### Supplementary Information of Guo et al. List of primers and sgRNAs

| Name          | Sequence                      | Source              |
|---------------|-------------------------------|---------------------|
| UHRF1\_sg1\_ss | caccgTGCTGGGACACGAACATGG     | Brunello Library    |
| UHRF1\_sg1\_as | aaacCATGTTCTGTCCCGAGCAC      | Brunello Library    |
| UHRF1\_sg2\_ss | caccgCTACAACCCCGACAACCCA     | Brunello Library    |
| UHRF1\_sg2\_as | aaacTGGGGTTCGGGCTGGTAGc      | Brunello Library    |
| DNMT1\_sg1\_ss | caccgGCTTACTGGGAGGAGG        | Brunello Library    |
| DNMT1\_sg1\_as | aaacctCTGCTGCTCCAGTAGAGCc   | Brunello Library    |
| DNMT1\_sg2\_ss | caccgGAGGCAAAAGAAATCCCCA     | Brunello Library    |
| DNMT1\_sg2\_as | aaacTGGGGTTGTCGGGGTTGTAGc   | Brunello Library    |
| RING1\_sg1\_ss | caccgTAAGATCTCTCTCTAGGGG     | Brunello Library    |
| RING1\_sg1\_as | aaacCCCGGCTAGTATAGTACTTAc   | Brunello Library    |
| RING1\_sg2\_ss | caccgGACCACAACGAGGAGG        | Brunello Library    |
| RING1\_sg2\_as | aaacCCCCCTCTCTCTCTCGG       | Brunello Library    |
| SCML2\_sg1\_ss | caccgAGGTACGGGTTACGACTGGA    | Brunello Library    |
| SCML2\_sg1\_as | aaacCTCGTGAATGATTTCAAAGT    | Brunello Library    |
| SCML2\_sg2\_ss | caccgCCATGGAATGATTTCAAAGT   | Brunello Library    |
| SCML2\_sg2\_as | aaacACTTTGAATGATTTCAAAGT    | Brunello Library    |
| Cp F          | GGCAGGGAAGGAAGAATAACG        | PMID: 28794029     |
| Cp R          | CTTAGCGCTCTCTATTTGGAATATCC   | PMID: 28794029     |
| LMP1p F       | TCCAGAATTGGAGAGGAGT          | PMID: 28794029     |
| LMP1p R       | GCCACCGTCTGCTTCAGGAAGTT      | PMID: 28794029     |
| LMP1p Set2 F  | AGGCGATTGAGGAAGAAGG          | PMID: 24257606     |
| LMP1p Set2 R  | GCCCTACGTAGCCAGAAGAACA       | PMID: 24257606     |
| LMP2p F       | AAGCGGGGATCGAGGAAGTATG       | PMID: 28794029     |
| LMP2p R       | AAAGAGGTAGGGCGCAACAA         | PMID: 28794029     |
| BZLF1p F      | GCAAGGTGCAATGTTTTATAGGTT     | PMID: 28794029     |
| BZLF1p R      | GCTGGTGCCCTGGCCTAAAGG        | PMID: 28794029     |
| Qp F          | AAATTGGGTGACCACTGAGGAG      | PMID: 28794029     |
| Qp R          | ATAGCATGATTACCCGCCATCC      | PMID: 28794029     |
| Wp F          | AGTGGGCTTGGGTTTGTGACT       | This study         |
| Wp R          | TGACAAATGGCTGTGTCT          | This study         |
| TRAF1p F      | ATGTACTTTGTGGCTAAGA         | This study         |
| TRAF1p R      | AGGTACATCTGGCGCTCGAG        | This study         |
| STAT3p F      | GAACGAGCTGGCCTTCCA          | This study         |
| STAT3p R      | CTCGGGAAACCGGCTTGAATTA      | This study         |
| LMP1 transcript F | TGAGTGACTGGAGCGGAGGA      | This study         |
| LMP1 transcript R | GATACCAAAAGAAGTAAGCA     | This study         |
| EBNA3C transcript F | AAGGTGCATTACCCACTG     | This study         |
| EBNA3C transcript R | AGCAGTAGCCTGGGAACACC   | This study         |