

Supplementary Materials:

Table S1. Short binding motifs of V3 and V5.

| Name | Sequences |
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| V3M1 (29mer) | 5'-CGGATCGATAAGCTTCGATCATCGATCAC-3' |
| V3M2 (40mer) | 5'-ACCTCTTCAAGAACATCCCTGTCACGGATCCTCTAGAGCA-3' |
| V3M3 (29mer) | 5'-CAAGAACATCCCTGTCACGGATCCTCTAG-3' |
| V3M4 (22mer) | 5'-CGGATCGATAAGCTTCGATCAT-3' |
| V5M1(27mer) | 5'-AAGCTTCGCATAGACCCAGCTGGTCCG-3' |
| V5M2 (41mer) | 5'-TAGACCCAGCTGGTCCGGAATAAGATGTCACGGATCCTC-3' |
| V5M3 (37mer) | 5'-AGCTTCGCATAGACCCAGCTGGTCCGGAATAAGAT-3' |

Adenines that have monothioated phosphates are shown in red.