

## Supplemental Information

### Locations of tested MHV-68 DNA fragments and primer sequences for PCR-cloning:

M1 (nt 2023-3357)

Forward primer: 5'-CCGGAATTCCAGCTGGCCACCTTAT-3';

Reverse primer: 5'-CGCGGATCCTATTTGCATAATAATGTA-3';

M2 (nt 3375-5925)

Forward primer: 5'-CCGGAATTC GAAGAGACTTTCAG-3';

Reverse primer: 5'-CGCGGATCC GGTGGTGAACAAAG-3';

M4 (nt 8497-9867)

Forward primer: 5'-CCGGAATTCGCTCTTGTTGCGATGGGAC-3';

Reverse primer: 5'-CGCGGATCC GTTGAGAGTAATTTTTATTAA-3';

ORF 4 (nt 9877-11040)

Forward primer: 5'- CCGGAATTCGCCAACTTCCACTTTTTTCT-3';

Reverse primer: 5' - CGCGGATCCTCAGAGTCTGCAACATC-3'

ORF 6 (nt 11216 -14274)

Forward primer: 5'- CGGAATTCATGGAGACAACCAATG-3'

Reverse primer: 5' - CGCGGATCC ATTCCACATCATCTGAAGT-3'

ORF 7 (nt 4527-6485)

Forward primer: 5' - CGGAATTCATGTCTAAGGAAGTGGCT-3'

Reverse primer: 5' - CGCGGATCC ATGTCTAAGGAAGTGGCTG-3'

ORF 8 (nt 17213 -19055)

Forward primer: 5' - CGGAATTCCTATAACTACATCGCT-3'

Reverse primer: 5' - CGCGGATCC AGGGAAGTTGATTCATCTT-3'

ORF 9A (nt 19218 -21203)

Forward primer: 5' - CGGAATTCATGAATTTTTACAAC-3'

Reverse primer: 5' - CGCGGATCC ATCCTCACAAGCTGCC-3'

ORF 9B (nt 21204 – 22297)

Forward primer: 5' - CGGAATTC CCCATCACAAGACCAT-3'

Reverse primer: 5' - CGCGGATCC GAATAATCGAGGGGGCA-3'

ORF10 (nt 22301 – 23489)

Forward primer: 5' - CCGGAATTC ATCACTGGTGCGTGACCTG-3'

Reverse primer: 5' - CGCGGATCC TCTGTGATCGCTCTGGAAG-3'

ORF12 (nt 24698 – 25776)

Forward primer: 5'- CCGGAATTC CATATAAGCCTGACAATTC-3'

Reverse primer: 5'- CGCGGATCC AAACCCTTTAAAATTTC-3'

ORF17 (nt 28282 – 29968)

Forward primer: 5'-CCGGAATTC ATGGCTGATGCACCTATATA-3';

Reverse primer: 5'-CGCGGATCC TTTATTGACACACGCAACCC-3';

ORF18 (nt 29928 -30783)

Forward primer: 5'-CCGGAATTC ATGTCCACATATCCTCCCA-3';

Reverse primer: 5'- CGCGGATCC TTTATTTTTGTGTGTTGGGG-3';

ORF19/20 (nt 30816 – 32881)

Forward primer: 5'-CCGGAATTC ATGAATGAATTAGGAGCCA-3';

Reverse primer: 5'- CGCGGATCC TGTCTCGCATGGTGGTCCCC-3';

ORF21 (nt 32879 -34751)

Forward primer: 5'-CCGGAATTC ATGGCTTCTGGAGGTAAAA-3';

Reverse primer: 5'- CGCGGATCC TCTGTGAGTATTTGGGTA-3';

ORF22 (nt 35084 - 37036)

Forward primer: 5'-CCGGAATTC TCTGATGTCTTTAAGCCAC-3';

Reverse primer: 5'- CGCGGATCC TTAATGAAAATGTACTTTA-3';

ORF23 (nt 36956 -38161)

Forward primer: 5'-CCGGAATTC ATGCTTCGGATTTTAAAA-3';

Reverse primer: 5'- CGCGGATCC TTTATTTTATTTGCTGTCA-3';

ORF24 (nt 38231 -40264)

Forward primer: 5'-CCGGAATTC ATGACAATATTCTTACCAG-3';

Reverse primer: 5'- CGCGGATCC TCGCCTGGACGAGCTGGGG-3';

ORF 25A (nt 40513-42374)

Forward primer: 5'-CGGAATTCC AAGGATCTCAGGAG-3';

Reverse primer: 5'- CGCGGATCC CCACCTTCTCATGTCCGCA-3';

ORF 25B (nt 43502 -43955)

Forward primer: 5'-CGGAATTCC TAAGCAATGAAATAG-3';

Reverse primer: 5'- CGCGGATCC CATAGGCTGGGTCAGGC-3';

ORF 26 (nt 43956 -46400)

Forward primer: 5'-CGGAATTC AATTCAGGACCACAAA-3';

Reverse primer: 5'- CGCGGATCC TAAAATAATCTTTATTTAGTC-3';

ORF 29A (nt 50899 -51462)  
Forward primer: 5'-CGGAATTC ATGTTTATAGCTTCAA-3';  
Reverse primer: 5'- CGCGGATCC ATTCATCAAAAAGTTTTGT-3';

