

pMK18

AGCTTGCATG CCTGTTGGCA TGCCTCAGTT GACCCCATTTG ACCCTTCTCT
CTGGAGGTGG TAGCTAGAGG GGAATGGTCC CACCCTGGAG CCCACCCCT
TGCCAACCCT GGGCCCGGTA TAATGCCGGG CAATGGGAAG ACCGGGCCCC
CTGGGGGCC AAGGCGGCAG GGCCGCGTGA GGACCAAAA GAGAGGCTCC
CGCTGGGAGG GAACCCAAAT TCCAGCAACC TTTTCTTCG CCTAAGGTTA
TCCCTCCCA GCGGGAAAG CAATAGGCG CAAGGCGGCG CGCGGGGGAG
TGCCGTCTCC GACGCGCGAA ACGGGAGGGG **TTTATGCCCC** **AAGAAGGAGT**

RepA →

TGAAGGAAG AGCTATAAAG AACAGCCGGA AGGACTCACC GAGCGGGGCC
GGGCTTTCCT CGAGGCCCTG GCCCGGAGGA AGCGGGCGAG GGGCGAGGAG
CTTCCGCCCC TCTACCTGAA GCTCCTGGAG GGGCCGCGC CCCCGAGAA
GGGGTCCAT GAGCCCCGC CCGAGGAGGC GCCTCCCCG GAGGACCTCC
GCCGGAAGCT CCGGAGGCG CCGCCTTCCC CGGCCCTCCC CAACCGACAG
GAGCTCTCCG CCTCCCCGCC CCCGCCGAG ATGAGGCGGG ACGCCTGGAG
CCTCGCCGAC CGCTCCTGG AGGAGGGGGA GCGGCGGGC ACCCTGCCAG
GGCTTCCGA GCGGGAGCGG AGGGTGTACC GGACCCTCCT CGCCCTGGGC
CTCGAGGTCC TGGCCCGGAG GCTGGGCCCG GGGAGGCCCC TGCCAGGAA
CCTGTCCCAG GTCTCCTTCT TCGCCGTGAA CGACGCCCTG GCCGTGGCCC
TGGGAATCCC CCCGGCCTCC CTCTACGGG TCCTGGCCTC CCTGGAGGCC
AAGGGCTCA TCCGCCGGAG GGCCTGGCGC ACCCGGCCA CCCTCAAGGG
CCGGACGGGG GTCTACGCCG GCGGGACCCT CTACGCCGTG CGCCTGCCCC
ACCGGAGGC CCGCCCCGC CTGGACCCGG AGGACTTCCG CCACCCTGG
CGGGACCTGG AGGGGACGC CCGTCAGGGG CGCACCCTT GGAGCTTGAG
AGAGTCATAT ACAAGTCCTC CTAAGGAGGA CTCCGGGGTC CTCCAGCTCC
TCCTTCGGTT TTCGTTATCC CCTGGCGAAG CCGAAACTCC GTTAGCTTTA
GA CTCTCTCA CCGCCCTCCT CCGGGCCCG CCCGCCGAGC GCCGGGCCCT
GGTGGAGGCC CTCGCCCTCT CCTGGCCCG GGAGTTCGG GATCCCGGA
GCGTGCCTT CTACGCCTGG GTCCTCTGGA ACGCCCTCCG GGCCGAGCTC
TACGGCCTGA TGGAGGGGGC CCTCGAGGCC GTCGCCTGGG CGGTCCGGCG
GGCGCGGGAG GCCGCGGCA AGGTCCTCTG GAGCCCGAG GCGAGGGGG
TCCGGCGCCC CGGGGCCCTC CTCGCCACC TCCTCCGGGA GCGGGGCCCTC
CTGGAGCTCT TCCGCCAGGC CCTCAGTGG CGGGTGGCGT AGGGCTCCCC
CCGGGCTAAG CTGGAGGTAG CCCATCCAGG GCCTCTGGGG GGTGGCTTGT
GTATCAAGAC TGGCTGTTCA AGGACTGCC AGGGGGCTGG CGCCTCCGCT
ACCGCCGAA CGGGGGCGGC TACGAGGCCT CCCGGGACGG TGAGAGGTGG
GAGAAGGTCC CCTCGGTCAC GGAGGTTACG GGGCGCCTGA ACAAGAACCT
TCAGGACTGG GCCGTGCGCC AGGTGGTGGA GTACCTCCAG GGGGAGCTGG
TCCCGGGGCT GGTCTCACG GAGGAGGAG TGAACCGCT CCTGGACGGT
GCGTCCAAAG CCCACCGCT GGCCGCGCAG AGGGCCGCC GCGGAGGCGC
CGACCTCCAC GCCTGGGCGG AGGCCTACCT CAAAGGGCAA AGGCCTCCCT
TCCCCGAGGA GGAGCCCTT CGGGGGATGG CCCTCGCCCT GCGGACTGG
TGGGACGGGA ACGGGGCGA GGCCTGCGC TCCGAGGAG CGGTCTTCCA
CCCGGAGCAC CGCTACGCCG GCGGGTGGGA CCTGGTGGCC CGGCTGGGG
GGAGGGTGGT GGTGGTGGAC CTGAAGACCT CCCCCGGGC CTACCCGGAG
CACCTCCTCC AGGTGGGGGC CTACCCCTG GCCCTCCGG GCGAGGGGGT
GGCGGTGGAG GGGGGCTTCG TGCTGGCCCT GAGGGAAGGC TTAGCCTCCA
GGAGGTCCCC CTGGAGGAG CGGCGCAGGC CTCCTGGGG CTCTGGCCG
TCCACCGCTT TCTGAAGGTC CTCGAGGCTA CCCCTGAGC ACCCGTTGT
ACCACACCTT AAGGGCCTCG AGGTCCAGG CCACCACCG CCGGCTCCCC



