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| **Supplementary File 2. Sequences of oligos** | |
| **Structure of 2′Ome-RNA::TEG oligos** | 2’OMeRNA(GGAAGGGCCGAGCGC) – TEG spacer – DNA(oligo) |
| **Mammalian cell cultures** | |
| TLR2.0-donor-F | GGGCCAAGAACAGATGGTCA |
| TLR2.0-donor-R | GGCGGATCTTGAAGTTCACC |
| Sec61-B-donor-F | GGGCCCACACTAAAGTTAGAG |
| Sec61-B-donor-R | GCGCCATTGGGATGTTCAG |
| TOMM20-donor-F | GACGCGTATTGGGATGATGA |
| TOMM20-donor-R | GCGCCATTGGGATACCTTAA |
| GAPDH-donor-F | CTCCTGCACCACCAACT |
| GAPDH-donor-R | TGGGGTTACAGGCGTGC |
| GFP\_to\_BFP\_donor | GTGCCCTGGCCCACCCTCGTGACCACCCTGTCTCATGGAGTTCAGTGCTTCAGCCGCTACCCCGAC |
| 05\_emx1F\_90bp | TGGCCCAGGTGAAGGTGTG |
| 06\_emx1R\_90bp | GGTTGCCCACCCTAGTCATT |
| 108\_emx1\_250hr\_F | GCCCTGCCATCCCCTTCTGT |
| 109\_emx1\_250hr\_R | CCATTGCTTGTCCCTCTGTC |
| 114\_trac-250hr\_F | GATAGCTTGTGCCTGTCCCT |
| 115\_trac-250hr\_R | AGAACCTGGCCATTCCTGAA |
| EMX1 PCR1\_F\_NGS | ctacacgacgctcttccgatctGGCCTCCTGAGTTTCTCATCT |
| EMX1 PCR1\_R\_NGS | agacgtgtgctcttccgatctCAGCACTCTGCCCTCGT |
| gSeq\_F\_guideseq | G\*T\*TTAATTGAGTTGTCATATGTTAATAACGGT\*A\*T |
| gSeq\_R\_guideseq | A\*T\*ACCGTTATTAACATATGACAACTCAATTAA\*A\*C |
| ***C. elegans*** | |
| cmo17659\_csr1 donor | CGATTGGAAGTAGAGGTTCT |
| cmo17660\_csr1 donor | ATCATGATATTGACTATAAA |
| cmo-KG686F\_eft3-gfp-donor | ATGAGTAAAGGAGAAGAACT |
| cmo-KG687R\_eft3\_gfp\_donor | TATCACCTTCAAACTTGACT |

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| **Mouse** | |
| cmo\_KG993F\_tyr-donor | AGGGGTGGATGACCGTGAGT |
| cmo\_KG994R\_tyr-donor | CTTATTCTTTTCGGAGACACTC |
| cmo\_KG882F\_tyr\_genoyping | TTGTTGGCAAAAGAATGCTG |
| cmo\_KG883R\_tyr\_genotyping | GCTTCATGGGCAAAATCAAT |
| cmo\_KG884F\_tyr\_sequencing | GGATGGGTGATGGGAGTC |
| cmo\_KG674F\_sox2-v5donor | GCTGCGCCCAGTAGACTGCA |
| cmo\_KG675R\_sox2-v5donor | TCAGATTTTTCCTACTCTCC |
| cmo\_KG823F\_sox2F1-genotyping | ACATGATCAGCATGTACCTCC |
| cmo\_KG824R\_sox2R1-genotyping | TAATTTGGATGGGATTGGTGG |

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| **Zebrafish** |  |  |
| hey2\_F\_umi | ctacacgacgctcttccgatctNNWNNVDHACGGCTCGGGGCGTGTTTTCTAT | LAM PCR |
| hey2\_R | agacgtgtgctcttccgatctCATCCATTAAGTGAATCATCAGTTCC | Amplification PCR |
| 5p\_DS\_constant\_F | CTACACGACGCTCTTCCGA |

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| Hey2 avi tag donor | GCTCAGAGAGTGTGTGGTGTCTGTACCTGCGCGCACTGCATCATGTCAGGACTGAACGATATCTTCGAGGCTCAGAAAATCGAGTGGCACGAGGGCGCGCCAAAGCGGCCCTGTGAGGACAGCACGTCCGACAGCGACATGGATGAA |