NITNLCPFGEVFNATRFASVYAWNRKRISNCVADYSVLYNSASFSTFKCYGVSP
TKLNDLCFTNVYADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAW
NSNNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFNCY
FPLQSYGFQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKSTNLVKNKCVNF
NFNGLTGTGGGSGGSGGSGGSGGSTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSV
LTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEM
TKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLT
VDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK

FIG.1

MSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICGDSTECSN
LLLQYGSFCTQLNRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQI
LPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLT
VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVT
QNVLYENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVK
QLSSNFGAISSVLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIR
ASANLAATKMSECVLGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPA
QEKNFTTAPAICHDGKAHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVS
GNCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASV
VNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPGGSGGSGGSGGSGGST
CPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWY
VDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALP
APIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWES
NGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNH
YTQKSLSLSPGK

FIG.2

VNLTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDLFLPFFSNVTWFHAIH
VSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWIFGTTLDSKTQSLLIVNNA
TNVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVYSSANNCTFEYVSQPF
LMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLVRDLPQGFSALEPLVD
LPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNEN
GTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP
FGEVFNATRFASVYAWNRKRISNCVADYSVLYNSASFSTFKCYGVSPTKLNDL
CFTNVYADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDS
KVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFNCYFPLQSYG
FQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTG
TGVLTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTN
TSNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEH
VNNSYECDIPIGAGICASYQTQTNSPRRARGGSGGSGGSGGSGGSTCPPCPAPE
LLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVH
NAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTIS
KAKGQPREPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPEN
NYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSL
SLSPGK

FIG.3

VNLTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDLFLPFFSNVTWFHAIH
VSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWIFGTTLDSKTQSLLIVNNA
TNVVIKVCEFQFCNDPFLGVYYHKNNKSWMESEFRVYSSANNCTFEYVSQPF
LMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLVRDLPQGFSALEPLVD
LPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNEN
GTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP
FGEVFNATRFASVYAWNRKRISNCVADYSVLYNSASFSTFKCYGVSPTKLNDL
CFTNVYADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDS
KVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTPCNGVEGFNCYFPLQSYG
FQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTG
TGVLTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTN
TSNQVAVLYQDVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEH
VNNSYECDIPIGAGICASYQTQTNSPRRARSVASQSIIAYTMSLGAENSVAYSN
NSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICGDSTECSNLLLQYGSFCTQLN
RALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNFSQILPDPSKPSKRSFIE
DLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLLTDEMIAQ
YTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIA
NQFNSAIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVL
NDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSE
CVLGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICH
DGKAHFPREGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNT
VYDPLQPELDSFKEELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVA
KNLNESLIDLQELGKYEQYIKWPGGSGGSGGSGGSGGSTCPPCPAPELLGGPS
VFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKP
REEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQP
REPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPP
VLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK

