Supplementary File 2:

A: shRNA sequence.

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| Gene knockdown | shRNA sequence |
| *Tet3* | tgctgttgacagtgagcgcgcagtgtgtattcctaccatttagtgaagccacagatgtaaatggtaggaatacacactgcttgcctactgcctcgga |

B: Oligonucleotide sequences.

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| Primers | Sequence |
| M13 FOR long | GTTTTCCCAGTCACGACGTTGT |
| M13 REV long | AACAGCTATGACCATGATTACGCCA |
| Tet1 Transcript FW | GAAGGTATCCCTCGCCTGAT |
| Tet1 Transcript RV | CCACGAACAGCCAAAGGAGA |
| Tet2 Transcript FW | GTCAACATGCCAGGAGGATTC |
| Tet2 Transcript RV | TTGCGGGTGAGCCTCAGATG |
| Tet3 Transcript FW | ACACCCTCTACCAGGAGCTT |
| Tet3 Transcript RV | GCAGCCGTTGAAGTACATGC |
| Smad9\_DRIP\_RNA FW | CACAGCGAGTACAACCCTCA |
| Smad9\_DRIP\_RNA RV | ATGGAGACTGCGGAAACACA |
| Diexf\_DRIP\_RNA FW | ATGCGATAGCTCTTGGGAGG |
| Diexf\_DRIP\_RNA RV | TTCAACCCGCCCTTCCATTT |
| Tom1l1\_DRIP FW | CACATGGGTCTTACAGACAG |
| Tom1l1\_DRIP RV | GAGTTTGGGATGCTGGTGAT |
| Tom1l1\_RNA FW | TTCTGTTCTGGGTCTCCAGC |
| Tom1l1\_RNA RV | ATGTGCGTGCAGAACTGTGG |
| Slc8a1\_DRIP\_RNA FW | GTCCATTGCTGCCATCTACCA |
| Slc8a1\_DRIP\_RNA RV | GAAGATGTGAGGAGCTTGGCA |
| Actb\_DRIP\_RNA FW | GAACCGCTCGTTGCCAATAG |
| Actb\_DRIP\_RNA RV | CACCACAGCTGAGAGGGAAA |
| Hprt1\_DRIP\_RNA FW | GTCATGAAGGAGATGGGAGG |
| Hprt1\_DRIP\_RNA RV | ATGTAATCCAGCAGGTCAGC |
| Palm2\_DRIP FW | CAGCTTTATCCTGGGCGTGA |
| Palm2\_DRIP RV | TCATCCCGCATCCTATGCAC |
| Palm2\_RNA FW | ACAATGGCCTCCTCGCTGAT |
| Palm2\_RNA RV | ATCACAGCAGTTGGCCTCCA |
| Gpr180\_DRIP FW | ACCTTGATACACGCGCTCTT |
| Gpr180\_DRIP RV | TGCTGACCTTGACAATCGAC |
| Gpr180\_RNA FW | AGACGGAGCACAACCTCACA |
| Gpr180\_RNA RV | CGGGTTGAGGAGCACCATTT |
| Srpk1\_DRIP FW | TGCTCACAACGTCTTACCCA |
| Srpk1\_DRIP RV | CCTCCTGAGACCAAGATTCT |
| Srpk1\_RNA FW | AGTCATTGGGGTCTTCCTGC |
| Srpk1\_RNA RV | TGAAACTCAGCACCGAGGCT |
| Hip1r\_DRIP FW | TGCATGACTATCAGCGGTAC |
| Hip1r\_DRIP RV | TTATGGAGCTGTCGGCCAAT |
| Hip1r\_RNA FW | AGGGAGCCTTTACCTTCTGG |
| Hip1r\_RNA RV | GAGGACCTTGTGAAGGACGT |
| B2m\_DRIP\_RNA FW | ACGTAACACAGTTCCACCCG |
| B2m\_DRIP\_RNA RV | TCAGTCTCAGTGGGGGTGAA |
| APOE Pair A FW | GCTGCGTTGCTGGTCACATT |
| APOE Pair A RV | CAGGAGGTTGAGGTGAGGAT |
| APOE Pair B\_1 FW | GCCCGAGCTGCGCCAG |
| APOE Pair B\_1 RV | ACAGTGTCTGCACCCAGC |
| APOE Pair B\_2\_mRNA FW | GGCAGAGCGGCCAGCG |
| APOE Pair B\_2\_mRNA RV | CTCCTCCTGCACCTGCTC |
| APOE Pair C\_1 FW | GCCTACAAATCGGAACTGGA |
| APOE Pair C\_1 RV | CAGCTCCTCGGTGCTCTG |
| APOE Pair C\_2 FW | CCGTTCCTTCTCTCCCTCTT |
| APOE Pair C\_2 RV | TCCAGTTCCGATTTGTAGGC |
| APOE Pair D FW | TGAAGGAGCAGGTGGCGGA |
| APOE Pair D RV | CTGGCGCTGCATGTCTTCCA |
| Pou5f1 FW | GAAGCCGACAACAATGAGAACC |
| Pou5f1 RV | CTCCAGACTCCACCTCACACG |
| Sox17 FW | ACAACGCAGAGCTAAGCAAGAT |
| Sox17 RV | GTACTTGTAGTTGGGGTGGTCCT |
| Sox6 FW | TCAACCTGCCAAACAAAAGC |
| Sox6 RV | GCTGGATCTGTTCTCGCATC |
| Dll1 FW | GCAGGACCTTCTTTCGCGTAT |
| Dll1 RV | AAGGGGAATCGGATGGGGTT |
| U6 snRNA FW | GCTTCGGCAGCACATATACTA |
| U6 snRNA RV | AAATATGGAACGCTTCACGA |
| Gapdh FW | AACTTTGGCATTGTGGAAGG |
| Gapdh RV | ACACATTGGGGGTAGGAACA |

C: Antibodies used in this study.