ORF 29B (nt 50344 -50884)  
Forward primer: 5'-CGGAATTC TCAAATTTTTATTAGA-3';  
Reverse primer: 5'- CGCGGATCC ACCATACTTTGCTGCCA-3';

ORF 29C (nt 46396 -47298)  
Forward primer: 5'-CGGAATTC GACTTCAACAAACAG-3';  
Reverse primer: 5'- CGCGGATCC TTTTATTGAAAAAGAGA-3';

ORF30 (nt 47508- 47742)  
Forward primer: 5'-CCGGAATTC ATGTCTGCCCCCGGATGC-3';  
Reverse primer: 5'- CGCGGATCC TCATACACTTGTCTTGGCC-3';

ORF 31 (nt 47711– 48310)  
Forward primer: 5'-CGGAATTC ATGTATAAAAGATGCAA-3';  
Reverse primer: 5'- CGCGGATCC TTCTAAATACATCCATTTCTC-3';

ORF37-38 (nt 5413-55795)  
Forward primer: 5'-CCGGAATTCATGGAAGGGTTCGATTATTC-3';  
Reverse primer: 5'-CGCGGATCC TTTATTAAAGTAATTAAG-3';

ORF42 (nt 58874-5963)  
Forward primer: 5'-CCGGAATTC ATGATCTCTTCAAACATTA -3';  
Reverse primer: 5'-CGCGGATCC TCATAAAATAATGTTGTC -3';

ORF45 (nt 63663- 64283)  
Forward primer: 5'-CCGGAATTC ATGGACCCCTTTAAGA-3';  
Reverse primer: 5'- CGCGGATCC CCATGGTTGGATTGA-3';

ORF46 (nt 64273-65022)  
Forward primer: 5'- CGCGGATCC ATGGACACTTGGCT-3';  
Reverse primer: 5'- CGCGGATCC TTATAAGTTCCAAGAAATT-3';

ORF47 (nt 65035- 65448)  
Forward primer: 5'- CCGGAATTC ATGTTTGGGAAGCCTA-3';  
Reverse primer: 5'- CGCGGATCC TTACCAGGCGGCGA-3';

ORF48 (nt 65582- 66583)  
Forward primer: 5'- CGCGGATCC GACAGGTAAAGCATAG-3';  
Reverse primer: 5'- GCTCTAGA CTTTTTGAACACAT-3';

ORF49 (nt 66748 -67644)

Forward primer: 5'- CCGGAATTC GAAATTCCCTCGTAG-3';

Reverse primer: 5'- CGCGGATCCTAAAATTCATCCCCCAT-3';

ORF50 (RTA) (nt 66760-69279)

Forward primer: 5'-CCGGAATTC ATGGCCTCTGACTC-3';

Reverse primer: 5'- CCGGAATTC GTTTATGACTCCAGG-3';

ORF51 (nt 69464 -70918)

Forward primer: 5'- CCGGAATTC ATGTGTGGCGTTAA-3';

Reverse primer: 5'- GCTCTAGA TTATTCATGTAAACAC-3';

ORF 52 (nt 70958-71365)

Forward primer: 5'- CGGAATTC ATGGCGTCCAAAAAG-3';

Reverse primer: 5'- CGCGGATCC TTTATTCATGATCATGTC-3';

ORF 53 (nt 70957 -71689)

Forward primer: 5'- CGGAATTC ATGCAGGTCCTGGT-3';

Reverse primer: 5'- CGCGGATCC TTTATTCATGATCATG-3';

#### **Sequences of primers for RT-PCR:**

M2 forward: 5'-GTTACAGACTCTCACG-3'

M2 reverse: 5'- TGCCCCCAGATGTAGAG-3'

ORF37 forward: 5' - GCCATAATGGGCGTTT -3'

ORF37 reverse: 5' - AGTGTCCAGGGAAACTC -3'

GAPDH forward: 5' -TCGGAGTCAACGGATTTG-3'

GAPDH reverse: 5' -GCATCGCCCCACTTGATT-3'

#### **Sequences of primers for real-time PCR:**

mZAP forward: 5'-CCCGAAGCGCAACTCTACG-3'

mZAP reverse: 5' -CGCTGGGACTGTGCATAGTG-3'

GAPDH forward: 5' -CAACAGCAACTCCCACTCTTC-3'

GAPDH reverse: 5' -GGTCCAGGGTTTCTTACTCCTT-3'

M2 forward: 5' -CCGAGTCCTGTACCAAGTCC-3'

M2 reverse: 5' -TGTTGGTTCGGGAGTTTAGG-3'

RTA forward: 5'- CTTCGCCACAGAAGAGTTC-3'

RTA reverse: 5'- TTGCGGAACAGGTGTGATTA-3'

#### **Target sequences of shRNAs:**

mZAP shA: 5'- ATATTCTCACGATGTTCTC -3';

mZAP shB: 5' - CAGTTTAAAGCATCCATGA -3';

mZAP shC: 5'- ACCCAAATGGCTTTAGTCAAAT -3';

mZAP shD: 5'- AGCACACAGGGACAGAAGCAA -3';

mZAP shE: 5'- CCGGCATTCTGCATAGTAAAT-3'