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C12Q 1/70 (2006.01)
(71) Demandeur/Applicant:
VANDERBILT UNIVERSITY, US
(72) Inventeurs/Inventors:
RUBIN, DONALD H., US;
ORGAN, EDWARD L., US;
DUBOIS, RAYMOND N., US
(74) Agent: GOWLING LAFLEUR HENDERSON LLP

(54) Titre : GENES MAMMALIENS INTERVENANT DANS L'INFECTION VIRALE ET LA NEUTRALISATION TUMORALE
(54) Title: MAMMALIAN GENES INVOLVED IN VIRAL INFECTION AND TUMOR SUPPRESSION

(57) **Abrégé/Abstract:**

The present invention provides methods of identifying cellular genes necessary for viral growth and cellular genes that function as tumor suppressors. Thus, the present invention provides nucleic acids related to and methods of reducing or preventing viral infection or cancer. The invention also provides methods of producing substantially virus-free cell cultures and methods for screening for additional such genes.



ABSTRACT

The present invention provides methods of identifying cellular genes necessary for viral growth and cellular genes that function as tumor suppressors. Thus, the present invention provides nucleic acids related to and methods of reducing or preventing viral infection or cancer. The invention also provides methods of producing substantially virus-free cell cultures and methods for screening for additional such genes.

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SEQUENCE LISTING

<110> Rubin, Donald H.
Organ, Edward L.
DuBois, Raymond N.

<120> Mammalian Genes Involved in Viral
Infection and Tumor Suppression

<130> 22000.0086/P

<150> 60/062,021

<151> 1997-10-10

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 <212> DNA
 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

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 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

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 <213> Rattus norvegicus

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<210> 21
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 <212> DNA
 <213> Rattus norvegicus

<400> 21						
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 <212> DNA
 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

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<210> 24
 <211> 586
 <212> DNA
 <213> Rattus norvegicus

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<210> 25
 <211> 909
 <212> DNA
 <213> Rattus norvegicus

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<400> 25

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<210> 26

<211> 576

<212> DNA

<213> Rattus norvegicus

<400> 26

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<210> 27

<211> 853

<212> DNA

<213> Rattus norvegicus

<400> 27

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<210> 28

<211> 825

<212> DNA

<213> Rattus norvegicus

<400> 28

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<210> 29
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 <212> DNA
 <213> Rattus norvegicus

<400> 29						
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cccngagnan	naaaattgag	tcagtngggg	gnaaccgacg	nananaggaa	caggtttccc	180
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caaccggta	agacagattt	ntcgccantg	ccagcagcca	ntggtaacag	gattagcaga	420
gagaggtatg	tagacngtgn	acagattaag	gaagtgggtg	cgtaagnacg	gacacattag	480
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tagntttnga	tcccggcaga	caaaccaccg	ttggnagcgg	tggnctcctt	gnntgnaagc	600
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gcagtccgcc	ccnaggacga	naggagacca	ggggcccg	ctgnagtaac	naatcaacta	780
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<210> 30
 <211> 149
 <212> DNA
 <213> Rattus norvegicus

<400> 30						
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<210> 31
 <211> 857
 <212> DNA
 <213> Rattus norvegicus

<400> 31						
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tgacnagggg	gganaccccn	taccnggggn	cnancggaan	tnttggnac	cgnaaaaaat	120
ttccaggngn	acangaacgg	gtgcggnggg	antaggggga	aangtttgga	gtgngccaaa	180
acggaaaagn	agacgnntgt	anggggtggg	aaccagnacc	ntggaaagan	tnagttctn	240
atcngcaaca	accaccggag	gtaggggggt	ttttgtngca	gcacagatan	gcgcagaaaa	300
aaggatttca	ggagatcctt	tgatttttat	tcgggtanga	cgttcangtn	gnggggattg	360
ggagcggana	accatttnna	cacaggattn	tatgaactat	ggtcanttgc	ttgttggtcc	420
angtcgttgt	gggattgctg	tttttagtag	ctgcaaaccg	ttcgttttnt	gctatctttg	480
ttnnngataa	tcagccccgg	gcagangana	ttcgaaagtt	cccttttagga	gcttatttan	540
acgggctcaa	ngccaccggt	ttcgtttttt	taggcacgtt	ctgcgcattt	tttttttttn	600
gnatntttgg	atcgcgtttc	gtgggatctt	aaaaaccgtt	ttctgtgatt	ggcacgcaag	660
aaanactcat	gagctgggtc	ctgttggtgc	tctcaggacc	aatcaaanac	ccattttcaa	720

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cggttttata	atgtctgggt	ctgtttgcac	aggaagcgaa	gtcacggctt	gcacccgtga	780
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caatcttcca	gttggtt					857

<210> 32
 <211> 1630
 <212> DNA
 <213> Rattus norvegicus

<400> 32						
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gnnttaannc	ttttngngaa	tgtnnacc	aatnttcccc	tnaattttga	gtngngataat	180
tgcttanagg	catttgga	tttaacggnc	acctgaggtt	gattgggtgn	tattnaacgg	240
acttngatnn	gaggaaggcc	cccaanattt	tggtccattc	cttntaagtt	tgggacttgg	300
aaatcccgtt	gtttagatct	tgaccgtaat	caggagtcag	cgtagaggag	gccccggaag	360
gagggcccag	cgcggttcg	cccgcggcag	ggcggggacc	aacagagggc	cntcggggat	420
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cagacccgga	ggaggccgct	ccagcgttgg	tggtgccggt	ccggggctag	cctgatccgg	540
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ttaaaaactg	taaaggatct	tgtgcttgag	aatattgttg	gccagcttta	tagtcttcat	1260
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cgcgcctgcc	aggcatagtg	tagcattgta	ctgcattctt	tttgaccagt	ttccccaggt	1620
gaagagcctg						1630

