**Supplementary file 1A Primers used in this research article are presented.**

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| **Primer name** | **Primer sequence (5′-3′)** |
| **RT-PCR and qRT-PCR for *P. rapae*** | |
| 18s-q-F | CCTGCGGAAGGATCATTAAC |
| 18s-q-R | AACGAAAGAAAGCGTCCAAA |
| TPH-q-F | AAGATTGTACCGGGTTCACG |
| TPH-q- R | AACGATGCCAGTCCAATTTC |
| TRH-q-F | TACCAAAAACACGCCTGTGA |
| TRH-q- R | AGCCAAACCGGAAAGAAAAT |
| SERT-q-F | GCGGCATCACAAATCTTCTT |
| SERT-q-R | TCCGGGTAGACGATGAAAAC |
| 5-HT1A-q-F | TTTGCAGCTCAGCATCAATC |
| 5-HT1A-q-R | TTGGCTTACGAGGCACTTCT |
| 5-HT1B-q-F | AACCTGGTGGGAGACATCTG |
| 5-HT1B-q-R | CGGCCAGAGAAAGTATGAGC |
| 5-HT2A-q-F | CCAGAGCTATGCGTCATCAA |
| 5-HT2A-q-R | TCCACATTGCCTTCTCTGTG |
| 5-HT2B-q-F | TCCAGAATGTGAAAAGAGAATACC |
| 5-HT2B-q-R | CAATACTGACACAAAAGCACCTT |
| 5-HT7-q-F | CTCCGCATCAGAAAAAGCTC |
| 5-HT7-q-R | ACGGCGTCAGGAATTGTATC |
| **RACE PCR for *P. rapae*** | |
| TRH-3′outer | ATTGGCAACGCTATATTTCTTCACG |
| TRH-3′inner | CACGGATTCGTTTGAGGAAGCTAAG |
| 5-HT1A-3′outer | CCAACGTACAAGGGCCGAAACAATTGC |
| 5-HT1A-3′inner | CCACGGTAGACACGTTAGACGAAGAACCA |
| 5-HT1A-5′outer | CGCTTCTCATTCCTTATGTGGATGTAGTCG |
| 5-HT1A-5′inner | AATCCAACCCTGGCTAACCTCATAAACAGC |
| 5-HT2B-3′outer | GGTTGGGTTATGCCTCATCTATGGT |
| 5-HT2B-3′inner | TGTAAAAAGAGATAGCCAGCACCCT |
| 5-HT7-5′outer | CGCTGTGGAACCTCTTGTAGGGTTC |
| 5-HT7-5′inner | GCTGCCCCTCCATTTTTCACATTTA |
| **Complete sequence** | |
| TPH- compF | ACTCTTTCGACCTCTCCTCTC |
| TPH- compR | CACCAATTCACTTTAAACAGCT |
| TRH- compF | CGTCCTTACTCGTCAAACTAACC |
| TRH- compR | CGCCGTTTTGTATGTACTAAAAATT |
| 5-HT1A-compF | CGATTTTGAGGAGAGGAGC |
| 5-HT1A-compR | AACACATACCGTATCACAGAGC |
| 5-HT1B-compF | GATTGTGAGTGAGTGCGATGTGC |
| 5-HT1B-compR | GACAGATAACGCCTATTGCCTAC |
| 5-HT7-compF | TCAAACGGAGAAACCTGATGTA |
| 5-HT7-compR | CTGGGGTATTGACAATCATAGAAAG |
| **Construction of expression vector** | |
| 5-HT1B - KpnⅠ | TT***GGTACCACC***ATGGAGGGCGTGTACC |
| 5-HT1B -EcoRⅠ | TTT***GAATTC***CTAGGGCGGAGCCCGA |
| 5-HT7 - KpnⅠ | TT***GGTACCACC***ATGGCGTCTCAAAAT |
| 5-HT7 - XholⅠ | CC***CTCGAG***TCATAGAAAGCTCTC |
| **RT-PCR for *D.melanogaster*** | |
| 5-HT1B-F | CGTATTCGTAATTGCCGCCA |
| 5-HT1B-R | CCGGTCCCAATATCCATCCA |
| 5-HT2B-F | ACACCACTGTACAGGAGAGC |
| 5-HT2B-R | AGCGGTCTGTCCCCAAAATA |
| TPH-F | TCGAGACCTGGGGCATTATC |
| TPH-R | CCGAGAGCTGAGTAGTCCAG |
| RPL11- F | CGATCCCTCCATCGGTATCT |
| RPL11- R | AACCACTTCATGGCATCCTC |
| **Genomic PCR for *D.melanogaster*** | |
| 5-HT1B-genomic-F | CTGCGCTCCTTCTTCAGC |
| 5-HT1B-genomic-R | CGTAATTGCCGCCATTATACTC |

**Supplementary file 1B siRNA sequence**

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| **Gene name** | **Sense（5'-3'）** | **Antisense（5'-3'）** |
| negative control | **UUCUCCGAACGUGUCACGUTT** | **ACGUGACACGUUCGGAGAATT** |
| TPH | **GCUAGCGUUCCGAGUAUUUTT** | **AAAUACUCGGAACGCUAGCTT** |
| Pr5-HT1B | **GCUGACUCCAAGAGAGAAATT** | **UUUCUCUCUUGGAGUCAGCTT** |
| Pr5-HT2B | **CCAGUUCACCAUCAUCUAUTT** | **AUAGAUGAUGGUGAACUGGTT** |
| Pr5-HT7 | **GGUUGUGAAGCAUCUCCAUTT** | **AUGGAGAUGCUUCACAACCTT** |