FIG.4

MLLVNQSHQGFNKEHTSKMVSAIVLYVLLAAAAHSAFAAD

FIG.5

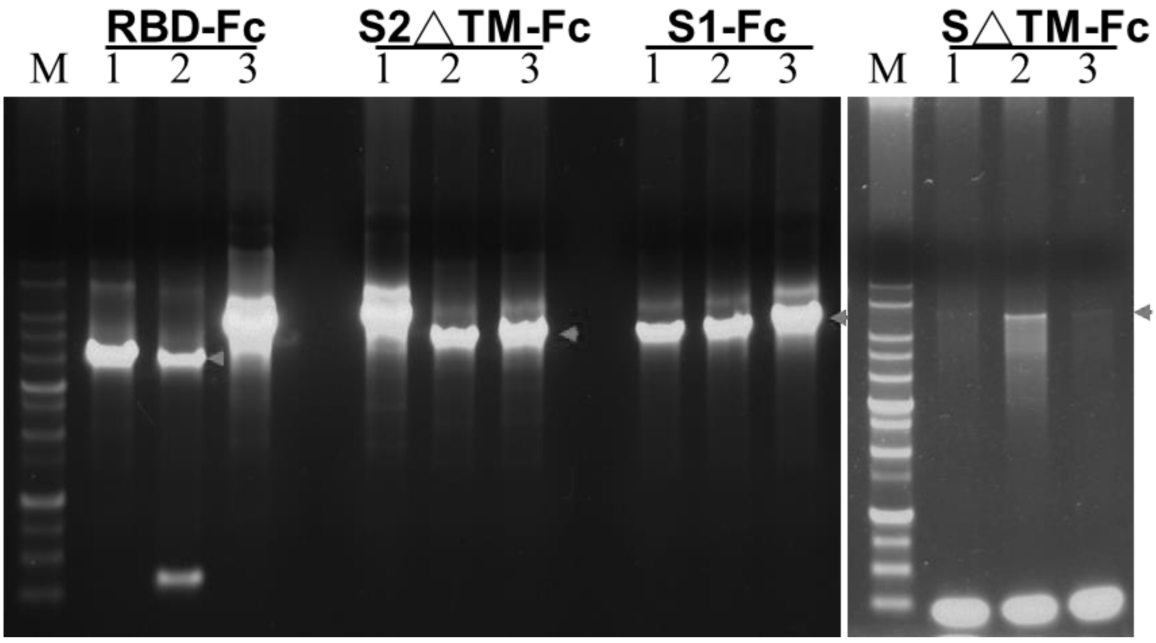


FIG.6

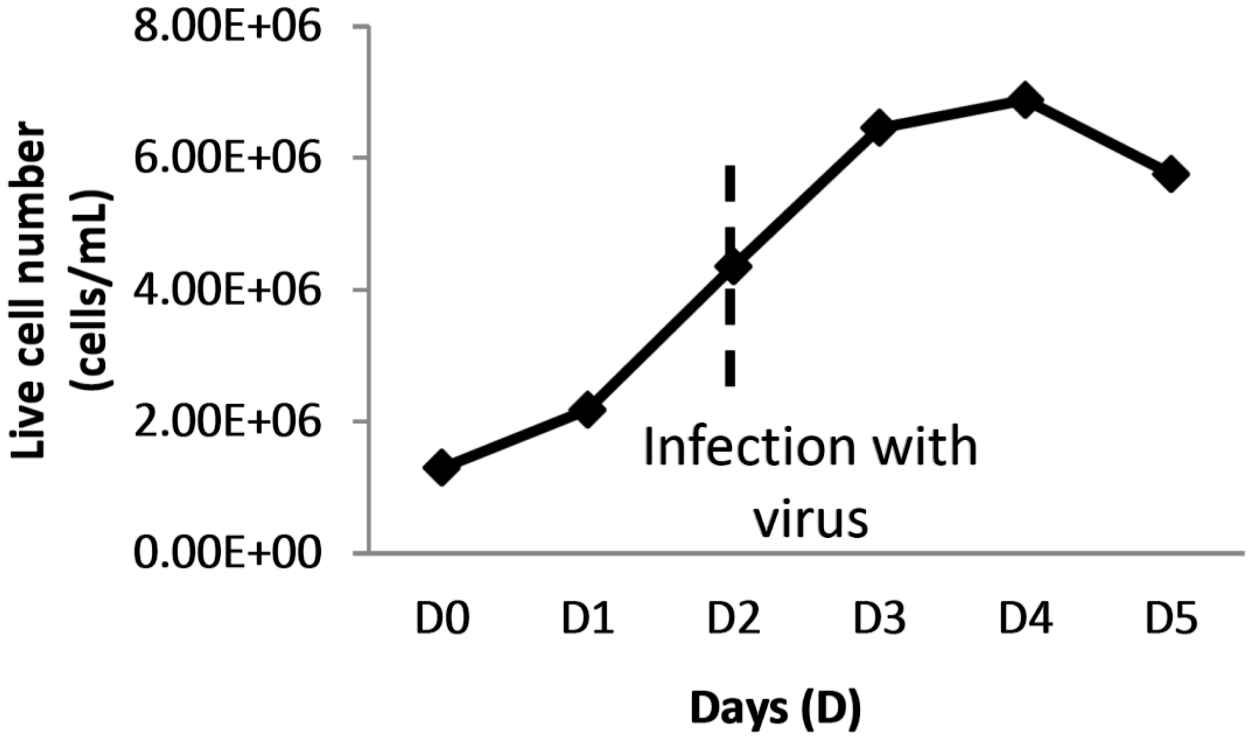

8.00E+06
6.00E+06
4.00E+06
2.00E+06
0.00E+00
Live cell number (cells/mL)
Infection with virus
D0
D1
D2
D3
D4
D5
Days (D)

