

Title of file for HTML: Supplementary Information
Description: Supplementary Tables and Supplementary Notes

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Supplementary Note 1: Mutant mice used in this study. Genomic sequences are given, with CTCF binding sites highlighted red, and deletions bolded and underlined. CTCF binding motifs are highlighted in blue.

Line ΔA
sgRNA used: N/A
Deletion size: 1,711 bp
LoxP site in Yellow

TAGAATGAAGTTCCTATACTTTCTAGAGAATAGGAACTTCGTTTCGAACATAACTTCGTATAGCATACATTATACGAA
GTTATGGTACCTGCAGAATTCATGCATAAGCTTGGATCTGATGCCCTCTTCTGTTTGAAGACAGCTACAGTGTACTC
ACATACATAAAATAAGTAAATAATTTTTAAAAGGAAGGAAGGAAAGAAAGGAAGGAGAAATAATTTCACTTCCAT
TTGGGACTCAGAAAAAGTATAGATATCTGTCAAATAGAAAAACACAAATTTGGTAAAAGAACAAAAAAAAAATTGTT
CTTCTCATACTGAAAAAAAAAAGATGTTTCTAGATGACTTTAACAAGGAGAAAAGACCCATGTGAATGGGAGGG
AAGGGGTGGAGAACACCATTCTGGGGACTGGAATACAAAATAAATAAAGAGAAGAAAGTCAAAGCCAGGCATGGTG
GCACACATATTATTATTATTATTATTATTATTATTAAATTTAAAGTATGACTGCTCTGATGCATATACAACCCTCAGGC
CAGAAAGGGCACCAGTTCCTTATAGATGGTTGTGAGCCACCATGTAGTTGCAGGAATTGAACTTAGGACCTGTGG
AAGAGCAGCCAGTTCCTTAACTCTGAGCCATCTCACACACATCTTTAATTACATCATGAAAAGGCAGAGGCAGG
AGGATCTCTGAGTCTGAGGCCAGCCAGTGTGCTCCAGGGCAGCCAGGACTGCTCTAAAGACTGTCTCTAAACCCTC
CCCCACCCTGCAAAAAAAAAAATAAAAAATATAGCTGACCATCAACATTCATTTCTCTCTGCTTCTGACTATGCCT
TTTGGGTCTGAGGTGAGGAGGTGCAGTAGCTCTGCTGGCTACTGTGTGCTCAGGTGGCTCAGCAGGTACCTGTGCA
TGGAGCTCAAGGCCAGTTCAGTTTTCAGCATCCACACCATTACGTTAGGACCAGTGGTCCCTTCTTCCATTCCCTCAA
GTCACTGCAGGACTAGGCACCTCCTCCCCACTGAGGCCAGATGAGGCAACCCAGTTAGGGGAACAATATCCACAGGC
AGGCAACAGAGTCAGGGTAAGCCTTAAGAAGCATTCTTGGGGCTGGGGAGATGGCTCAGTGGTTAAGAGCACCGACT
GCTCTTCCAGAGGTCTGAGTTCAATTCCCAGCAACCACATGGTGGCTCTCAACCATCTGTAATGGAGTTTGTATGCC
CTCTTCTGGTGTGTCTGAAGACAACACTACAGTGTACTCATATACATAAATAAATAAATCTTAAAAAAAAAAGCATT
CTTTACAGCACGTTGGTCAATACAATGCCATGTCCAGATTACAACCTGATCCTGGTCACAGAACTCAGCAGCATCT
AAGCATATCTTGACAAGACCAACCCCTAGCAATGGCCTCTGCTCCAGTTTCTGCCTTGAGCTCCTGTCTCTTTCTTG
ATGATGATGTGTGATGTGAGTCAAGTAAACCACAAGTTGCTTTGGCTATGGTTTTTATCACAGTATAGCAACCTAA
CAAAGACATTGGCCAAAGTCCATCTTAAATCCCCTAACACTTTGGGGTTTCTTGCTCCTTTTCTAAAGCTCTACTCC
CCAGCACAAGGTTGCTGACAAACATGGTGGCTGACCCTATCTGAGCTGCATGGCTCTAGCTCCCGCCACATGGAT
GCCTGCCACCCGGTGGCTAACCTGTGAACTGCCAGCTCAAGCTGCAGGGCTATTCTCCAGTCCCAGGCAGCTTTG
AGGTTTTATGGCTGACCGGCCCGGGGTTTTCTTTTTGAACTCTAACTGTCTTAGGCCCCATAACTTCGTATAGCATA
CATTATACGAAGTTATAGTACTTCCATTTGTGTGATGTCTAAATTTTTATTAATAACCCTAAGGAAGAACCCT