<210> 33
 <211> 883
 <212> DNA
 <213> Rattus norvegicus

<400> 33						
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ggaatttggt	anaattttnn	taatggaaat	ngggcacttc	aattgggang	ataaaacccc	180
aggaagtgat	accnggggta	tcaagtnaaa	cntgattctt	ggngngagg	gaaaggatat	240
tgaatttgag	tgagtgcagg	tgaagtgaga	cttggggagna	caggtcatgc	ccacccaagg	300
gaggagcaag	ggntgggcag	tgtaggtggg	gnggtgggtc	ttcctggggg	gggcggggag	360
acagatgaga	acgttattgg	aggacaggca	caagtgttac	tgaaatgcaa	atccctgtag	420
atntggaaaa	gttctggntt	caggcttgat	gcttggggcg	gcaactgtgn	actttccctg	480
tacgttcagc	ccccccaccc	ttacggaagt	tntcgtcact	gagantagtg	gctaatacaga	540
gtcttcaatg	gacctgccaa	tcagaaagga	aggcgggctt	ttccgggtgc	ntaggtgtag	600
gattcgctca	gtagttaagc	agtcttaact	ggttntgggt	gctgtgctct	ctgtcctgcc	660
gttggaattnt	ntgaggcatg	ttcaggcaag	ctccaaagtt	gcgacatggg	gagcacaggg	720
gcaggggggg	cgggcggacg	ggcaggggac	tgagcagtg	gagctgggtg	ggggtgtctt	780
tcccggggct	gagttggaat	ccgcggctac	ccgtgaggtc	ttagccactc	actagaccca	840
gcggcagttt	ctgaataact	ttccttgtag	gggctgcaac	tct		883

<210> 34
 <211> 913
 <212> DNA

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<213> Rattus norvegicus

<400> 34

ttccccccna	gaaaaatatt	tttngggacc	canaaaaaan	gggtccnngn	cctgttttct	60
tccnccccna	aanaacttcc	ntttccntgg	ggggnnttaa	naaaagaana	tttcattggn	120
ggttttntcc	naggggggga	gaccccnttn	nccgcgggcc	tttcgnaatt	ttttggtcca	180
ccngtnaaag	attttcccat	ggcgacccat	gtacgggttg	cgaggngtat	taggcggnaa	240
cggtttttna	gtgggcctaa	tacggnanat	aggaggacga	tttgtnttgg	tttgtngagc	300
cagtaccttn	gnaaagagtt	gtagttttga	tccggcaacc	aaccacngtt	gtagcgnngt	360
tttttggtga	agcagcanta	acgcgcagaa	aaaaggatnt	caggagatcc	tttgattttt	420
cttcgggttc	ngacgttatg	ttgtgtggat	tgtgagcgga	taacaatttc	acacagattc	480
cgatngtagt	ccaatttggt	aaagacagga	tatntttccc	ttcaaagaaa	acagaaaaat	540
acagaaacgt	taattttcaa	atctcnaatc	tttcntttct	tcttcnntca	ttcattcntt	600
cnttctttct	tctttctttc	tntctttctn	nagaggaggc	atgctagggg	aacagtagct	660
catttttaaaa	tctggcacct	ggaattaatt	tagggacaaa	acacctttat	gcaaaaaaaa	720
gtttatgttt	ttccatggaa	cacagtaaaa	tcaaaattaa	agaatataa	caaaggcttt	780
ggtgatttgg	taggattttt	tttttcctgg	aggggaaaac	agatgacttg	gaaagtgtta	840
ggaacatatc	aagccccagg	gaaagaaaaa	cgtttgattg	gtattaatta	aaacactgct	900
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<210> 35

<211> 320

<212> DNA

<213> Rattus norvegicus

<400> 35

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ggttgggtaa	atgaagagga	gagacagagt	gggaagtcgg	cttagtggat	atggacttca	120
aatttgatga	acaagcaatt	caaatgagta	tcgtgggctt	gactgggatg	aagaccggtt	180
tgcaaagcag	tgntcataag	agagaaaaga	gagagagaga	gagagagaga	gagagagaga	240
gagaaagaga	gagagtgtgt	gttgttggtg	ttgttggtgt	tgtttattgg	tttataacaa	300
gatntacntt	tggttaacttt					320

<210> 36

<211> 389

<212> DNA

<213> Rattus norvegicus

<400> 36

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tcaggggatt	ggagattntc	tgngctcncc	nctcacnacc	cagaagaagc	gcacagagan	180
cagagtanca	catcatacac	acctnttcag	ctacagagcg	antnctctan	aaggggactc	240
gggggganaac	acaaccctcc	tcctcttctg	actgngagng	ccgcntgtag	gntctgtcta	300
cccancaagn	cttgtgcagn	ntgngaacct	ctctntgggg	tagagtgtgt	tgngggagca	360
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<210> 37

<211> 882

<212> DNA

<213> Rattus norvegicus

<400> 37

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gnagcgctcg	gngannnccc	acnggnagac	nnnggctgcc	ccncngncc	anggcnttnn	120
nccnncccc	cgnatccggn	ncnncccccc	ctccctnggg	gngcgggggt	cccngngccg	180
ngnggatacc	nggcganncn	ttgtgcccc	gcnngggggg	naggaccccc	ggcaccggcc	240
cngacccana	ncagnngctt	ngtggggggc	ccccccgcca	nagaacgaat	tncgccnccg	300
gccgcggcca	tcggaacnnc	cctagcagng	cgtcntgcta	ggcnggnnna	cgggnatccg	360
caancccncc	cttngtaccg	ggacagccgn	gggnccgtat	gggctgngcg	ntnggccgta	420
gccanntncc	tttngaaang	acncggnagc	tnttcatccg	cctcacaac	cncnggnncn	480
gngggggctn	tntcntgngc	cgcccgcgcg	gtgngcgcan	aaaaaaaaa	aanncggccn	540
tccnccccct	ttttggccng	ggtnccccgc	ncaccccggtg	ccgagtnccn	nncccccac	600
aacctcacac	cgatcccngt	gggttcccn	ngggagtcgc	ncngncnnag	cnggnttctc	660

