNGTCGTCACAACTCCTATACTAACAAAAATAAAT
ISG15 FP	PB495	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN GTGTATTAGGTGTTTTTAGGGTGTTGG
ISG15 RP	PB496	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNGTCACCACAACTCCTATACTAACAAAAATAAAT
MAPK1 FP	NR031	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN AAGAAGTGTGTATGYGGATTGGTT
MAPK1 RP	NR032	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGAAT TTCTACCCCAATACAAAACCTCTAAAT
MRPL52 FP	NR197	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATTGATTGAAAATTTAGATTTAAGATGG
MRPL52 RP	NR198	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATA CCRAATCAAAAATCCTATACC
MRPL52 FP	NR365	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN ATGGGTATTTTGTGTGGGTTAGAG
MRPL52 RP	NR366	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTTATC RCCCTCCCTAAACTCC
MSH6 FP	PB374	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN TGTCGGTGAAGGTGAATTGTTGATTAAAG
MSH6 RP	PB375	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNTCAGCCTACTAAACTCCCCTTCCCTCA

MSH6 FP	PB483	CACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNNC AGATGTGAAGGTGAATTGTTGATTAAAG
MSH6 RP	PB484	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNCGTGTCTACTAAACTCCCCTTCCCTCA
MYH10 FP	PB687	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN ACTGCTATTTTTTTAGTTTTTTTAGGGGTTGTT
MYH10 RP	PB688	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNGCAGAATAACTCCTAAACTAAAAAATCCC
MYH10 FP	PB707	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN TGCGTTATTTTTTAGTTTTTTTAGGGGTTGTT
MYH10 RP	PB708	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNACTCTATAACTCCTAAACTAAAAAATCCC
MYH10 FP	PB754	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CGCAGTATTTTTTAGTTTTTTAGGGGTTGTT
MYH10 RP	PB755	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNGACGAATAACTCCTAAACTAAAAAATCCC
NARF FP	NR399	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATGTTTTTYGAATTTGTTTTTTTGAGGG
NARF RP	NR400	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATR AATTCCCCTAAACACAAAT
PDE8A FP	NR199	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATGGTTATTTTGTYTGGGTTAGAG
PDE8A RP	NR200	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATC RCCCTCCCTAAACTCC
PDE8A FP	NR363	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN ATGTGATTGAAAATTTAGATTTAAGATGG
PDE8A RP	NR364	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTTATA CCRAATCAAAAATCCTATACC
RAF1 FP	NR033	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN TTAAATATAAGGAAATTTGAGTGGA
RAF1 RP	NR034	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTTATC CTAACTCCCTCAAATAAATAACAAAAC
RALB FP	NR035	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN AGGGGTAGAGAGAGAAATAGAGGGG
RALB RP	NR036	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTATGC CCTTACCAAAAACCAATCC
TTC41P FP	NR195	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CATTTTAGGATTYGGAAGTAGTTT
TTC41P RP	NR196	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGATA CCCACRACACCAATAAA
TYK2 FP	PB644	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN GCTACCCCATTAACAATACTCTATTCTCC
TYK2 RP	PB645	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNTATACGATATGTAGTTGTGTTTTAGGGT
VEGFA FP	PB504	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNAGAGCGTTTGTTATTTTTTATTGAAT
VEGFA RP	PB505	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN AGCATAATCACTCACTTTACCCCTATC
VEGFA FP	PB506	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNTGTCGGTTTGTTATTTTTTATTGAAT

VEGFA RP	PB507	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN TCAGCAATCACTCACTTTACCCCTATC
VEGFA FP	PB518	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNGACATGTTTGTTATTTTTTATTTGAAT
VEGFA RP	PB519	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN GTCGTAATCACTCACTTTACCCCTATC
VEGFA FP	PB522	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTNNN NNCAGATGTTTGTTATTTTTTATTTGAAT
VEGFA RP	PB523	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNNNNN CGTGTAATCACTCACTTTACCCCTATC

Supplementary Table 4: List of Illumina specific primers used in the second PCR reaction.