TCGGGCCGGG GATCCCCGGG AGTATAACAG AAACCTTAAG GCCCGACCGC
TTGACAAGGG CGCGTGAGGT TTTTACGATA GCGCCGGATG CGGGGAAAAA
GGGCTCCTTT TGGGGGGTTT TCCCCGCACC GGGCGGACCT GGGCGGAGAG
GAAACGCGGC AACTCGCCCC TCTCGGGTTC CCGCCCACGA CCCTTAAGGA
GGTGTGAGGC AT**ATGAATGG** **ACCAATAATA** **ATGACTAGAG** **AAGAAAGAAT**

Kat →

GAAGATTGTT **CATGAAATTA** **AGGAACGAAT** **ATTGGATAAA** **TATGGGGATG**
ATGTTAAGGC **TATTGGTGT** **TATGGCTCTC** **TTGGTCGTCA** **GACTGATGGG**
CCCTATTCGG **ATATTGAGAT** **GATGTGTGTC** **ATGTCAACAG** **AGGAAGCAGA**
GTTCAGCCAT **GAATGGACAA** **CCGGTGAGTG** **GAAGGTGGAA** **GTGAATTTTT**
ATAGCGAAGA **GATTCTACTA** **GATTATGCAT** **CTCAGGTGGA** **ATCAGATTGG**
CCGCTTACAC **ATGGTCAATT** **TTTCTCTATT** **TTGCCGATTT** **ATGATTCAGG**
TGGATACTTA **GAGAAAGTGT** **ATCAAACCTGC** **TAAATCGGTA** **GAAGCCCAA**
AGTTCCACGA **TGCGATTTGT** **GCCCTTATCG** **TAGAAGAGCT** **GTTTGAATAT**
GCAGGCAAAT **GGCGTAATAT** **TCGTGTGCAA** **GGACCGACAA** **CATTTCTACC**
ATCCTTGACT **GTACAGGTAG** **CAATGGCAGG** **TGCCATGTTG** **ATTGGTCTGC**
ATCATCGCAT **CTGTTATACG** **ACGAGCGCTT** **CGCTCTTAAC** **TGAAGCAGTT**
AAGCAATCAG **ATCTTCCTTC** **AGGTTATGAC** **CATCTGTGCC** **AGTTCGTAAT**
GTCTGGTCAA **CTTTCCGACT** **CTGAGAAACT** **TCTGGAATCG** **CTAGAGAATT**
TCTGGAATGG **GATTCAGGAG** **TGGACAGAAC** **GACACGGATA** **TATAGTGGAT**
GTGTCAAAC **GCATACCATT** **TTGAACGGAA** **TTTATGCGGT** **GTGAAATACC**