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cccatnnccgc	gnngcttnag	cgngccnnnn	cacngtttgt	nngngnntgc	ctccccctcn	720
tccttgaggc	aaaagcccg	acngtntctg	tggaccacnn	tgctgaggng	ctgggcgcen	780
cgntctctct	ctctctcnct	ctctctctct	ctctatctct	ctttctctct	ctggggcccc	840
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<210> 38
 <211> 975
 <212> DNA
 <213> Rattus norvegicus

<400> 38						
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tttagcgngg	ttctcnagtt	natggtaacc	nagtacttaa	ttggcncnct	tgataaatgc	120
tngatcctna	naatttcaac	aaccgcagga	ccatttttga	acttggcggn	ngtttaccct	180
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agactaccta	taccgtcatt	aaaaactcct	caccagcatt	tactatgggt	ggactttcag	900
agatctcaat	caactctttc	ccaccagtc	tactgaaagn	ttccacctgt	agcggcccaa	960
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<210> 39
 <211> 850
 <212> DNA
 <213> Rattus norvegicus

<400> 39						
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ggtttcaaac	aatgcttaag	ttgtggggag	aacnagncag	tccgttccng	accnggttta	180
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<210> 40
 <211> 889
 <212> DNA
 <213> Rattus norvegicus

<400> 40						
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nccgggaccg	naaccgtttt	tgccnnaaan	ncgagaagtg	ccttccnggc	aaagtagggg	180
accaaaggtn	gggggagaga	attgggggtt	gtncagngtt	ccggttcnac	ggaaggagcc	240
ggttgttggg	attgtttcca	aggagngngt	ttgngaccgg	agcacctcng	ggnggacctat	300
gggnttgcc	tgtagagac	cngcgngatg	ttttgggttc	gnattcgggg	agggatttcg	360
ggggcctcag	acnggggagg	agtccctngc	gttcccnatg	ggaccgggtg	tcgggcgggt	420

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tcaggagant	agantntagc	gtctgtnttn	tntgcgtttt	ccccttcacg	attctcagtt	600
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ggccacctgg	catcttgagg	tgggttgcca	atgagtgaat	gaatgagtga	gtgaatgaat	840
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<210> 41
 <211> 929
 <212> DNA
 <213> Rattus norvegicus

<400> 41						
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ttccaaatcg	gtttaantgg	ncccnccgaa	ncnttnttn	tttggcagaa	ggtgaanttc	180
nttggggccc	ttgtttaagg	gttttnagcc	ttaaattgnt	tgntnagnnt	ctccntaatt	240
agttcattcc	tttgaccatc	ttttgnccct	ccatcttgta	aacanttaag	tctattgcat	300
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atggttccaa	anggtttccc	aacctatgct	caataccaca	ggcagcttgc	aggagggaga	420
antggatatg	atttaacagc	atthttgacc	aaacttttag	gagcagagag	gactttaccc	480
aggacaggaa	ggcaaaagac	ttgaatctta	aacaaaggat	taagaacagg	atgtcatctg	540
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gaagcttggg	gcttatgttt	tgcagatcca	ttgtaattaa	aaaagaattg	taaggagatg	900
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<210> 42
 <211> 943
 <212> DNA
 <213> Rattus norvegicus

<400> 42						
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natcccaatt	aaggntnaac	nggtttaatt	tgtnntccnc	ntaccnaccn	ggtttnccgt	180
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ggaacccagc	nagtgccttg	aggtaaaaga	tcacttccnt	ntcccttagt	caggancntt	420
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cgtccactaa	agctgcctcc	aattcaaact	ggattgagtg	acaagtggct	tgggtgtctc	540
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gctntagaaa	gctttgcttc	ccctctgctc	cctggctggc	tggaactcag	cctccggtgt	780
gggcagactg	gctcatcctc	tgtgtttctc	tgagtgtgga	ctgctgcctt	ccacacagac	840
tctctgaagt	caaggagccg	caccagcact	tcagttgtgg	gccataatca	agncangact	900
gaaagttgcc	acctgtagn	gccgcaagca	aactgagatn	ttg		943

<210> 43
 <211> 867
 <212> DNA
 <213> Rattus norvegicus

<400> 43						
aggaaacnt	tttaaaaaa	aggggggggg	gggggggggn	ntagnggcaa	aaaagatgan	60
accctcaagn	cggggggggg	taaanaagga	atcggtatcg	ggctttgnac	aaataaagga	120
gttttgngng	nattttcccc	ntggctggtt	tntgnacgat	ccacggttga	ccgacgacgn	180

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acggaccgac	aaccaanacg	taaaggggaa	ttgtggaggg	gttggaagtt	tagatgcccc	240
gacccaggac	gtgcggccan	cttccggaga	cccaccttcc	ttgtnggccg	ggnccggcgg	300
cagcgnagcc	atttccaccg	gatccctata	gcnggccagc	ctagcaggcn	gaacaccagc	360
gggaagttga	ntnggacctc	ggagagcgcc	cgcccttccg	gcggaagtnc	taattccaaa	420
gcggccccgcg	gcngagtttc	ccatacaggt	tggttccgtc	tcggagtgc	gtggcttgaa	480
ggacgggtctt	cgcgcgagaa	gagtaccctg	cctttcaggt	gcgggagtta	cntcagcctg	540
ctgcacacccc	ggctgtgcgc	antcttcttg	tgtggccggg	acggttcacc	cagaggagtc	600
tctgtagttc	ggagcaagat	gtcggttaaa	tctggcagga	aaatgccttc	tatgctcatn	660
tatatattcc	tgcttccctc	agcttgcttt	cgacttagta	aggtaacatt	tcagagcggg	720
gcacttagta	ctttttggca	ctgtgctgta	taaatataaa	tggtccacac	ttaacatctt	780
agatgtttata	tctaaagata	tgcattctta	aacttcgaaa	gcgcataccc	taaaatttca	840
tattttttgca	tacattgggtc	agctgtg				867

