|  |  |
| --- | --- |
| **Table S1. Genome engineering of cohesin variant mESCs** |  |
|  |  |  |  |
| Genotype | Type of edit | sgRNAs delivered (5' to 3') | Repair templates delivered (5' to 3') | Number of potential off-target locations with: |
|  1 mismatch |  2 mismatches |  3 mismatches |
| *Stag1-/- cl1* | In-frame indel | TATATTGACACTGTCGAATC  | none | 0 | 0 | 4 |
| AGGCATACAAGTACCCTTGC | 0 | 0 | 8 |
| *Stag1-/- cl2* | Frameshift indel | TATATTGACACTGTCGAATC  | 0 | 0 | 4 |
| AGGCATACAAGTACCCTTGC | 0 | 0 | 8 |
| *Stag2-/- cl1* | Frameshift indel | ACTGTCATTTCACTTCTTAC | ATACAGTATCATATATGATGAGTACATGATGGATACTGTCATTTTACTTTTGACTGGATTGTCTGACTCCCAAGTCAGAGCATTTCGAC | 0 | 2 | 12 |
|  |
| *Stag2-/- cl2* | Frameshift indel | GATTACCCACTTACCATGGC  | CTGTATGTACATTTTTATTTTAGGATAGTGGGGATTACCCACTTGGAGTGTTTGTACATAGATACAGATAAGGCAAGACAGATTCCTTT | 0 | 1 | 5 |  |
| GAGTGTTTGTACATAGATAC | 0 | 0 | 17 |  |
| *Stag2V181M* | Valine to Methionine substitution | AGTTCATTGGTGTGTTAGTA | CTCAGTGGAAGAAGTTCAAGTCCAGCTTCTGTGAGTTCATTGGTATGTTAGTACGACAGTGTCAATACAGTATCATATATGATGAGTAC | 0 | 0 | 14 |  |
| *Stag2S202L cl1* | Serine to Leucine substitution | ACTGTCATTTCACTTCTTAC | ATACAGTATCATATATGATGAGTACATGATGGATACTGTCATTTTACTTTTGACTGGATTGTCTGACTCCCAAGTCAGAGCATTTCGAC | 0 | 2 | 12 |  |
|  |
| *Stag2S202L cl2* |  |
|  |
| *Stag2∆164-196 cl1* | In-frame indel | GATTACCCACTTACCATGGC  | CTGTATGTACATTTTTATTTTAGGATAGTGGGGATTACCCACTTGGAGTGTTTGTACATAGATACAGATAAGGCAAGACAGATTCCTTT GTACATTTTTATTTTAGGATAGTGGGGATTACCCACTTACCATGTACAGGTAAGACAAGACAGATTCCTTTAAAGTGGTTGAGACAGAC | 0 | 1 | 5 |  |
|  |
| *Stag2∆164-196 cl2* | GAGTGTTTGTACATAGATAC | 0 | 0 | 17 |  |
| CCCACTTACCATTACAGGTA | 0 | 0 | 5 |  |
| *Smc1aR96H cl1* | Arginine to Histidine substitution | ACCTACAATGACTCGGGCAA | GGTCTACTCGGAGGAGGGTGCTGAGGACCGTACATTTGCCCACGTCATTGTAGGTGAGTGAGGCTCAGAAGGCTCGAGGGGTCCAATGA | 0 | 0 | 3 |  |
|  |
| *Smc1aR96H cl2* |  |
|  |
| *Smc1aR586W cl1* | Arginine to Tryptohan substitution | AGAAACTCCGGGAGCTGAAG | AAGATTCTTCACACACAGGTGAAACCTACTGATGAGAAACTCTGGGAGCTGAAGGGCGCCAAGCTAGTGATTGATGTAATTCGTTAT | 0 | 1 | 60 |  |
|  |
| *Smc1aR586W cl2* |  |
|  |
| *Smc1aR711W cl1* | Arginine to Tryptohan substitution | TCAGCCGCATTTGAAGCCCG | GAACTGCGTCAAGTGCAGTCTCAGGCACACGGGCTTCAAATGTGGCTGAAGTACTCACAGAGTGACCTAGAACAGACTAAGACAAGG | 0 | 0 | 3 |  |
|  |
| *Smc1aR711W cl2* |  |
|  |
| *Smc1aR816G cl1* | Arginine to Glycine substitution | GAGAATCAGAAGACTCGCTT | TTCCCCTTTCGTTCTGCAGCTTGGAATTTGAGAATCAGAAGACTGGCCTGGGCATCCAATTGGATTTTGAAAAGAATCAGTTGAAGGAG | 0 | 0 | 9 |  |
|  |
| *Smc1aR816G cl2* |  |
|  |