FIG.7

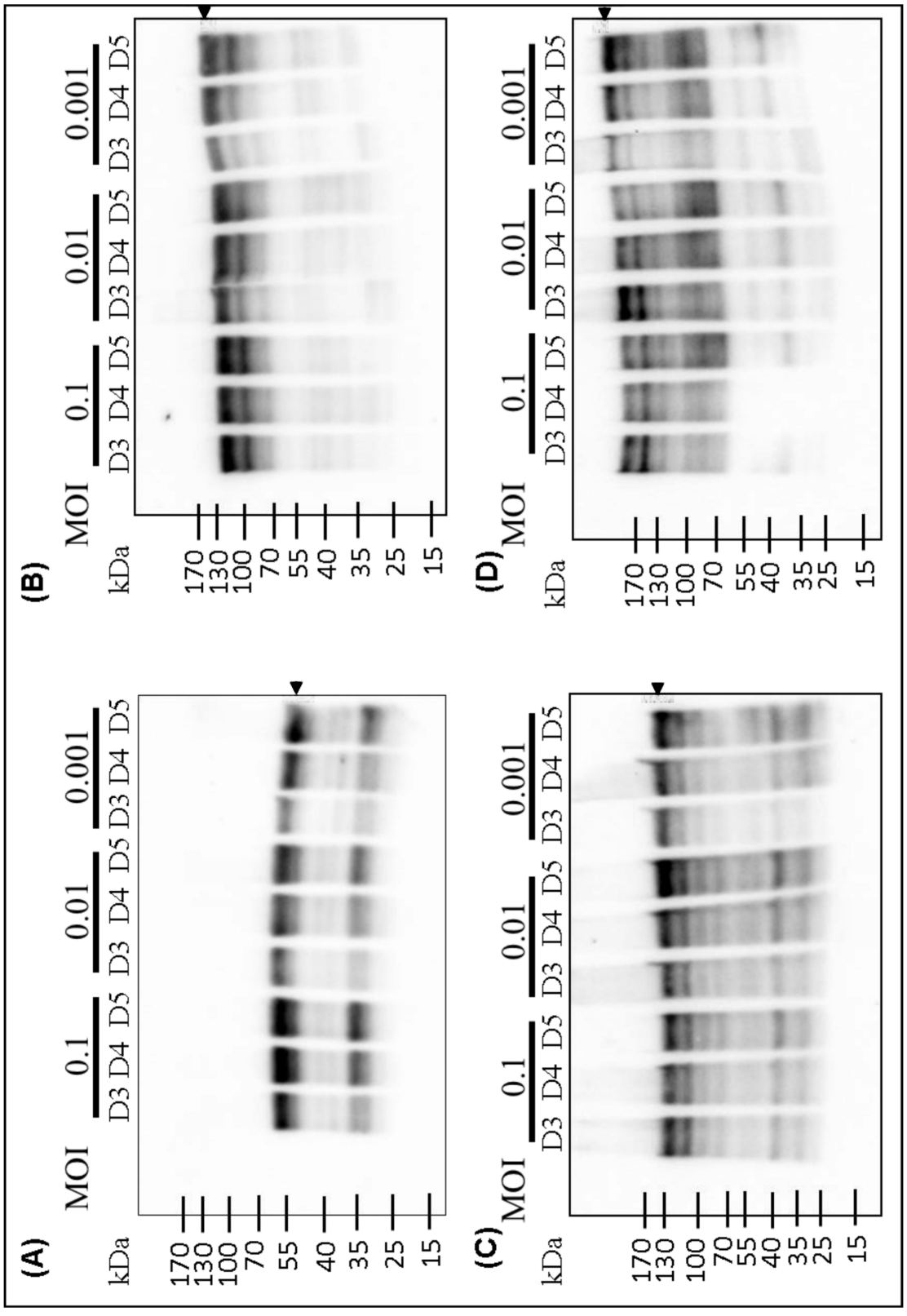


FIG.8

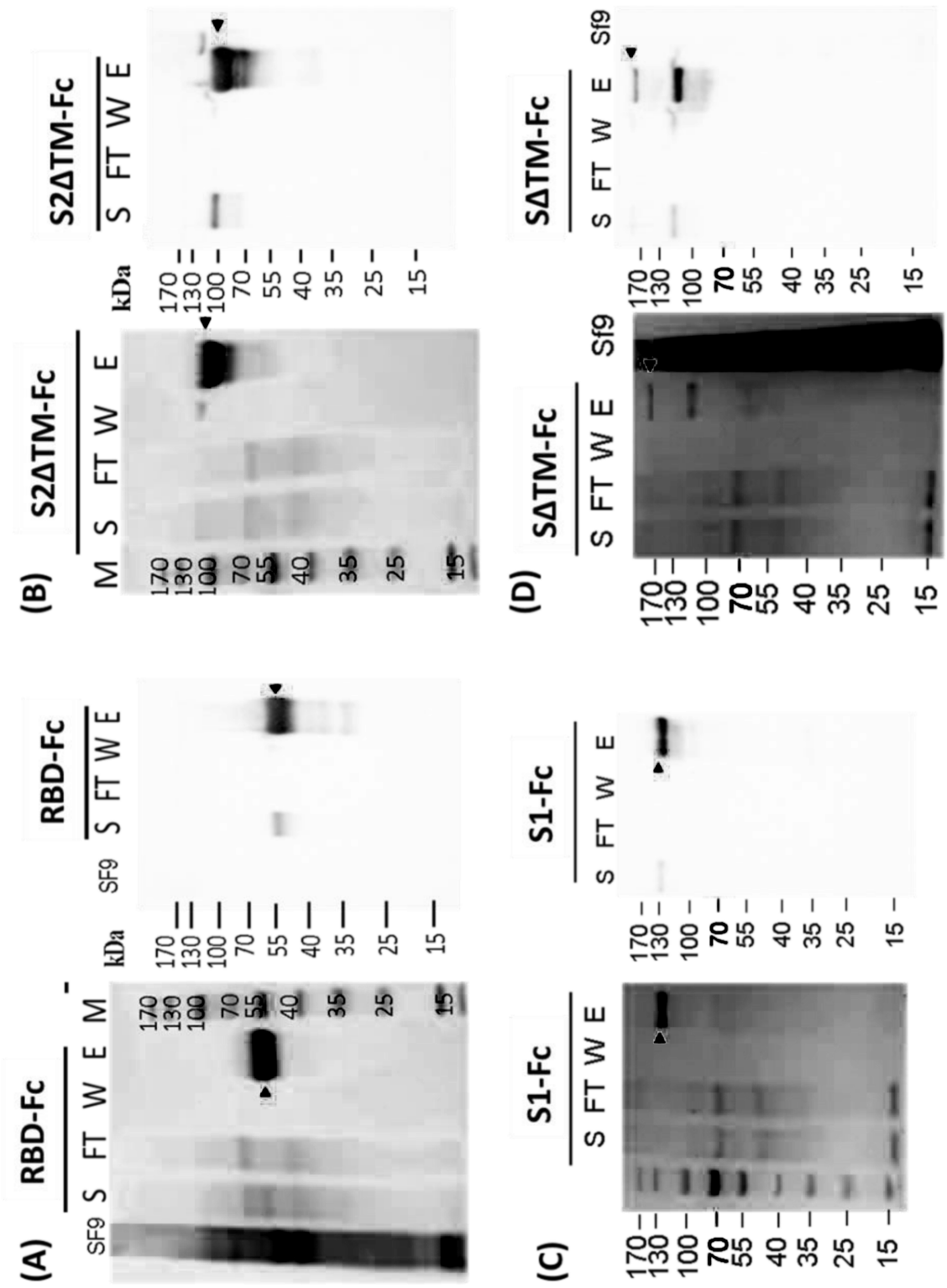

(A)
RBD-Fc
SF9 S FT W E M
kDa
170
130
100
70
55
40
35
25
15
(B)
S2ΔTM-Fc
M S FT W E
S2ΔTM-Fc
S FT W E
kDa
(C)
S1-Fc
S FT W E
(D)
SΔTM-Fc
S FT W E Sf9

FIG.9

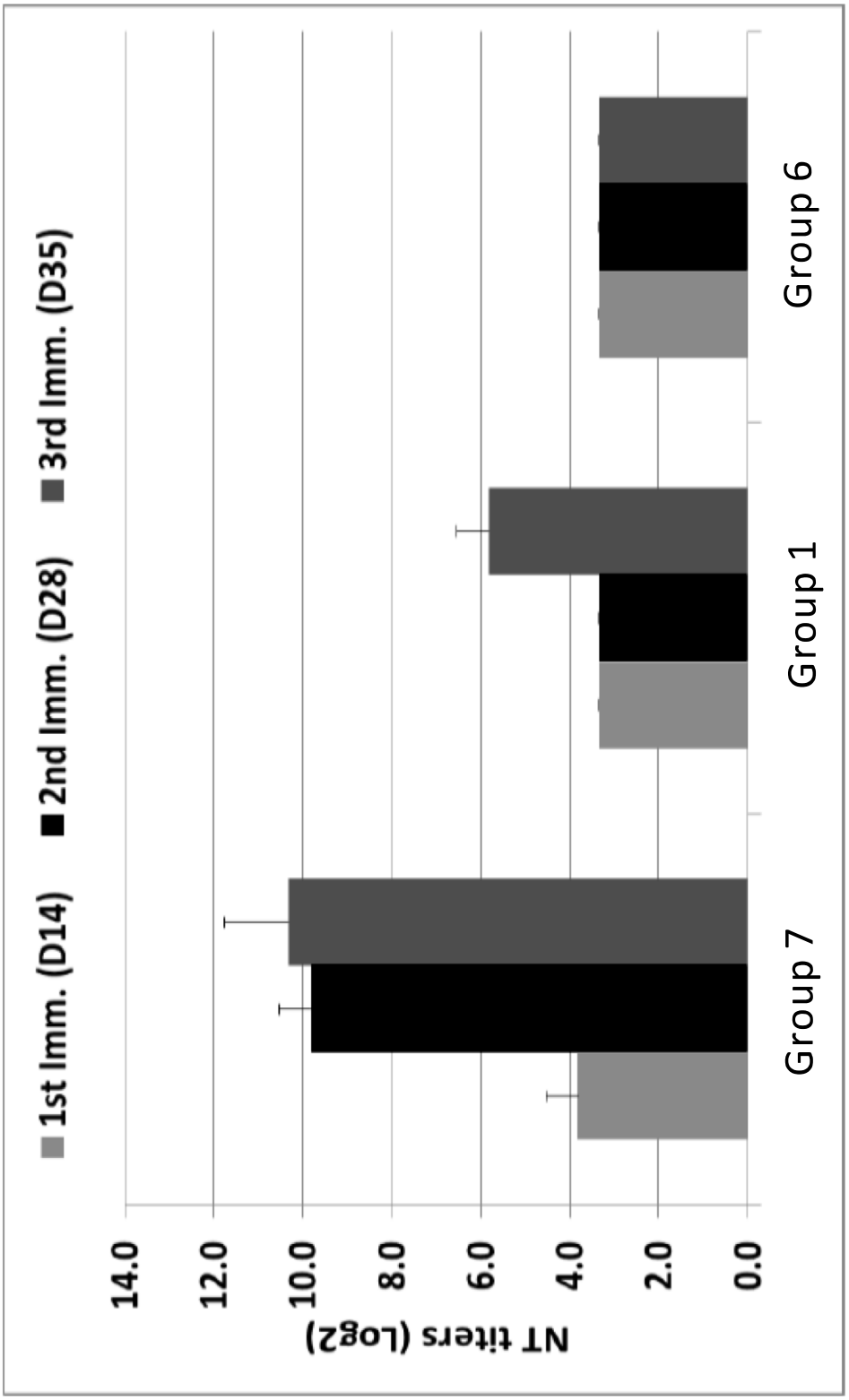

1st Imm. (D14)
2nd Imm. (D28)
3rd Imm. (D35)
NT titers (Log2)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Group 7
Group 1
Group 6