<210> 44

<211> 303

<212> DNA

<213> Rattus norvegicus

<400> 44

ggaaatgatt	agtccaagaa	atatttgagc	agaagggagt	taggggttttc	aaattaggaa	60
agtggaatcc	acagagttcc	cttgacagag	aataataaaa	ggactctggg	gtgtcagaat	120
ggtgggcatt	aacctgatct	tccacttgag	ggtaagggaa	atgattagtc	caagaaatat	180
ttgagcagaa	gggagttagg	gttttcaa	taggaaagt	gaatccacag	agttcccttg	240
acagagaata	taaaaaggac	tctgggggtg	cagaatgggt	ggcattaacc	tgatcttcca	300
ctt						303

<210> 45

<211> 840

<212> DNA

<213> Rattus norvegicus

<400> 45

aaaccggng	anaaaaaaan	gaaanngang	gcnnnaaaaa	agttnggaca	gaaaaaactt	60
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anagagntgg	naatnagna	naggacattc	tttnnaacctc	cnangnggn	nggaannaat	180
ngggattgag	cngccaccat	tagggangaa	gttnngaattn	nggggcccgn	gngagttaaa	240
angattcccn	ggttttttaa	aacagagaa	acctncagg	acagatnaac	ccgagattgg	300
ttccctngaa	aattnnngan	aaagataaan	gtaggagcat	tcaaagtag	anggtaaaa	360
taatgggaga	catagacacc	aaaaaaagcc	agttcagtgg	gccccgaagg	ngcattaagg	420
gaggaccagg	aaacggcagc	anagccacng	gcagccgcct	gccccnacac	cagtnattcc	480
cgacantaga	tccaggcgnt	gggggcccgg	cggggcgcgc	ntgngcagng	aagntnngcg	540
gcaacaantt	tgcntagacc	ggntggaacc	ggttagaacc	ggccgcgccg	gaccggccgc	600
ccgttccgga	ttntgcgttc	acaaagggag	gcgggactca	cgacntgngt	atcnttgngg	660
tcccaacccc	ggcccccnac	cccnaccccc	nttgctccctg	tggtattcgc	gttctttccg	720
ccgtctccct	cgcgggccgn	ttntctgcgc	ctggtgatcc	tttcgccatg	gtcctntgga	780
gaaagaaaaa	atctttaatt	tnctagggac	gtccttttcc	tgtagtcgta	attgtagaaa	840

<210> 46

<211> 893

<212> DNA

<213> Rattus norvegicus

<400> 46

gagaaggann	aggngggng	agngaagana	gaggagggaa	gaaangaagg	tggaganaag	60
tggannaaaa	agagggagan	ggaggggaga	ntaaaganag	ganaagagng	gggaggaggg	120
gnagnatagg	agaggaaaga	aagganggan	agaagagaaa	agaanganga	gagaaaggaa	180
agaggaaaga	aagaggggag	aagaggaaga	aanagaggag	gggangagag	ggaggataag	240
agaggaaaga	gggaganagg	nttgaaaagg	gaaagagaag	gagaaaggna	gnaggngngg	300
aagagaggna	agggagaggg	gganaanggt	aagggggnaa	agaangagaa	gtatnggggg	360
aaaggaggag	angaaagaag	aaagaganga	ggaggagagg	gagagtgagg	aataaagggg	420
agggaaaagg	angagaaaga	gagagagggg	gaggggaaga	nagagaagga	tagnggggtg	480
gagaaggaga	aaggagagaa	ggagaaggng	agaggagaa	tgaagaagga	gggagtaaga	540
aaggantgag	naggaaagga	ganagagagg	tagagagaaa	anaaagaggg	aaanggaggg	600
gaggagggng	nanaaggaat	agaggngnga	aanangagag	aggggaaang	gggaaggaaa	660

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ggaggaaaaa	aagnagagaa	gaagagnaat	gggaaggang	nagtagnaaa	agaaaagnag	720
aggggagagg	gggangangg	ggganacggg	ggggaanaga	aaaagtgaag	gaggccccc	780
nacccccccc	ccccacacac	acacacagcc	ttttcgccgg	cggaagtgca	ggttggtcca	840
ggagcctgtg	gtcaatccag	tcagtagtgg	gcgaggtgta	acatctgtgt	ccg	893

<210> 47
 <211> 789
 <212> DNA
 <213> Rattus norvegicus

<400> 47						
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cgtttccana	gncaaccatt	ctggngncc	caagggtnga	ngagntccgn	tcaaggngaa	180
accttttcaa	gaccaattaa	ctaggggatn	agaggcggn	tggttntga	ggggcggt	240
gctgagaaga	ttcgttggg	gacccaggag	tgaaggttt	tnacctgtgt	ntntcgga	300
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agcgtttact	tttnttgnc	cgcagccaat	ttgtntgct	tggtttctt	ngaattccg	420
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ttccggcagn	tacgantctt	caacaagagc	cagagaaggc	gggtgcagag	nttcattagg	540
acgntcgaa	acccggcgtg	acttactttn	tccaagccca	ttggttgatg	agaatgatga	600
ctgacaggga	ggcgtggtca	cgctgtcgcg	ggcgggagcg	acgggtggag	ttaacgacga	660
aagctgcgcg	cgcagccatg	acccctcaca	gccacntatc	ggaggggagg	gcgggacagc	720
tttagcttgg	tgctgtcgca	gccggacgtg	aggcagttgg	tggtcttcca	tcgtcgattt	780
ctggttacc						789