PUC18 →

GCACAGATGC GTAAGGAGAA AATACCGCAT CAGGCGCCAT TCGCCATTCA
GGCTGCGCAA CTGTTGGGAA GGGCGATCGG TCGGGCCTC TTCGCTATTA
CGCCAGCTGG CGAAAGGGGG ATGTGCTGCA AGGCGATTAA GTTGGGTAAC
GCCAGGTTTT TCCCAGTCAC GACGTTGTAA AACGACGGCC AGTGCC**AAGC**

HindIII

TTGCATGCCT **GCAGGTCGAC** **TCTAGAGGAT** **CCCCGGGTAC** **CGAGCTCGAA**
TTCGTAATCA TGTCATAGCT GTTTCCTGTG TGAAATTGTT ATCCGCTCAC

EcoRI

AATTCCACAC AACATACGAG CCGGAAGCAT AAAGTGTAAG GCCTGGGGTG
CCTAATGAGT GAGCTAACTC ACATTAATTG CGTTGCGCTC ACTGCCCGCT

← Plac

TTCCAGTCGG GAAACCTGTC GTGCCAGCTG CATTAAATGAA TCGGCCAACG
CGCGGGGAGA GCGGTTTGC GTATTGGGCG CTCTTCCGCT TCCTCGCTCA
CTGACTCGCT GCGCTCGGTC GTTCGGCTGC GGCGAGCGGT ATCAGCTCAC
TCAAAGGCGG TAATACGGTT ATCCACAGAA TCAGGGGATA ACGCAGGAAA
GAACATGTGA GCAAAAGGCC AGCAAAGGC CAGGAACCGT AAAAAGGCCG
CGTTGCTGGC GTTTTTCCAT AGGCTCCGCC CCCCTGACGA GCATCACAAA
AATCGACGCT CAAGTCAGAG GTGGCGAAAC CCGACAGGAC TATAAAGATA
CCAGGCGTTT CCCCCTGGAA GCTCCCTCGT GCGCTCTCCT GTTCCGACCC
TGCCGCTTAC CGGATACCTG TCCGCCTTTC TCCCTTCGGG AAGCGTGGCG
CTTTCTCAA GCTCACGCTG TAGGTATCTC AGTTCGGTGT AGGTCGTTTCG
CTCCAAGCTG GGCTGTGTGC ACGAACCCCC CGTTCAGCCC GACCGCTGCG
CCTTATCCGG TAACTATCGT CTTGAGTCCA ACCCGGTAAG ACACGACTTA
TCGCCACTGG CAGCAGCCAC TGGTAACAGG ATTAGCAGAG CGAGGTATGT
AGGCGGTGCT ACAGAGTTCT TGAAGTGGTG GCCTAACTAC GGCTACACTA
GAAGAACAGT ATTTGGTATC TGCCTCTGTC TGAAGCCAGT TACCTTCGGA
AAAAGAGTTG GTAGCTCTTG ATCCGGCAA CAAACCACCG CTGGTAGCGG
TGGTTTTTTT GTTTGCAAGC AGCAGATTAC GCGCAGAAAA AAAGGATCTC
AGAAGATCC TTTGATCTTT TCTACGGGGT CTGACGCTCA GTGGAACGAA

AACTCACGTT AAGGGATTTT GGTCATGAGA TTATCAAAAA GGATCTTCAC
CTAGATCCTT TTAAATTAAA AATGAAGTTT TAAATCAATC TAAAGTATAT
ATGAGTAAAC TTGGTCTGAC AGTTACCAAT GCTTAATCAG TGAGGCACCT
ATCTCAGCGA TCTGTCTATT TCGTTCATCC ATAGTTGCCT GACTCCCCGT
CGTG TAGATA ACTACGATAC GGGAGGGCTT ACCATCTGGC CCCAGTGCTG
CAATGATACC GCGAGACCCA CGCTCACCGG CTCCAGATTT ATCAGCAATA
AACCAGCCAG CCGGAAGGGC CGAGCGCAGA AGTGGTC

Bold: THERMUS REPLICON

Red: RepA and Kat proteins