FIG.10

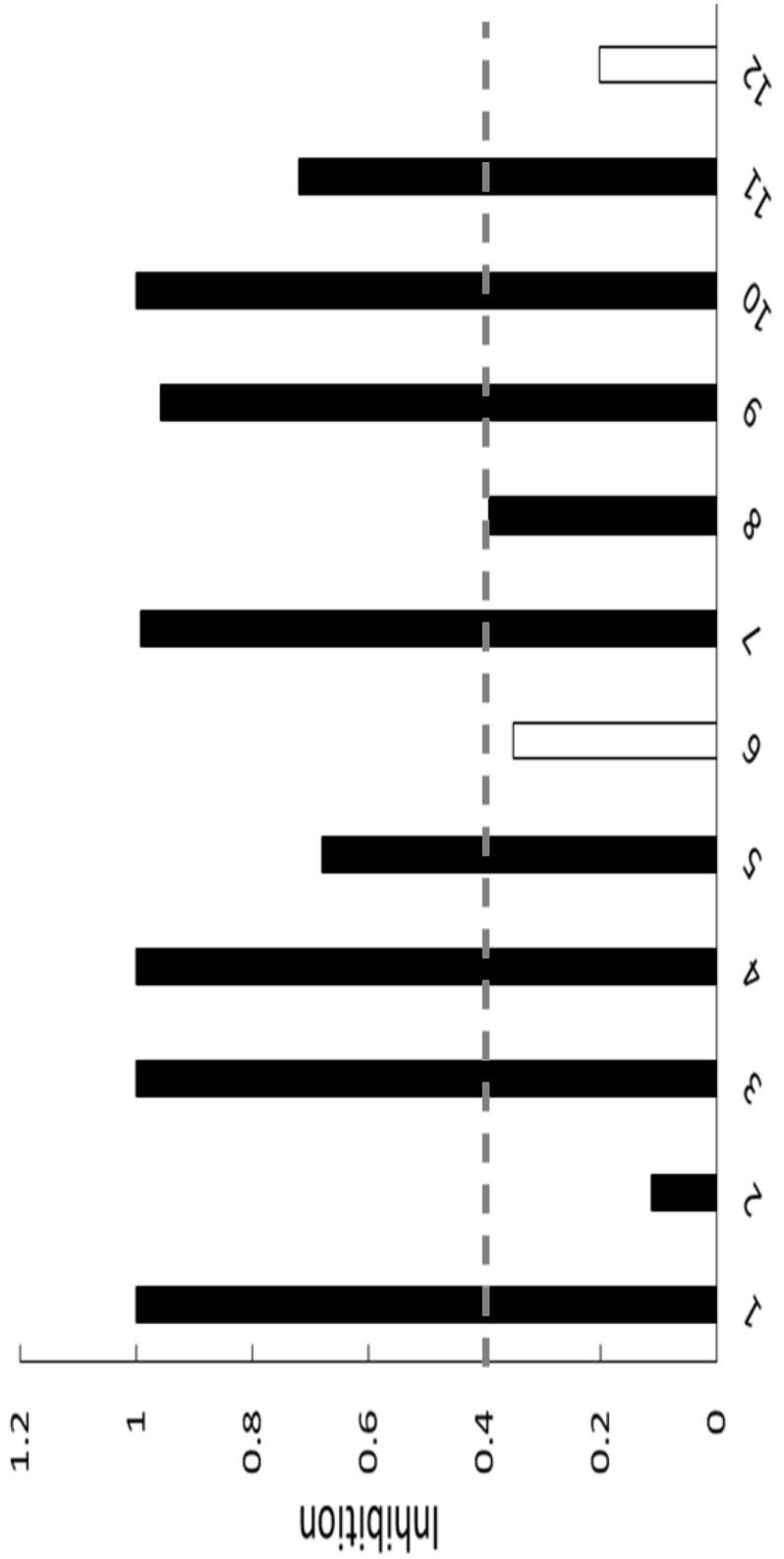


FIG.11

N protein

MSDNGPQNQRNAPRITFGGPSDSTGSNQNGERSGARSKQRRPQGLPNNTASW
FTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS
PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAI
VLQLPQGTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSRGTSPARMA
GNGGDAALALLLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQK
RTATKAYNVTQAFGRRGPEQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASA
FFGMSRIGMEVTPSGTWLTYTGAIKLDDKDPNFKDQVILLNKHIDAYKTFPPT
EPKKDKKKKADETQALPQRQKKQQTVTLLPAADLDDFSKQLQQSMSSADST
QA

E protein

MYSFVSEETGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCCNIVNVSLVKPS
FYVYSRVKNLNSSRVPDLLV

M protein

MADSNGTITVEELKKLLEQWNLVIGFLFLTWICLLQFAYANRNRFLYIIKLIFLW
LLWPVTLACFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRLFARTRS
MWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCDIKD
LPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNI
ALLVQ