<210> 48
 <211> 872
 <212> DNA
 <213> Rattus norvegicus

<400> 48						
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cctccnggnc	gtnaaggagg	agaggagaga	tgaggtttca	ggtgtgtttc	ccaccagtg	240
ttcccaggga	acacaaaacg	gataggtcac	cntcaatgna	caagggaatta	aaagcttggg	300
tgtatnngga	ggcctgcttc	caaagccacc	agaaaatccg	gagagccggn	ggatcntacn	360
cacccagagg	ttcatagggga	gggcantatt	aggggtgtgc	ccttgtgaga	ggaagtgtgg	420
cacngtgggg	ctgggtttga	gatntcagat	gntcaagcca	ggccattnt	ntctctctca	480
gtntctctcg	gtctctttct	cngtctctnt	tcagtctntt	cagtctctct	cagactctct	540
ctctctctct	ctctctctnt	ctctctctct	ctctctctct	ctctccngc	tgcnttcaga	600
tatagacgta	gaantctent	ntatccagca	ccatgtctgc	ntgcatgctg	ccattnttcc	660
caccangacg	ataataggct	aaacttntga	actctaagcc	agcctcaatt	aaatttntan	720
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tctttacagc	aatagaaacc	ctaactaaga	cttgccgaaa	cctcaaccac	aacttcagcc	840
ctcagaagcc	caagagggga	aagaccttga	at			872

<210> 49
 <211> 785
 <212> DNA
 <213> Rattus norvegicus

<400> 49						
tcgtaanttt	tnatccaccn	gtanangatn	ttccatgccca	ccatgtacgg	ttacgaggng	60
tatagcgtgn	acngttttgg	agtnggctaa	aaggaaatgg	agacntattg	tnntggtttt	120
gtgaccata	acttcggaaa	ggttgtgttt	tatccggcaa	caaccacngt	gtagcgggtg	180
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ttnttcgggt	tctgacgntc	atgttgtgtg	gaattgtgag	cggataacaa	tttcacacag	300
aattcaaagg	agaggagcca	atatagaggg	ggaaaaaaa	agaaggggaa	agcattagtt	360
taaaaagtgt	agagaacaaa	gtatgttttg	cttggtatgg	caaccaaaga	agcntgccag	420
gaatggtcgg	taaaaggtgt	aagagtcag	aaacgtcttc	tgtccaaccg	ttaccggaaa	480
catgcaagga	atttcttaga	ctggccagga	ttggattgtg	ggaaaggtct	cttcaagent	540
ccccttggt	tttatggcaa	gaaaatagtg	cggactatag	agagcgtcgt	tctcaaagct	600

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tgtccccaat	agcagaaaag	cattgtccta	aattccttaa	aaggcaccgt	gaaataaata	660
ttacgaggac	acgatggcac	aagaaggagc	tttcaactct	gccaccagaa	cagttatact	720
tcatagtaac	catgttgccc	tgttcaatga	caaggcacgc	tctccagcag	aaagggaaaa	780
ggagc						785

<210> 50
 <211> 889
 <212> DNA
 <213> Rattus norvegicus

<400> 50						
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ggctttgggn	gggntttcat	anggnntgn	tttacccaat	tcagtttttt	attggtnttt	120
natgggcgca	gggatagngn	gttcnggntt	cccacangaa	tttgatttnt	ggaatcacia	180
gtnaccagtn	gccgnaatca	cgagtttgcc	gctttntttc	ctacctana	ttcataatan	240
gaatgagtan	ttttttttta	ttgagnaang	ttttnacagg	tttagtaaac	atgaggacag	300
aggttttaag	ttgangatta	ggaaggagag	ttccggggga	cagaatgtgt	gtattntcag	360
tcagtgcact	acccggaaga	gttgcaatca	ggttgaggaa	gggagcggat	ttcctggagg	420
ttttaaccaa	cagagagaaa	aagcatttac	tactgattaa	gcacacaatc	tctggattca	480
gagaaggggtg	tttaccttta	tataaaatgt	ctcctaactg	cgtgactgtg	tgactttgtt	540
gaagtcaact	gagcactgac	tgtgttggtg	gcaacatggt	aagaggacca	actttnttct	600
taaattttat	ttattattta	tgtcacgtgn	acacttggtg	cttttggttt	tggttctaatt	660
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gggaagtga	cttcagtttc	ctctggaagg	gcagaaagcg	cttttcaa	gctgggccat	840
gtatttcagc	ccctacttaa	tttataattt	tatttttagag	gatgtgctc		889

<210> 51
 <211> 947
 <212> DNA
 <213> Rattus norvegicus

<400> 51						
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agnaagggng	anaaantaga	gaaaggaaaa	gntcttaaag	aggnanaaaa	ntancnatnn	120
aaggagaaga	nggaaggnta	acataggagn	caagaatana	aaganaaaaa	gaggtagaga	180
anncagagaa	cgagaaaaga	tgaaanaaaag	antanaangg	aagaaagang	nccagnanaa	240
anaaggcaga	aanaagatgn	cgtaaaaana	gagagaagat	aggnaaaata	gaggagaagg	300
ccnaacagga	ngggaagagc	agcgaattnn	agataaaacc	ggagganagn	nagagaagg	360
agagntngnn	aaggcaaaga	cagnanngag	nacggtaent	gccccagaag	gnngaagaan	420
gncnagangg	tgagggngng	cacngncnt	ttcccttagg	aggnccgccc	cccagagatc	480
aggtttcnag	gncaccgagt	tggatacnag	attatncacc	naggcaggaa	angantatng	540
caaaangatt	cgggngggg	tcacgggggtg	agaaataaan	tcannaaana	gaggacngng	600
aggagggngg	gaaactctng	acagaaatng	caagcangaa	gccagccnca	cccaagcccc	660
nacngaagca	gengagangt	tgcaaggcgg	naggtccaaa	tcancgnagt	catggagnga	720
gcttcggngg	ggcccnaganc	cantgaggaa	gggcaggaaa	ccatatacnag	ccgagccnng	780
ngangntgc	cctganacac	ccggagaggt	aatttttatt	tnacgggaag	cgtccagnca	840
agttcgtggg	ccggaagaga	cggtaacttta	gtatacanag	ctnntgctnc	gagttgttng	900
nccttntnat	gnnagatctc	acaaangaag	ctnanaagta	gatatgt		947