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| Product | Concentrations | Company/ Cat. No. | Notes |
| S9.6 | 5ug/ IP; 1:1000 (DB) | Millipore; MABE1095 | Anti-DNA:RNA hybrid antibody used to detect R-loops |
| dsDNA | 1:1000 (DB) | Santa Cruz; sc-58749 | Anti-dsDNA specific antibody (HYB331-01) |
| 5hmC | 5ug/ IP; 1:1000 (DB) | Active Motif; 39791 | 5-hydroxymethylcytosine antibody |
| 5mC | 5ug/ IP; 1:500 (DB) | Active Motif; 61255 | 5-methylcytosine antibody  |

D: g-blocks sequences.

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| g-blocks |
| *ACTB P1* |
| CTGACAACCGGTGTTTTCCCAGTCACGACGTTGTTAATACGACTCACTATAGGGTTACCCAGAGTGCAGGTGTGTGGAGATCCCTCCTGCCTTGACATTGAGCAGCCTTAGAGGGTGGGGGAGGCTCAGGGGTCAGGTCTCTGTTCCTGCTTATTGGGGAGTTCCTGGCCTGGCCCTTCTATGTCTCCCCAGGTACCCCAGTTTTTCTGGGTTCACCCAGAGTGCAGATGCTTGAGGAGGTGGGAAGGGACTATTTGGGGGTGTCTGGCTCAGGTGCCATGCCTCACTGGGGCTGGTTGGCACCTGCATTTCCTGGGAGTGGGGCTGTCTCAGGGTAGCTGGGCACGGTGTTCCCTTGAGTGGGGGTGTAGTGGGTGTTCCTAGCTGCCACGCCTTTGCCTTCACCTATGGGATCGTGGCTGTCAGCCTTGAGGGTCAGCCTGGCCCAGGCTCCTGGCGTAATCATGGTCATAGCTGTTTGTACACTGACA |
| *ACTB P2* |
| CTGACAACCGGTGTTTTCCCAGTCACGACGTTGTTAATACGACTCACTATAGGGGGGACTATTTGGGGGTGTCTGGCTCAGGTGCCATGCCTCACTGGGGCTGGTTGGCACCTGCATTTCCTGGGAGTGGGGCTGTCTCAGGGTAGCTGGGCACGGTGTTCCCTTGAGTGGGGGTGTAGTGGGTGTTCCTAGCTGCCACGCCTTTGCCTTCACCTATGGGATCGTGGCTGTCAGCCTTGAGGGTCAGCCTGGCCCAGGCTCCCATAGGCTTAGGAGAGGCCGCAATTCCTACCTGTTCATCCAGACAGAGGGGGACCTGGAATCAAAGTCAAGTTGGGGTAGGGGGTCCATGGGGCCATATCTGGCCTGCAGACAGCTCTGGTTAGCTATGGGCTGAGGTCTGGATTCTGCCTTGTGACTGGAGACTGGGCGCCATCCCGTGGCCTCTGAGGGCTGGCGTAATCATGGTCATAGCTGTTTGTACACTGACA |
| *APOE* |
| CTGACAACCGGTGGTTTTCCCAGTCACGACGTTGTAATACGACTCACTATAGGGCCGGTGAGAAGCGCAGTCGGGGGCACGGGGATGAGCTCAGGGGCCTCTAGAAAGAGCTGGGACCCTGGGAACCCCTGGCCTCCAGGTAGTCTCAGGAGAGCTACTCGGGGTCGGGCTTGGGGAGAGGAGGAGCGGGGGTGAGGCAAGCAGCAGGGGACTGGACCTGGGAAGGGCTGGGCAGCAGAGACGACCCGACCCGCTAGAAGGTGGGGTGGGGAGAGCAGCTGGACTGGGATGTAAGCCATAGCAGGACTCCACGAGTTGTCACTATCATTTATCGAGCACCTACTGGGTGTCCCCAGTGTCCTCAGATCTCCATAACTGGGGAGCCAGGGGCAGCGACACGGTAGCTAGCCGTCGATTGGAGAACTTTAAAATGAGGACTGAATTAGCTCATAAATGGCGTAATCATGGTCATAGCTGTTTGTACACTGACA |

E: S9.6 EMSA oligonucleotides.

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| Single stranded oligonucleotide | Sequence |
| ssDNA\_S9.6 EMSA | GCTGTCAGAC |
| ssRNA\_S9.6 EMSA | GUCUGACAGC |