FIG.12

AAAATTTTTACTGTTTTCGTAACAGTTTTGTAATAAAAAAACCTATAAATATT
CCGGATTATTCATACCGTCCCACCATCGGGCGCGGATCCCGGTCCGAAGCG
CGCGGAATTCATGCTGCTGGTCAACCAGAGCCACCAGGGTTTCAACAAGG
AACACACCTCAAAGATGGTGTCCGCCATCGTGCTGTACGTCCTGCTGGCTG
CTGCTGCTCACTCAGCTTTCGCTGCCGACAACATCACCAACCTGTGCCCAT
TCGGCGAGGTCTTCAACGCTACTAGGTTCGCCTCCGTGTACGCTTGGAACC
GCAAGCGTATCAGCAACTGCGTGGCCGACTACTCTGTCCTGTACAACTCCG
CTAGCTTCTCTACTTTCAAGTGCTACGGAGTGTCACCTACCAAGCTGAACG
ACCTGTGCTTCACTAACGTGTACGCCGACTCCTTCGTCATCCGCGGTGACG
AAGTGCGTCAGATCGCCCCAGGACAGACCGGCAAGATCGCTGACTACAAC
TACAAGCTGCCTGACGACTTCACTGGATGCGTCATCGCTTGGAACAGCAAC
AACCTGGACTCTAAAGTGGGTGGCAACTACAACTACCTGTACAGGCTGTTC
AGAAAGAGCAACCTGAAGCCTTTCGAGAGGGACATCAGCACCGAAATCTA
CCAGGCCGGTTCTACTCCCTGCAACGGCGTCGAAGGATTCAACTGCTACTT
CCCCCTGCAGTCTTACGGCTTCCAGCCAACCAACGGTGTGGGCTACCAGCC
TTACAGAGTGGTCGTGCTGAGCTTCGAACTCCTCCACGCTCCAGCTACTGT
CTGCGGTCCTAAGAAGTCTACTAACCTGGTGAAGAACAAGTGCGTCAACTT
CAACTTCAACGGTCTGACTGGAACTGGAGGTGGCTCCGGAGGTAGCGGCG
GATCTGGTGGCTCAGGAGGTTCTACTTGCCCTCCCTGCCCAGCTCCTGAGC
TGCTGGGCGGACCCTCCGTGTTCCTGTTCCCACCTAAGCCAAAGGACACTC
TGATGATCTCACGCACCCCCGAAGTCACTTGCGTCGTGGTCGACGTGTCCC
ACGAGGACCCAGAAGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTC
CACAACGCTAAGACCAAGCCCAGGGAGGAACAGTACAACTCAACCTACAG
AGTGGTCTCCGTGCTGACTGTCCTGCACCAGGACTGGCTGAACGGCAAGG
AGTACAAGTGCAAGGTCAGCAACAAGGCTCTGCCCGCCCCAATCGAGAAG
ACCATCTCTAAGGCCAAGGGACAGCCTCGCGAACCCCAGGTGTACACTCT
GCCCCCAAGCCGTGAGGAAATGACCAAGAACCAGGTCTCTCTGACTTGCC
TGGTGAAGGGATTCTACCCTTCAGACATCGCTGTGGAGTGGGAATCCAACG
GTCAGCCCGAAAACAACTACAAGACCACTCCTCCCGTCCTGGACAGCGAC
GGCTCTTTCTTCCTGTACTCAAAGCTGACCGTGGACAAGTCCCGTTGGCAG
CAGGGAAACGTGTTCTCATGCTCCGTCATGCACGAGGCTCTGCACAACCAC
TACACTCAGAAGAGCCTGTCTCTGTCACCTGGCAAGTAACTCGAGGCATGC
GGTACCAAGCTTGTCGAGAAGTACTAGAGGATCATAATCAGCCATACCACA
TTTGTAGAGGTTTTACTTGCTTTAAAAAACCTCCCACACCTCCCCCTGAACC
TGAAACATAAAATGAATGCAATTGTTGTTGTTAACTTGTTTATTGCAGCTTAT
AATGGTTACAAATAAAGCAATAGCATCACAAATTTCACAAATAAAGCATTTT
TTTCACTGCATCTAGTGTATTGTCAAACTCATCATGTATCTATCATGTCTGAT

FIG.13

CTGATCACTGCCTTGAGCTTAGAGATCCGACCGATATGGATCTAAGTCCACT
ATTTGTCATTTTACTTCGGATAGCTACGAACGCTACACCAGCTGCA

FIG.13 (continued)

AAGATTTACTGTTTTCGTAACAGTTTTGTAATAAAAAAACCTATAAATATTCC
GGATTATTCATACCGTCCCACCATCGGGCGCGGATCCCGGTCCGAAGCGCG
CGGAATTCATGCTGCTGGTGAACCAGTCACACCAGGGCTTCAACAAGGAG
CACACCTCAAAGATGGTCTCCGCTATCGTCCTGTACGTGCTGCTGGCTGCT
GCTGCTCACTCCGCCTTCGCTGCCGACATGAGCCTGGGAGCTGAGAACTCT
GTGGCCTACTCAAACAACTCCATCGCCATCCCCACCAACTTCACTATCAGC
GTCACCACTGAAATCCTGCCAGTGAGCATGACCAAGACTTCTGTCGACTGC
ACCATGTACATCTGCGGAGACAGCACTGAGTGCTCTAACCTGCTGCTGCAG
TACGGTTCTTTCTGCACCCAGCTGAACCGCGCTCTGACTGGCATCGCCGTG
GAGCAGGACAAGAACACCCAGGAAGTCTTCGCTCAGGTGAAGCAGATCTA
CAAGACTCCTCCCATCAAGGACTTCGGTGGCTTCAACTTCTCCCAGATCCT
GCCTGACCCCAGCAAGCCATCTAAGAGGTCATTCATCGAGGACCTGCTGTT
CAACAAGGTGACCCTGGCTGACGCCGGCTTCATCAAGCAGTACGGAGACT
GCCTGGGTGACATCGCTGCCAGAGACCTGATCTGCGCTCAGAAGTTCAAC
GGACTGACCGTCCTGCCACCTCTGCTGACTGACGAAATGATCGCTCAGTAC
ACCTCTGCTCTGCTGGCTGGTACCATCACTTCTGGCTGGACTTTCGGAGCT
GGTGCTGCCCTGCAGATCCCTTTCGCTATGCAGATGGCCTACCGTTTCAACG
GCATCGGAGTCACTCAGAACGTGCTGTACGAGAACCAGAAGCTGATCGCT
AACCAGTTCAACAGCGCCATCGGAAAGATCCAGGACTCACTGTCCAGCAC
TGCTTCTGCTCTGGGCAAGCTGCAGGACGTGGTCAACCAGAACGCTCAGG
CCCTGAACACTCTGGTGAAGCAACTGTCTTCAAACTTCGGAGCTATCTCCA
GCGTCCTGAACGACATCCTGTCCCGCCTGGACAAGGTCGAGGCCGAAGTG
CAGATCGACCGCCTGATCACCGGTCGTCTGCAGTCACTGCAGACCTACGTG
ACTCAGCAGCTGATCAGGGCTGCCGAGATCAGAGCTTCCGCCAACCTGGC
TGCCACTAAGATGTCAGAATGCGTGCTGGGACAGTCCAAGCGTGTCGACTT
CTGCGGCAAGGGCTACCACCTGATGTCATTCCCCCAGTCCGCTCCACACGG
TGTGGTCTTCCTGCACGTCACCTACGTGCCAGCCCAGGAAAAGAACTTCAC
CACTGCTCCTGCCATCTGCCACGACGGCAAGGCTCACTTCCCCCGCGAGG
GAGTCTTCGTGAGCAACGGTACCCACTGGTTCGTGACTCAGCGTAACTTCT
ACGAACCACAGATCATCACCACTGACAACACCTTCGTCTCTGGCAACTGCG
ACGTGGTCATCGGAATCGTCAACAACACTGTGTACGACCCTCTGCAGCCCG
AGCTGGACAGCTTCAAGGAGGAACTGGACAAGTACTTCAAGAACCACACC
TCTCCTGACGTGGACCTGGGCGACATCTCAGGAATCAACGCTTCCGTGGTC