<210> 52
 <211> 860
 <212> DNA
 <213> Rattus norvegicus

<400> 52						
aagggaattt	ttaccccgggt	tnctttttgn	cnggggggna	aaaaaannaa	aaaataattt	60
tttaaaatta	aagggngggg	angtttttcc	ggttctattn	ngccnatctg	gggttacact	120
tttatccanc	ntttgntttt	ttanccggcc	gggttaaaaa	tgggggggga	ttagttcggg	180
tagnggttnc	cnacagcaca	gccctgtttt	tcttcgttcc	ngaaaaaaa	aaattttgct	240
ggtntcacia	ttttnttaaa	caggatttnc	ttcaacctg	gattaataca	tttccggtgc	300
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tgtgnttagt	ntctggccct	ttaggagagc	tttgggctaa	ttatgtgacc	gattttaaga	420
agtgggtgtg	ttgtgggttc	agggactcac	ggatcagcct	ttattttata	aggacactgt	480

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ggaggagaga	cagaggctga	gctgcattct	gatgtcattt	gtgctgctgt	ggaagttaaa	540
gaaaagctgc	agaagtcagc	aaaacagatg	aataccaaga	agggcagtgt	gagtacagga	600
atggagagaa	aagtcagagt	ccagcttttg	ttaactccct	aggatcagac	anttctgcgt	660
aaggacgggt	ctacagttta	acagaccaca	gagcaangtc	aaacagcaaa	gtggtttcat	720
ggcaggcagg	aaatggaaca	tttaactgga	aacactgaac	ccacccatgg	caaacttagc	780
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<210> 53
 <211> 191
 <212> DNA
 <213> Rattus norvegicus

<400> 53	
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ttgccctgan	tcatagatga
gccactgtct	tcttcccctc
aattcctcag	gatggggaac
agccattggg	cttttagtag
aggagggaca	ggcccttttg
cagcaacagt	tctcccctga
atgttggatc	tccacctata
cacatggggg	acttagcctt
atggatgccc	c

<210> 54
 <211> 988
 <212> DNA
 <213> Rattus norvegicus

<400> 54	
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nantatgaan	ccnttcccgg
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gccaaatncc	cntntnaang
ccttttatcc	ttcctntntt
gccccncttc	naattaggaa
gcntggtttg	nccgantntt
aaggttttta	gtcctccttc
gtnntntttt	cccttntttt
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ntggattcct	gngancaggg
cctntgtttc	atggaagcaa
actcccttaa	ntatttacca
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antcatgntt	gggaaaccca
cntgtttntt	tcccaggatg
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aaaaaaaaaa	aaaaaaccca
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tgacccattt	ggtgcatgtg
tgcccatgga	gggaggggac
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agcangcatt	gaaagtnccc
cacntgtagg	gncgcaagca
actgagat	

<210> 55
 <211> 665
 <212> DNA
 <213> Rattus norvegicus

<400> 55	
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anacngtnac	nggttcgtag
atccactttt	tttagacctg
agagtagttt	ttaaaaatatt
tnaattaaag	gtttcctgca
cccacttttt	tttttatccc
taacttttca	tccagtatgg
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aaagtaagag	atggctnata
gctctcatta	ctgggatgca
ggtgtgaaac	aagtgatttg
tgtagaagct	ggcaggatgg
gtataaacia	gaacacgtgc
ccagaggatg	tattgaaagt
tggatttaag	tctctgagta
gtttatgcta	ggcggtagca
ttgaacaaga	tgaantctct
gntcatagag	gtagaaactn
cccagattct	gaggaagtgt
gagggagagc	attagatggt
actggtgggg	atttggggag
gccaggaaac	gttactccat
gccaaggag	ggtaggagaa
aggtttgggc	ttagcttttg
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ctaaaagcag	agtgggtttt
aactattggt	cttct

<210> 56
 <211> 857

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<212> DNA

<213> Rattus norvegicus

<400> 56

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aaaggaacaa	aaganaagng	anggaagana	aagggagaaa	aaanaagagg	gagaaangga	180
ggagggaaan	agagaanaga	gggggagaga	anncagagaa	nagaannag	aaaaggngga	240
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gaagangaga	agangagnag	aggaaganga	ggggaagaag	aagaggngga	ggagaagaag	360
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ggaggaggat	actanggagg	ttgtttcaat	aaaagagngg	gatntaagat	taananaagn	480
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cagtttntca	aaattnaant	gngaagattt	cttggtntga	gagcagntca	gattnantng	600
nattnttttc	tagttttnaa	cacaancttt	gtgntaacia	agagnganga	ttcnaggana	660
actcgntttt	ntttgggagg	agactttggt	cctttcnatg	aagatgcagg	acngggaaga	720
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<210> 57

<211> 902

<212> DNA

<213> Rattus norvegicus

<400> 57

aaaggggng	ggaagaanga	aaagggnaaa	cnttngtttg	gaagccnca	nnaaagna	60
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ccgaacttcc	ngcaaggaaa	aaaaatttgg	ngggngtaaa	gggcaccnca	tcccacaaaa	180
ttttgntaan	tttgggcgca	aattcangca	ggntttngtt	ggaaaggngn	ananaccaa	240
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ggnggactca	ggcttgcttt	tttttcagga	gaggttagat	tactaatcat	tcagatgttc	720
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<210> 58