Primer name	Sequence
PB346	AATGATACGGCGACCACCGAGATCTACACATTACTCGACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB347	AATGATACGGCGACCACCGAGATCTACACTCCGGAGAACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB348	AATGATACGGCGACCACCGAGATCTACACCGCTCATTACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB349	AATGATACGGCGACCACCGAGATCTACACGAGATTCCACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB350	CAAGCAGAAGACGGCATACGAGATCGAGTAATGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB351	CAAGCAGAAGACGGCATACGAGATTCTCCGGAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB352	CAAGCAGAAGACGGCATACGAGATAATGAGCGGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB353	CAAGCAGAAGACGGCATACGAGATGGAATCTCGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB370	AATGATACGGCGACCACCGAGATCTACACATTCAGAAACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB371	CAAGCAGAAGACGGCATACGAGATTTCTGAATGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB481	AATGATACGGCGACCACCGAGATCTACACGAATTCGTACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB482	CAAGCAGAAGACGGCATACGAGATACGAATTCGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB497	AATGATACGGCGACCACCGAGATCTACACCTGAAGCTACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB498	CAAGCAGAAGACGGCATACGAGATAGCTTCAGGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB516	AATGATACGGCGACCACCGAGATCTACACTAATGCGCACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB517	CAAGCAGAAGACGGCATACGAGATGCGCATTAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB520	AATGATACGGCGACCACCGAGATCTACACCGGCTATGACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB521	CAAGCAGAAGACGGCATACGAGATCATAGCCGGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB611	AATGATACGGCGACCACCGAGATCTACACTCCGCGAAACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB612	CAAGCAGAAGACGGCATACGAGATTCGCGGAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB650	AATGATACGGCGACCACCGAGATCTACACTCTCGCGCACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB651	CAAGCAGAAGACGGCATACGAGATGCGCGAGAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT

PB652	AATGATACGGCGACCACCGAGATCTACACAGCGATAGACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB653	CAAGCAGAAGACGGCATACGAGATCTATCGCTGTGACTGGAGTTCAG ACGTGTGCTCTTCCGATCT
PB654	AATGATACGGCGACCACCGAGATCTACACTTCCTCCTACACTCTTTC CTACACGACGCTCTTCCGATCT
PB655	CAAGCAGAAGACGGCATACGAGATAGGAGGAAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB659	AATGATACGGCGACCACCGAGATCTACACTGCTTGCTACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB660	CAAGCAGAAGACGGCATACGAGATAGCAAGCAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB661	AATGATACGGCGACCACCGAGATCTACACGGTGATGAACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB662	CAAGCAGAAGACGGCATACGAGATTCATCACCGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB667	AATGATACGGCGACCACCGAGATCTACACAACCTACGACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB668	CAAGCAGAAGACGGCATACGAGATCGTAGGTTGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB673	AATGATACGGCGACCACCGAGATCTACACGGATCTGAACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB674	CAAGCAGAAGACGGCATACGAGATTCAGATCCGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB705	AATGATACGGCGACCACCGAGATCTACACTGATCACGACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB706	CAAGCAGAAGACGGCATACGAGATCGTGATCAGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT
PB732	AATGATACGGCGACCACCGAGATCTACACAAGCGACTACACTCTTTC CCTACACGACGCTCTTCCGATCT
PB733	CAAGCAGAAGACGGCATACGAGATAGTCGCTTGTGACTGGAGTTCA GACGTGTGCTCTTCCGATCT

Supplementary Table 5: List of primers used for transcript amplification from cDNA.

Primer name	Sequence	Gene
NR417	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATAAGAGGCTTGAATTGGCAGT	MSH6 exon FP
NR418	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATCATCACTGCTTCCTTCCTCC	MSH6 exon RP
NR419	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATCTGCTGGTGGTGGACAAATG	ISG15 exon FP
NR420	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATCGCAGATTCATGAACACGGT	ISG15 exon FP
NR421	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATGCTTCTACAAGTGA CT CGCC	MYH10 exon FP
NR422	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATGCCCTCATCTCTTCTGCTTC	MYH10 exon FP
NR425	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATCTACCCCGGCTACTCCTG	MRPL52 exon FP
NR426	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATTGTGACAGCAGTACA ACTCG	MRPL52 exon RP
NR427	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATGTGAGAGGCAGTTCATTAGCA	GPD1L exon FP
NR428	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATGAACACACTCACTCCTCCAC	GPD1L exon FP
NR431	ACACTCTTTCCCTACACGACGCTCTTCCGATCTNN NNNCATTCTGTGCTCAGGGTGATGGA	NARF exon FP
NR432	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT GATCTGCCAGCTCTGTTTCACTGTTTG	NARF exon RP