FIG.14

AACATCCAGAAGGAGATCGACAGGCTGAACGAAGTCGCCAAGAACCTGA
ACGAATCACTGATCGACCTGCAGGAGCTGGGCAAGTACGAACAGTACATC
AAGTGGCCCGGAGGTTCCGGCGGAAGCGGTGGCTCTGGAGGTTCAGGCG
GATCCACCTGCCCTCCTTGCCCAGCTCCTGAACTGCTGGGTGGCCCTTCCG
TGTTCCTGTTCCCTCCCAAGCCCAAGGACACTCTGATGATCAGCAGAACCC
CAGAAGTGACTTGCGTGGTCGTGGACGTCTCTCACGAGGACCCTGAAGTC
AAGTTCAACTGGTACGTGGACGGCGTCGAAGTGCACAACGCTAAGACCAA
GCCCCGCGAGGAACAGTACAACAGCACCTACCGTGTCGTGTCTGTCCTGA
CTGTGCTGCACCAGGACTGGCTGAACGGCAAGGAGTACAAGTGCAAGGTG
TCAAACAAGGCTCTGCCCGCCCCAATCGAGAAGACCATCTCCAAGGCCAA
GGGCCAGCCAAGGGAACCTCAGGTCTACACTCTGCCACCTTCAAGAGAGG
AAATGACCAAGAACCAGGTCTCCCTGACTTGCCTGGTGAAGGGCTTCTACC
CTTCAGACATCGCTGTGGAGTGGGAATCCAACGGACAGCCCGAGAACAAC
TACAAGACCACTCCCCCAGTGCTGGACAGCGACGGTTCTTTCTTCCTGTAC
AGCAAGCTGACCGTCGACAAGTCTAGGTGGCAGCAGGGCAACGTCTTCTC
TTGCTCAGTGATGCACGAAGCTCTGCACAACCACTACACTCAGAAGTCCCT
GAGCCTGTCTCCTGGCAAGTAACTCGAGGCATGCGGTACCAAGCTTGTCGA
GAAGTACTAGAGGATCATAATCAGCCATACCACATTTGTAGAGGTTTTACTT
GCTTTAAAAACCTCCCACACCTCCCCTGAACCTGAAACATAAATGATGCAT
GTGTGGTACTGTATGCAGCTATATGTACATTAGCATAGCATCACAATTCACAA
TAAGGCATTTTTCCATGCATTCCAGTGTGATGGTCCAGCTCATCATGTACTAT
CAGTTGATCAGATCATGCTGACCTAGAATCCGAACCGATAGTGATC

FIG.14 (continued)

AAGAAATTTACTGTTTTCGTAACAGTTTTGTAATAAAAAAACCTATAAATAT
TCCGGATTATTCATACCGTCCCACCATCGGGCGCGGATCCCGGTCCGAAGC
GCGCGGAATTCATGCTGCTGGTCAACCAGAGCCACCAGGGATTCAACAAG
GAGCACACTTCCAAGATGGTGAGCGCTATCGTGCTGTACGTCCTGCTCGCT
GCTGCTGCTCACTCTGCTTTCGCTGCTGACGTCAACCTCACCACTAGGACC
CAGCTGCCTCCCGCTTACACCAACTCATTCACTAGGGGTGTGTACTACCCT
GACAAGGTGTTCAGATCCAGCGTCCTGCACTCCACTCAGGACCTGTTCCTG
CCCTTCTTCAGCAACGTCACCTGGTTCCACGCTATCCACGTGTCCGGCACC
AACGGAACTAAGAGGTTCGACAACCCAGTCCTGCCTTTCAACGACGGCGT
GTACTTCGCCTCTACCGAGAAGTCAAACATCATCAGAGGTTGGATCTTCGG
CACCACTCTGGACTCCAAGACTCAGAGCCTGCTGATCGTCAACAACGCTAC
CAACGTGGTCATCAAGGTGTGCGAGTTCCAGTTCTGCAACGACCCTTTCCT
GGGAGTCTACTACCACAAGAACAACAAGTCTTGGATGGAGTCAGAGTTCC
GCGTCTACTCTTCAGCCAACAACTGCACTTTCGAGTACGTGTCTCAGCCCT
TCCTGATGGACCTGGAAGGCAAGCAGGGCAACTTCAAGAACCTGCGCGAG
TTCGTGTTCAAGAACATCGACGGTTACTTCAAGATCTACTCCAAGCACACC
CCTATCAACCTGGTCCGTGACCTGCCCCAGGGTTTCAGCGCTCTGGAGCCT
CTGGTGGACCTGCCCATCGGCATCAACATCACCCGCTTCCAGACTCTGCTG
GCTCTGCACCGTTCCTACCTGACTCCAGGCGACTCCAGCTCTGGATGGACT
GCTGGTGCTGCTGCTTACTACGTGGGCTACCTGCAGCCTAGGACCTTCCTG
CTGAAGTACAACGAAAACGGAACCATCACAGACGCTGTGGACTGCGCTCT
GGACCCACTGTCCGAAACCAAGTGCACTCTGAAGAGCTTCACCGTGGAGA
AGGGCATCTACCAGACTTCTAACTTCAGGGTCCAGCCAACCGAATCAATCG
TGAGATTCCCCAACATCACTAACCTGTGCCCATTCGGAGAGGTCTTCAACG
CCACCCGTTTCGCTTCCGTGTACGCCTGGAACAGGAAGAGAATCTCTAACT
GCGTGGCTGACTACTCAGTCCTGTACAACTCAGCCTCCTTCAGCACCTTCA
AGTGCTACGGTGTGTCTCCTACTAAGCTGAACGACCTGTGCTTCACCAACG
TGTACGCTGACTCATTCGTCATCAGGGGCGACGAGGTGAGACAGATCGCTC
CCGGACAGACTGGCAAGATCGCCGACTACAACTACAAGCTGCCAGACGAC
TTCACCGGTTGCGTCATCGCCTGGAACTCCAACAACCTGGACAGCAAAGT
GGGTGGCAACTACAACTACCTGTACCGCCTGTTCCGTAAGTCCAACCTGAA
GCCATTCGAGAGGGACATCTCTACTGAAATCTACCAGGCTGGCTCAACCCC
TTGCAACGGCGTCGAGGGATTCAACTGCTACTTCCCACTGCAGAGCTACGG
ATTCCAGCCTACTAACGGCGTGGGATACCAGCCCTACAGAGTGGTCGTGCT
GTCCTTCGAACTGCTGCACGCCCCAGCTACTGTGTGCGGACCTAAGAAGA