<211> 852

<212> DNA

<213> Rattus norvegicus

<400> 58

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atttttnnnn	tattnaggat	caggataaat	angaaaangg	gnanattttt	nnnangnggg	180
tttttttttt	tttttttttt	tttttngng	gnnnnannan	annnnnaaat	ggcgncgggc	240
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atgaattcag	ntaccaacca	ggttggtacc	agcattttta	cattcgaggt	agacatcaat	360
ggttaggtcg	ggagtgagag	gttcggggcc	ngacatatat	tcntgggtgaa	cccagtgac	420
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gattgtttct	gc					852

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<210> 59
 <211> 884
 <212> DNA
 <213> Rattus norvegicus

<400> 59
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 ttaaaanaca aaaatttgan ggggnngng ngttacaaaa agacaggatg ttttccgagt 180
 cggattcaat cccaccacaa catgggggttc acaccatngt aaggaatcgn tgcctttttg 240
 ggggtatcct aggggggtana nttccaaata nngataanaa ttttttttaa aatttaattg 300
 tanatatatta ttanataatt taataaataa tatttgana nantnatgtt ctngcgcctt 360
 gnggactggt agttttttnt ccnnatttna actttcccag nactnggtag cctatgtgnt 420
 tatgcaaccc nttagaagct gccttcanta ttnaactcat actgtttctc gataatcngg 480
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 aaaatctaac cagggatgtt tctgggccag tcatgttggg gatgcctcag tcatgtaaaa 840
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<210> 60
 <211> 955
 <212> DNA
 <213> Rattus norvegicus

<400> 60
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 ggnngttgct tctcttggan cgntttttgt tcgaccgggg tgactaaggn catgtngggg 180
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 gaagnccgaa nnggcattgn ttaagatttg cnatccatt tagggttcgt tcaacgcctt 300
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 agtagggaga gaggaagg agatagacc ggagacagag aaggaggagg ggaaggagg 420
 gattatcctg taggatgtga gccagacnt gtctgtgtn tctttccatg acacaagaga 480
 cttntgctt gtccctagaa tgcttcattt tntagtgtct caaacttaaa gggctagtgt 540
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 nttatatgcc acggcagagt ggtacgtgat gccccacat gttatgtgga agttntcatg 660
 cagggttca gaacacagta gatggagatt gtgaaaatct gttgttnact taagagactg 720
 gcccgaagga tccatgtgat gntacttctg ttgcttgtgc tttaaaatct tatgtgatgt 780
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 gcctgtctgc tgaaggggaa cccaggcatt tgatgttggc cggcccaagg aggggctgaa 900
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<210> 61
 <211> 1107
 <212> DNA
 <213> Rattus norvegicus

<400> 61
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 nttcccntga ancctcctga ggggccaan attggggggg gttnacaccc ccggggaaac 180
 ctttcttgac ccnagaaan gcngtttagn tcccnccca tgggntccct taccctgggn 240
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 ngaccaggag tgacaaattt ngngggacnc cccagtnga gctcacaaca ngtnacatt 420
 gaggcnccaa aggattgttg aggggatgga ttgtgtcgca gtctgggttc ctttatagt 480
 ccagcatcgt tgagccccgc ccaggagtg ttggcacgcc caaaccena cccagcgtt 540
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 cccggantgg gagcaggatg aaggatttta gtgcaggaga agaccagtgc aagccggaga 660
 catngagttc cctntaattc ggtgttcagt ttgccntnt ggcacgtgac tcgtaactct 720
 ggtatgtgtg ctgaacntc taccagccag agatcagtgt ccttaaagtt cgaatcagt 780

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<210> 62
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 <213> Rattus norvegicus

<400> 62	
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<210> 63
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 <212> DNA
 <213> Rattus norvegicus

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	120
	180
	209

<210> 64
 <211> 97
 <212> DNA
 <213> Rattus norvegicus

<400> 64	
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	97

<210> 65
 <211> 1047
 <212> DNA
 <213> Rattus norvegicus

<400> 65	
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atccanaatt	naattccgga aatttacaat aatttgaatt ntagttttcc caattntaat
ntcagtagtt	tgnntttgtg tgcccnatt ntaanatcag acccgccaa tcaccaatt
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	1047

<210> 66
 <211> 1063
 <212> DNA

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<213> Rattus norvegicus

<400> 66

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ccngaacagt	ccantnttaa	aattgggcct	nttgggatta	acggattcca	aggttgcaac	180
anattggcaa	gttttnggac	aggaggttcc	aantggntaa	agtggataaa	tngtgaattt	240
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<210> 67

<211> 815

<212> DNA

<213> Rattus norvegicus

<400> 67

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gggggggggt	tccaaanatt	ccnggggttt	tttnnggggg	taaagggnnt	naaaggtnaa	180
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<210> 68

<211> 1034

<212> DNA

<213> Rattus norvegicus

<400> 68

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gggttaagtn	tttncccaaa	agttggtttt	tnnaaaaanc	ccctttnncc	cggacgtttt	180
ccttnncngg	anaatatntt	ttgggccaaa	ccngttagn	gggatttccc	aattgcgnen	240
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nacgcnatnt	tttttggaat	tttgggggga	taanaatttt	nnaccnga	tttngnggc	540
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tatgtgtgtg	tgtgtgtgtt	tgtgtgtgtg	taaccagag	gggtgccac	ttgctcaaaa	780
gagaaggggc	agaggaatat	gaggaagga	ttgtgggagg	gagtgaccag	tagggaaaca	840
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gtctacaaag tcaattactc ctttcccttc ctccaccctt tcttctaata ttaggcaaaa	960
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gaaagagatn tttc	1034

<210> 69
 <211> 186
 <212> DNA
 <213> Rattus norvegicus

<400> 69	
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aagaagtagc caccgttggt ttacttaact catgggtccac ggggtgagct gaggtctcct	120
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<210> 70
 <211> 1028
 <212> DNA
 <213> Rattus norvegicus

