**Supplementary File 6.** **Interstitial deletion junction sequences**

PGSP752 [bzg110] (*pol32*)

 ChrV 8879+:

ATGAACAATAATTAACACGAGAATTTAAACCATACTCGGCCG::

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**ATGAACAATAATTAACACGAGAATTTAAACCATACTCGGCCG::AATCCAGGTGCATTTTAAGAAACTTATCTGCTGGG**

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 ::AATCCAGGTGCATTTTAAGAAACTTATCTGCTGGG

 :ChrV 27385+

PGSP939 (*sgs1*)

 ChrV 23,935+:

CAAGGAAAGGAACACGACAAATGATTGTC:

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**CAAGGAAAGGAACACGACAAATGATTGTC:CCAGACCCGTTTGATCTCAAGACTTTCACCGCAACAACG**

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 :CCAGACCCGTTTGATCTCAAGACTTTCACCGCAACAACG

 :ChrV 40785+

PGSP3607 (*yku80*)

 ChrV 13549+:

TTACCAATATGGGATCAATAACTTTACTTTTG:AAGATCTT:

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**TTACCAATATGGGATCAATAACTTTACTTTTG:AAGAGCTT:AGAACGGAGTTTGAATTGACAAATTTT**

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 :AAGAGCTT:AGAACGGAGTTTGAATTGACAAATTTT

 :ChrV 31202- (CAN1 insertion)

PGSP3608 (*yku80*)

 ChrV 5473+:

GGTTCGTCTTCAACAAACGTCAG:GAA-CTTTTTTAC-A-TTTTTCCC:

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**GGTTCGTCTTCAACAAACGTCAG:GAA-CTTTTTTCCCACTTTTTCCC:AGTGAAATAGTTTCTTATTGGCTTTT**

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 :GAAGCTTTTTTCCCACTTTTTCCC:AGTGAAATAGTTTCTTATTGGCTTTT

 :ChrV 27270+

PGSP4575 [bzg109] (*rrm3*)

 ChrV 18499+:

GTTTATTTCTTGTAAGAGTCGAAACTAAACCT:TAGTTG:

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**GTTTATTTCTTGTAAGAGTCGAAACTAAACCT:TAGTTG:TTTAATTGTAAAAACAGTGTAGATTTCAATTTTTTAAT**

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 :TAG-TG:TTTAATTGTAAAAACAGTGTAGATTTCAATTTTTTAAT

 :ChrV 37590+

PGSP4578 [bzg130] (*rad10*)

 ChrV 24041+:

TAAGGAAGGTGCTTTTGCAACACTTTGCCCCTTCGTTGTG:AAG:

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**TAAGGAAGGTGCTTTTGCAACACTTTGCCCCTTCGTTGTG:AAG:TAGGCTCTGTCATCGCTCAACGTGGAAGCTCCG**

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 :AAG:TAGGCTCTGTCATCGCTCAACGTGGAAGCTCCG

 :ChrV 40500+

PGSP4587 [bzg139] (*rad10*) – *CEN5* deletion

 ChrV 151043+:

ACAGTGAACTTTTACTTGTTTCTTTTGTTTAACCACTAGTATG::

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**ACAGGGAACTTTTACTTGTTTCTTTTGTTTAACCACTAGTATG::CTATTAAGTTGTAAAACAATCGCGAAAAAAAAAA**

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 ::CTATTAAGTTGTAAAACAATCGCGAAAAAAAAAA

 :ChrV 153003+

PGSP4609 (*sae2 pol32*)

 ChrV 15946+:

AATCTACCCAAAATGTCTCGAGCATCTTGATAATTACA:G:

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**AATCTACCCAAAATGTCTCGAGCATCTTGATAATTACA:G:CAACTTGAAACCAGAAAGACCATCAAAGGTTTCATTT**

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 :G:CAACTTGAAACCAGAAAGACCATCAAAGGTTTCATTT

 :ChrV 36019+

PGSP4853 (*sae2 yen1*), deletion of *CEN5*

 ChrV 153677+:

GAAAGATGACCTGAACTGATAAAAATTGTGGG:T:

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**GAAAGATGACCTGAACTGATAAAAATTGTGGG:T:GCGCTTATACGATCAAGCAATGTAAACAGTACAAA**

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 :T:GCGCTTATACGATCAAGCAATGTAAACAGTACAAA

 :ChrV 153642+

PGSP4905 (*slx1*)

 ChrV 25256+:

ATACCTGACAACGTAGCAGCGAGCCTTAGTTCATCTGCTCA:GG:

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**ATACCTGACAACGTAGCAGCGAGCCTTAGTTCATCTGCTCA:GG:CTTTCTCATGCGTTCATGCACCACT**

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 :GG:CTTTCTCATGCGTTCATGCACCACT

 :ChrV 34339-80

**GGAAGATCTGAATTCTTGAAGACGAAAGGGCCTCGTGATACGCCGGGGGATCC:CTGGGTTAGCTTGAAG**

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GGAAGATCTGAATTCTTGAAGACGAAAGGGCCTCGTGATACGCCGGGGGATCC:CTGGGTTAGCTTGAAG

 :ChrV 34339+

PGSP4908 (*slx1*)

 ChrV 363+:

TATCAAATCTACCGTCTGGAACATCATCGCTATCCAGCTCTTT:GTGA-ACCGCTACC:

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**TATCAAATCTACAGTCTGGAACATCATCGCTATCCAGCTCTTT:GTGACACCGCGACC:GGCATCATCATCGTAGAGA**

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 :GTGACACCGCGACC:GGCATCATCATCGTAGAGA

 :ChrV 40995+

PGSP4909 (*slx1*)

 ChrV 528+:

CGAAATGTTTTATTGTAGAACAGCCCTAT:CAGCATCGAGAGG:

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**CGAAATGTTTTATTGTAGAACAGCCCTAT:CAGCAACGTGAGG:GGAAGCCATTGAGGTACCCGATAAAGTG**

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 :CAGCAACGTGAGG:GGAAGCCATTGAGGTACCCGATAAAGTG

 :ChrV 40375+

PGSP4914 (*slx1*)

 ChrV 23966+:

CAAATGATTGTCAATAGTATGTTTCTCTGAAGGCACA:GGTTAC:

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**CAAATGATTGTCAATAGTATGTTTCTCTGAAGGCACA:GGTTAC:AGACCATTACAATCACCGCGCACAGTTGCTGTA**

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 :GGTTAC:AGACCATTACAATCACCGCGCACAGTTGCTGTA

 :ChrV 27113+

PGSP4915 (*slx1*)

 ChrV 3634+:

ACGTCTTCCGCATTCCGAGTACTAGAG:AATGAAC:

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**ACGTCTTCCGCATTCCGAGTACTAGAG:AATGAAC:CCAGTTGCGGCTTGTTCTTAATGTTTTTAGCCTTCG**

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 :AATGAAC:CCAGTTGCGGCTTGTTCTTAATGTTTTTAGCCTTCG

 :ChrV 38081+

PGSP4917 (*slx1*)

 ChrV 528+:

GAAATGTTTTATTGTAGAACAGCCCTAT:CAGCATCGAGAGG:

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GAAATGTTTTATTGTAGAACAGCCCTAT:CAGCAACGTGAGG:GGAAGCCATTGAGGTACCCGATAAAGTGGCGGTG

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 :CAGCAACGTGAGG:GGAAGCCATTGAGGTACCCGATAAAGTGGCGGTG

 :ChrV 40375+

PGSP4967 (*sae2* chrV:35,709 gRNA – deletion of *CEN5*)

 ChrV 151941+:

CCGAGATATGTTTTATTTAAGAACTATGAATCTGTAAAT:

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**CCGAGATATGTTTTATTTAAGAACTATGAATCTGTAAAT:TT:GTTGTTAGCTATAAGGAGATTTTTAGCTACGAACAT**

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 :GTTGTTAGCTATAAGGAGATTTTTAGCTACGAACAT

 :ChrV 152305+

PGSP4998 (*sae2 hs-del*)