Line ΔC
sgRNA used: C1
Deletion size: 58 bp

TGATGAGCGGCCCTGACACCTCAAAGCCGCTTTGCTCCTTTGCACATGGATCTCAGAAAAAGCCTCTGAGTTTCCCA
TATGAACTCAGGAGACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCCAACCAAAACACCCAAA
CCGAGAGAAATAACAAACGGCTCACAGCTCCCTCCACTGGCCCATATGAGTTACTGCAGCTGCTTTATCAAAAAAC
AGCTTCTGGGTCCACAGCAGAGCCAGGCTTTCTTCCAACCTTTCTAGGTCAAAGCCAAGTCTGAGCTCCCAGTTCT
TTTCTTGGCTTTCTCCACGATACATGTCATCCCTGTTGACCCAGCTTGTTCCAGCCACACCGGTTTTCTGATGGCC

Line ΔD
sgRNA used: D1
Deletion size: 134 bp

CTTCTGGAACCTCACTCTGTAGACCAGGCTGGCCTCAAACCCAGAAACCCACCTGCCTCTGCCTCCCAAGTGCTGGG
ATTAAGGTGTGTGCCACCACTGCCCGGCCAGGTTTTGTTTTTTCAGGACCCCTTTGGTGGCTCACAACCTTTCTGGAA
CTCATAGTTGCAAGGGGATCTGACATCCTCTTCTGGTGGGCACAGGTAAGTGCATGCATGTGGTACACTGTATACAT
GTAGACAAATCAACCAGATACATAAGTTAGAAATGAAGAACTGGGCTGGTGGATGGCTCAGTGGGTAAGAGTACC
CGACTGCTCTTCCGAAGGTCTGAAGTTCAAATCCCAGCAACCACATGGTGGCTCACAACCACCTGTAATGAGATCTG

Supplementary Table 1: sgRNA used to generate CRISPR/Cas9 knockout mice

sgRNA	Sequences
C1	5' -GGTAACTCATATGGGCCAGTGG-3'
C2	5' -TGAGTTTCCCATATGAACTCAGG-3'
C3	5' -TCCTGATGGCCCTCTCCTGCAGG-3'
D1	5' -CCTCTTCTGGTGGGCACAGGTAC-3'
E1	5' -GACTTAACATACTTGCAGAAAGG-3'
E2	5' -AACTCAGTCTGTGGTAGATGAGG-3'
E3	5' -CTGAGGCAGTCTCGTTGGATGGG-3'
E4	5' -GGA ^{green} ACTCAGTCTGTGGTAGATG-3'

green = NGG

Supplementary Table 2: Primers

Name	Sequence
Site A/B Promoter Proximal LoxP PCR F	5'-AGCTCTACTCCCCAGCACAAAG-3'
Site A/B Promoter Proximal LoxP PCR R	5'-TGGGAATGGGTTCATTTTCTCTGC-3'
Site A/B Null Allele PCR F	5'-CCAGGAAGTGGGTATGGGTA-3'
Site A/B Null Allele PCR/ R	5'-GGGGAACCCCAGGAGAGC-3'
Site A/B Null Allele Sanger F	5'-AATTGTTCTGGGCTGGTGAG-3'
Site A/B Null Allele Sanger R	5'-GCCTAGGGAATCAGGGTTCT-3'
Site C PCR F	5'-GCTGGATAGCTCTTGCCAGGTG-3'
Site C PCR R	5'-GAGGTTCCCTGCAGGAGAGGG-3'
Site C Sanger F	5'-GAGAATGATGAGCGGCCCTG-3'
Site C Sanger R	5'-GGTGTGGCTGAACAAGCTGGG-3'
Site D PCR F	5'-GCTTGAAGGCAGATCTTTTGA-3'
Site D PCR R	5'-TCTATGCCATGTCCCTCCTC-3'
Site D Sanger F	5'-GGCACACACACATGCCCAGG-3'
Site D Sanger R	5'-TACAGGTGGTTGTGAGCCACC-3'
Site E PCR F	5'-CCCTGACTTGGTCATTATGCATTG-3'
Site E PCR R	5'-CACGAGCACGTGTGCACAC-3'
Site E Sanger F	5'-GTATTGAAGAGCCTCATTGG-3'
Site E Sanger R	5'-GTTTCTTCTCCCATCCAACG-3'
2392A F	5'-GCTCAATGGCTCATGGCTGGTCC -3'
2392A R	5'-CCAGCTGCACCTCTCAAGCTAGG-3'