

**Table S1**

| Oligonucleotides        | Sequence (5' to 3')                                                         |
|-------------------------|-----------------------------------------------------------------------------|
| 3 x FLAG tag            | ATGGACTACAAGGACCACGACGGTGACTACAAGGACCACGACATCGACTACAAGGACGACGACGACAAG       |
| ALKBH8_fwd              | CGGGTACCATGGACAGCAACCATCAAAGTA                                              |
| ALKBH8_rev              | CTGGCGGCCGCGGCCTTTTGAAGAATCACAC                                             |
| L3 DNA linker           | AppAGATCGGAAGAGCACACGTGTddC                                                 |
| L5 RNA linker           | OH-AGGGAGGACGAUGCGG-OH                                                      |
| TruSeq_adaptor_fwd      | AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCTAGAGTTCTACAGTCCGA |
| TruSeq_adaptor_rev      | CAAGCAGAAGACGGCATACGAGATCGTTTCAGTGACTGGAGTTCAGACGTGTGCTCTTCCGATC            |
| tRNA-Glu-TTC            | CCAGGAATCCTAACCGCTAGACCATAT                                                 |
| tRNA-Lys-TTT            | ACTTGAACCCTGGACCCTCAG                                                       |
| tRNA-Lys-CTT            | CGCCCAACGTGGGGCTCGAACCCAC                                                   |
| tRNA-Gly-CCC            | CATGATACCACTACACCAGCGGCGC                                                   |
| 5'-tRNA-Glu-CTC_capture | 5AmMC6 CGCCGAATCCTAACCCTAGACCACCA                                           |
| 3'-tRNA-Lys-TTT_capture | 5AmMC6 GCCCGAACAGGGACTTGAACCCTGGAC                                          |
| SNORD18A_fwd            | CAGTAGTGATGAAATTCCAC                                                        |
| SNORD18A_rev            | AGCATCAGAACATCCGAGAA                                                        |
| SNORD18C_fwd            | GTTATGATGAGATTCCACT                                                         |
| SNORD18C_rev            | AAAATCAGAACTTCCACAAA                                                        |
| SNORD34_fwd             | CGTCCATGATGTTCCGCAAC                                                        |
| SNORD34_rev             | CGTCTCAGCCAGTGCTGCTT                                                        |
| SNORD72_fwd             | AGCTTATCAGTGATGTTGT                                                         |
| SNORD72_rev             | CGCTTATCTCAGTTAAATGC                                                        |
| SNORD101_fwd            | GTTTGAATGATGACTTTAA                                                         |
| SNORD101_rev            | GTTTGTGCACTCTTATGT                                                          |
| yRNA5_fwd               | AGTTGGTCCGAGTGTTGTGG                                                        |
| yRNA-5_rev              | CAGCAAGCTAGTCAAGCGCG                                                        |
| ValutRNA2_fwd           | GGGCTGGCTTTAGCTCAGCG                                                        |
| ValutRNA2_rev           | AAAAGAGCTGGAAAGCACCC                                                        |
| 7SK_fwd                 | GGATGTGAGGGCGATCTGGC                                                        |
| 7SK_rev                 | GGCAGACTGCCACATGCAGC                                                        |
| TRNA-Lys-UUU_fwd        | GTCGGTAGAGCATCAGACTT                                                        |
| TRNA-Lys-UUU_rev        | CGCCCGAACAGGGACTT                                                           |