 ChrV 3699+:

CATTGAATCCAGCGCTCGGAAGCTCGTTCCTGC:AATAAA:

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**CATTGAATCCAGCGCTCGGAAGCTCGTTCCTGC:AATAAA:TGATAAGTTACTTGAAAAAAGAAATCACAATCAT**

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 :AAT-AA:TGATAAGTTACTTGAAAAAAGAAATCACAATCAT

 :ChrV 35940+

PGSP4999 (*sae2 hs-del*)

 Chr V 1726+:

TACTTTCAGTGGTAGTAGCATTAGTGTTGGAGTTGG:

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**TACTTTCAGTGGTAGTAGCATTAGTGTTGGAGTTGG:GCTTGCTTCTGTATCTATACTCAACGTTACTTTCTGG**

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 :GCTTGCTTCTGTATCTATACTCAACGTTACTTTCTGG

 :ChrV 39606+

PGSP5024 (*wt chrV:34,470 gRNA*)

 ChrV 24295+:

AATAACGGTGTCCGAGTCCTTTCCCTC:TCATGTTTTTT-TTTCAACTACA:

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**AATAACGGTGTCCGAGTCCTTTCCCTC:TCATGGTATTAATTTCAAC-ACA:TTTAAAAACTACATCATAACGAA**

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 :TCATGGTATTAATTTCAAC-ACA:TTTAAAAACTACATCATACCGAA

 :ChrV 34520+

PGSP5040 (*sae2 chrV:34,470 gRNA*)

 chrV 6656+:

CTTCGCATACCATTGTCATAGAATCTCACACTGACGCAT:GATTAAA-ACGA:

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**CTTCGCATACCATTGTCATAGAATCTCACACTGACGCAT:GATTAAATACGA:GTTTCCGCCAAATAATTTGAAAAAT**

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 :GATTAAATACGA:GTTTCCGCCAAATAATTTGAAAAAT

 :chrV 34484+

PGSP5065 *(exo1 yku80*)

 chrV 16,194+:

TTTCCAGCGGATGACACCACT:TGCCACA-GTTG:

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**TTTCCAGCGGATGACACCACT:TGCCACAAGTTG:ATCACTTTTAAGTATGGTACATATAGG**

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 :TGCCACAAGTTG:ATCACTTTTAAGTATGGTACATATAGG

 :chrV 34,575+

PGSP5074 *(sae2 mus81 chrV:25,817-1,749 gRNA*)

 chrV 116323- (in inserted URA3):

CAAGATATCCACATGTGTTTTTAGTAAACAAATTT:TGGG:

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**CAAGATATCCACATGTGTTTTTAGTAAACAAATTT:TGGG:GTCCAGGTATAATATCTAAGGATAAAAACGAAGGGAGG**

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 :TGGG:GTCCAGGTATAATATCTAAGGATAAAAACGAAGGGAGG

 :chrV 32662- (in inserted CAN1)

PGSP5075 *(sae2 mus81 chrV:25,817-1,749 gRNA*)

 chrV 22578+:

GGACTCTCCATTGTGCAGTGTTATCGTATTTTCTCGT:A:

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**GGACTCTCCATTGTGCAGTGTTATCGTATTTTCTCGT:A:AGAACTGTTAAAGACCCAGTACGAAAATTTTTCCATAA**

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 :A:AGAACTGTTAAAGACCCAGTACGAAAATTTTTCCATAA

 :chrV 27619+

PGSP5090 *(sae2 exo1 chrV:25,817-1,749 gRNA*)

chrV 116148- (in inserted URA3):

AGCTTTCGACATGATTTATCTTCGTTTCCTG::

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**AGCTTTCGACATGATTTATCTTCGTTTCCTG::GGGGTCCAGGTATAATATCTAAGGATAAAAACGAAGGGAGGCTCT**

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 CCT-::GGGGTCCAGGTATAATATCTAAGGATAAAAACGAAGGGAGGTTCT

 :chrV 32661- (in inserted CAN1)