FIG.15

GCACCAACCTGGTGAAGAACAAGTGCGTCAACTTCAACTTCAACGGTCTG
ACCGGTACTGGCGTCCTGACCGAGTCTAACAAGAAGTTCCTGCCATTCCAG
CAGTTCGGTCGCGACATCGCTGACACTACCGACGCCGTGCGTGACCCACA
GACCCTGGAAATCCTGGACATCACTCCATGCTCTTTCGGAGGTGTGTCAGT
CATCACTCCTGGCACCAACACTTCAAACCAGGTGGCCGTCCTGTACCAGGA
CGTCAACTGCACCGAGGTGCCTGTCGCCATCCACGCTGACCAGCTGACCC
CCACTTGGCGCGTCTACTCAACCGGTTCCAACGTGTTCCAGACTCGTGCTG
GCTGCCTGATCGGAGCCGAGCACGTGAACAACTCCTACGAATGCGACATCC
CCATCGGAGCTGGTATCTGCGCCTCCTACCAGACCCAAACTAACAGCCCAC
GCAGGGCTCGCGGCGGAAGCGGTGGCTCTGGAGGTTCAGGCGGATCCGGT
GGCAGCACTTGCCCACCTTGCCCAGCTCCAGAACTGCTGGGAGGTCCAAG
CGTGTTCCTGTTCCCTCCTAAGCCTAAGGACACCCTGATGATCTCCCGTACC
CCTGAGGTCACTTGCGTCGTGGTCGACGTGAGCCACGAGGACCCCGAAGT
CAAGTTCAACTGGTACGTGGACGGCGTGGAAGTCCACAACGCTAAGACCA
AGCCCCGCGAGGAACAGTACAACTCCACTTACCGTGTGGTCAGCGTGCTG
ACCGTCCTGCACCAGGACTGGCTGAACGGAAAGGAATACAAGTGCAAGGT
CTCTAACAAGGCCCTGCCTGCTCCCATCGAAAAGACTATCTCAAAGGCTAA
GGGTCAGCCCAGGGAGCCACAGGTGTACACCCTGCCTCCCTCTAGAGAGG
AAATGACCAAGAACCAGGTCTCACTGACTTGCCTGGTGAAGGGATTCTACC
CATCCGACATCGCCGTGGAGTGGGAAAGCAACGGTCAGCCTGAGAACAAC
TACAAGACCACTCCACCTGTCCTGGACTCTGACGGTTCATTCTTCCTGTACT
CTAAGCTGACTGTGGACAAGTCACGTTGGCAGCAGGGCAACGTGTTCTCT
TGCTCAGTCATGCACGAAGCTCTGCACAACCACTACACCCAGAAGTCCCTG
AGCCTGTCTCCTGGCAAGTAACTCGAGGCATGCGGTACCAAGCTTGTCGAG
AAGTACTAGAGGATCATAATCAGCCATACCACATTTGTAGAGGTTTTACTTG
CTTTAAAAAACCTCCCACACCTCCCCCTGAACCTGAAACATAAAATGAATG
CAATTGTTGTTGTTAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAAGC
AATAGCATCACAAATTTCACAAATAAAGCATTTTTTTCACTGCATTCTAGTT
GTGGTTTGTCCAAACTCATCAATGTATCTTATCATGTCTGGATCTGATCACTG
CTTGAGCCTAGGAGATCCGAACCAGATAAGTGAAATCTAGTTCCAAACTAT
TTTGTCATTTTTAATTTTCGTATTAGCTTACGACGCTACACCCAGTACCCATC
TATTTTGTCACTCTTCCCTAAATAATCCTTAAAAACTCCATTTCCACCCCTCC
CAGTTCCCAACTAATTTTGTCCGCCCACACAGGGGCATTTTTCTTCCTGTTA
TGTGAATTCCTGCAGCCCGGGAGGATCCACTAAGTTCTAGAGCGGCCGCCA
CGCGGTGGAGCTCCGGCTTTTGTTGCCGGTTACTGGAGGGTCAGTTGCGCG
CTTAGACGTATCATGGGTCGTAGCTGTTATCGCTGGCGTGCACCTGCACGA
GCTATGAGGAGGAGGAGACTTA

FIG.15 (continued)

AAGAATTTTACTGTTTTCGTAACAGTTTTGTAATAAAAAAACCTATAAATATT
CCGGATTATTCATACCGTCCCACCATCGGGCGCGGATCCCGGTCCGAAGCG
CGCGGAATTCATGCTGCTGGTGAACCAGTCCCACCAGGGATTCAACAAGG
AGCACACTAGCAAGATGGTCTCTGCTATCGTGCTGTACGTCCTGCTGGCTG
CTGCTGCTCACAGCGCCTTCGCTGCCGACGTGAACCTCACCACTAGGACCC
AGCTGCCTCCCGCTTACACCAACTCTTTCACTAGGGGTGTCTACTACCCAG
ACAAGGTGTTCAGATCCAGCGTCCTGCACAGCACTCAGGACCTGTTCCTGC
CTTTCTTCTCTAACGTGACCTGGTTCCACGCCATCCACGTCTCCGGTACCAA
CGGCACTAAGCGCTTCGACAACCCAGTCCTGCCTTTCAACGACGGCGTGTA
CTTCGCTTCAACCGAAAAGTCCAACATCATCCGTGGATGGATCTTCGGTAC
CACTCTGGACAGCAAGACTCAGTCTCTGCTGATCGTGAACAACGCCACCA
ACGTGGTCATCAAGGTCTGCGAGTTCCAGTTCTGCAACGACCCCTTCCTGG
GAGTGTACTACCACAAGAACAACAAGTCATGGATGGAGTCCGAGTTCCGC
GTGTACTCTTCAGCTAACAACTGCACTTTCGAGTACGTCAGCCAGCCATTC
CTGATGGACCTGGAAGGAAAGCAGGGTAACTTCAAGAACCTGAGGGAGTT
CGTGTTCAAGAACATCGACGGTTACTTCAAGATCTACAGCAAGCACACCCC
CATCAACCTGGTGAGAGACCTGCCACAGGGATTCTCTGCTCTGGAACCCCT
GGTCGACCTGCCAATCGGTATCAACATCACCCGCTTCCAGACTCTGCTGGC
TCTGCACCGTTCCTACCTGACTCCTGGCGACTCCAGCTCTGGATGGACTGC
TGGAGCTGCTGCTTACTACGTGGGATACCTGCAGCCAAGGACCTTCCTGCT
GAAGTACAACGAGAACGGTACCATCACTGACGCCGTGGACTGCGCTCTGG
ACCCACTGTCAGAAACCAAGTGCACTCTGAAGTCCTTCACCGTCGAGAAG
GGTATCTACCAGACTAGCAACTTCAGGGTCCAGCCTACCGAATCTATCGTG
AGATTCCCAAACATCACTAACCTGTGCCCTTTCGGCGAGGTGTTCAACGCC
ACCAGATTCGCTTCCGTCTACGCCTGGAACAGGAAGAGAATCAGCAACTG
CGTGGCTGACTACTCTGTCCTGTACAACAGCGCCTCTTTCTCAACCTTCAA
GTGCTACGGCGTGTCACCTACTAAGCTGAACGACCTGTGCTTCACCAACGT
GTACGCCGACTCCTTCGTCATCAGGGGAGACGAGGTGAGACAGATCGCTC
CTGGCCAGACTGGAAAGATCGCCGACTACAACTACAAGCTGCCCGACGAC

FIG.16

TTCACCGGTTGCGTGATCGCTTGGAACAGCAACAACCTGGACTCTAAGGTC
GGTGGCAACTACAACTACCTGTACCGCCTGTTCCGTAAGAGCAACCTGAAG
CCCTTCGAGAGGGACATCAGCACTGAAATCTACCAGGCCGGATCTACCCCA
TGCAACGGTGTGGAAGGCTTCAACTGCTACTTCCCTCTGCAGTCTTACGGT
TTCCAGCCCACTAACGGTGTCGGCTACCAGCCATACAGAGTGGTCGTGCTG
AGCTTCGAGCTGCTGCACGCCCCTGCTACTGTGTGCGGTCCCAAGAAGTCT
ACCAACCTGGTGAAGAACAAGTGCGTCAACTTCAACTTCAACGGCCTGAC
CGGAACTGGTGTGCTGACCGAATCAAACAAGAAGTTCCTGCCTTTCCAGC
AGTTCGGCCGCGACATCGCTGACACCACTGACGCCGTCCGTGACCCACAG
ACCCTGGAGATCCTGGACATCACTCCTTGCTCATTCGGAGGTGTGTCCGTC
ATCACTCCCGGAACCAACACTTCCAACCAGGTGGCTGTCCTGTACCAGGAC
GTGAACTGCACTGAGGTGCCTGTGGCTATCCACGCTGACCAGCTGACCCCA
ACTTGGCGCGTCTACTCAACCGGCTCCAACGTGTTCCAGACTCGTGCTGGT
TGCCTGATCGGCGCCGAGCACGTCAACAACAGCTACGAATGCGACATCCCT
ATCGGCGCTGGAATCTGCGCCTCTTACCAGACCCAGACTAACAGCCCCCGC
AGGGCTAGGTCTGTGGCTTCCCAGAGCATCATCGCTTACACCATGTCACTG
GGTGCTGAAAACTCCGTCGCCTACAGCAACAACTCTATCGCCATCCCAACC
AACTTCACTATCTCAGTCACCACTGAGATCCTGCCTGTGAGCATGACCAAG
ACTTCTGTCGACTGCACTATGTACATCTGCGGCGACAGCACCGAATGCTCT
AACCTGCTGCTGCAGTACGGTTCCTTCTGCACCCAGCTGAACCGTGCTCTG
ACTGGCATCGCCGTGGAGCAGGACAAGAACACTCAGGAAGTGTTCGCTCA
GGTCAAGCAGATCTACAAGACCCCACCTATCAAGGACTTCGGCGGATTCAA
CTTCTCCCAGATCCTGCCAGACCCTTCAAAGCCCTCCAAGCGCAGCTTCAT
CGAAGACCTGCTGTTCAACAAGGTGACCCTGGCCGACGCTGGATTCATCA
AGCAGTACGGAGACTGCCTGGGTGACATCGCCGCTCGTGACCTGATCTGCG
CTCAGAAGTTCAACGGTCTGACCGTCCTGCCCCCACTGCTGACTGACGAG
ATGATCGCCCAGTACACTTCAGCCCTGCTGGCTGGTACCATCACTTCTGGAT
GGACCTTCGGTGCTGGTGCTGCTCTGCAGATCCCATTCGCTATGCAGATGG
CCTACCGTTTCAACGGAATCGGTGTGACCCAGAACGTCCTGTACGAAAACC
AGAAGCTGATCGCTAACCAGTTCAACAGCGCCATCGGCAAGATCCAGGAC
AGCCTGTCATCCACTGCCTCTGCTCTGGGAAAGCTGCAGGACGTCGTGAA
CCAGAACGCCCAGGCTCTGAACACCCTGGTGAAGCAGCTGAGCTCTAACT
TCGGAGCTATCTCATCCGTCCTGAACGACATCCTGTCTCGCCTGGACAAGG
TGGAGGCCGAAGTCCAGATCGACCGCCTGATCACTGGTCGTCTGCAGTCA

FIG.16 (continued)

CTGCAGACCTACGTGACTCAGCAGCTGATCAGGGCCGCTGAAATCAGAGC
CTCCGCTAACCTGGCCGCTACCAAGATGTCAGAGTGCGTGCTGGGACAGTC
CAAGCGTGTCGACTTCTGCGGCAAGGGATACCACCTGATGTCATTCCCACA
GTCCGCTCCTCACGGCGTCGTGTTCCTGCACGTGACCTACGTCCCTGCCCA
GGAGAAGAACTTCACCACTGCCCCCGCTATCTGCCACGACGGCAAGGCTC
ACTTCCCTAGGGAAGGAGTGTTCGTCTCAAACGGTACCCACTGGTTCGTGA
CTCAGAGAAACTTCTACGAGCCCCAGATCATCACCACTGACAACACTTTCG
TCTCCGGCAACTGCGACGTCGTGATCGGAATCGTGAACAACACCGTCTACG
ACCCCCTGCAGCCAGAACTGGACTCATTCAAGGAGGAACTGGACAAGTAC
TTCAAGAACCACACCTCCCCAGACGTGGACCTGGGCGACATCTCAGGAAT
CAACGCTTCCGTCGTGAACATCCAGAAGGAGATCGACCGCCTGAACGAAG
TCGCCAAGAACCTGAACGAGAGCCTGATCGACCTGCAGGAGCTGGGCAAG
TACGAACAGTACATCAAGTGGCCTGGTGGCTCTGGAGGTTCAGGCGGATCC
GGTGGCAGCGGAGGTTCAACCTGCCCTCCCTGCCCTGCTCCAGAGCTGCT
GGGCGGACCTTCTGTGTTCCTGTTCCCACCTAAGCCCAAGGACACCCTGAT
GATCAGCCGTACCCCAGAAGTGACTTGCGTCGTGGTCGACGTCTCTCACGA
GGACCCTGAAGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTCCACA
ACGCTAAGACCAAGCCTCGCGAGGAACAGTACAACTCAACTTACCGTGTG
GTCTCCGTGCTGACCGTCCTGCACCAGGACTGGCTGAACGGCAAGGAGTA
CAAGTGCAAGGTGTCAAACAAGGCCCTGCCTGCTCCCATCGAAAAGACTA
TCTCCAAGGCCAAGGGACAGCCTAGGGAGCCCCAGGTCTACACCCTGCCC
CCATCAAGAGAGGAAATGACCAAGAACCAGGTCTCCCTGACTTGCCTGGT
GAAGGGTTTCTACCCCTCAGACATCGCTGTGGAGTGGGAATCCAACGGCC
AGCCAGAAAACAACTACAAGACCACTCCTCCCGTGCTGGACTCAGACGGC
TCCTTCTTCCTGTACAGCAAGCTGACTGTCGACAAGTCTCGCTGGCAGCAG
GGAAACGTGTTCTCTTGCTCAGTCATGCACGAGGCTCTGCACAACCACTAC
ACCCAGAAGTCCCTGAGCCTGTCTCCCGGCAAGTAA

FIG.16 (continued)