<400> 70	
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gggaaagtth taacaggatg gttatttnga caaaacaggt tttttcagac catttgtgna	180
ntatcttgaa atttcccagt ttttnaattn tattntaang atattntagt ttnnaatttna	240
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<210> 71
 <211> 1034
 <212> DNA
 <213> Rattus norvegicus

<400> 71	
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acaaacncaa aaacanaaac aancaaactg aaagactnta acctgtaggt tggncagctt	1020
gaaagagatn tttc	1034

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<210> 72
 <211> 824
 <212> DNA
 <213> Rattus norvegicus

<400> 72
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 atgntgtcag gagaaacccn ttcagtnttg tgcaattggg tcgccagcag ttaggaccgn 180
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<210> 73
 <211> 774
 <212> DNA
 <213> Rattus norvegicus

<400> 73
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 atggctcact gattaagaac actgactgct cttccagaag tcttgagttc aattccgagc 660
 aagcacatgg tggctcaca ccactctgta cagattctgg tttatgtnga gacaactaca 720
 gtgtactcgt attgaaagnt ncccacctgt aggttnngca agctaaanga gatc 774

<210> 74
 <211> 248
 <212> DNA
 <213> Rattus norvegicus

<400> 74
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 tagctcaggc tggttttgaa atcaggatcc tgaccctcag gaatgttaaa gtgcctaaaa 180
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 aagagatc 248

<210> 75
 <211> 833
 <212> DNA
 <213> Rattus norvegicus

<400> 75
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 antgtnttaa aaangaggat cttcnttgnc catanacgcc ntatatgaaa gcaactgaac 180
 aagatttaaa attggacagg tcacaancgg gcgtgtgect ttaatcccag cactcgntgg 240
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ntatatcagt	agggctttgt	agagaccnta	tctcaaaaaa	caaaagcaaa	acaacagaga	360
aaaaatcaat	tgaccatgtc	ccaattacct	ttattttatct	gtaacctatc	cttagttata	420
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<210> 76

<211> 880

<212> DNA

<213> Rattus norvegicus

<400> 76

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taaggcgggt	tcaaacaaac	ttggatttcc	ngccctttgg	ggcgggggaa	atgggcacgg	180
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<210> 77

<211> 864

<212> DNA

<213> Rattus norvegicus

<400> 77

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caggaantga	tcctnttggg	ttacagtcac	tttagcatag	gntgacagtt	ggngaccaan	180
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ccttggaatc	gggaantccc	ttaaaccaac	cccttttgcc	ggtgaattgc	accaaccaga	300
ttcttccagt	ctgcttgagg	angacaggac	ttcattgctn	tggagagggg	caggagggtt	360
gggagttgac	ntnacagggc	tcagggatcc	ttttagaagg	gtccagggtc	atggcttccc	420
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tcaactggga	cactcactct	gagacaggga	ggcaagggag	aaacagggtca	gaggtagaga	780
gagctcagtc	ccagggactc	acgttgaggt	ccctaagggtg	cgctagggag	aggnttttac	840
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<210> 78

<211> 874

<212> DNA

<213> Rattus norvegicus

<400> 78

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atgttgtaaa	cgcgnttggt	ttcccagttg	ttgnactgat	ccnccagga	tgttttccca	180
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tgcgcgcgca	cgtaaataatg	ccgctcagaa	tagtctaaaa	ctgctgggct	tgaaagacnt	840
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<210> 79

<211> 886

<212> DNA

<213> Rattus norvegicus

<400> 79

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aagTccaact	tctgtttttt	cttccttccc	cgcaacatta	ggaatgactt	ctaagagngc	840
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<210> 80

<211> 865

<212> DNA

<213> Rattus norvegicus

<400> 80

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agggnccatc	agtGagcttc	caaggacagg	ggaccagaac	ggtgaaaaca	aaccagggtc	420
gtgaaggaga	gcagggcggg	ggggggggga	ggggggggcg	tctntagaat	agattgaacc	480
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<210> 81

<211> 859

<212> DNA

<213> Rattus norvegicus

<400> 81

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ttgtgcacgg	gaggccaggc	tcancnnccct	tgggagnttg	acatccagca	ggctatanac	180
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<210> 82

<211> 1021

<212> DNA

<213> Rattus norvegicus

<400> 82

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<210> 83

<211> 1013

<212> DNA

<213> Rattus norvegicus

<400> 83

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acactcgtgt	gggntctttc	aaaacantgt	ncnntggata	cncagacact	cnncnagnngn	180
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<210> 84

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<211> 1002
 <212> DNA
 <213> Rattus norvegicus

<400> 84
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 ctctgcttta ccttttatac tcatttattt tgttatttgt gtatgaaagc cttccgtatg 960
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<210> 85
 <211> 1031
 <212> DNA
 <213> Rattus norvegicus

<400> 85
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 gcattccttt gggccagatt ctacatcctt tttttatgcc agaatttttt agcgttcctg 600
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 gatcnnnaaa a 1031

<210> 86
 <211> 1039
 <212> DNA
 <213> Rattus norvegicus

<400> 86
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 ccntgggata anaagtggaa tcattgacag ttttgtggc cttttnnat ccccatgnng 180
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 gnggagtatt agcaaattaa actgacttgt tcacttntga aaantgatgt ctgatttcgg 360
 aagaatccca gtgcctcggg acatgaaagg gagatgtaac cttgagttca tggtaggag 420
 ggaattcata gagacagttg gtaaaaatct gagtgaggtt gagaggttgg aggaccacat 480
 tgtgtatttg ctcatcntgt gagggagaga ctttgtactc tgctctgaga aggcagaact 540
 gttaggcaga cacttagaga atatatgtca tggcaaaaga catccacca acaagtcttc 600

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<211> 873

<212> DNA

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<210> 91

<211> 876

<212> DNA

<213> Rattus norvegicus

<400> 91

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<210> 92

<211> 459

<212> DNA

<213> Rattus norvegicus

<400> 92

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<210> 93

<211> 3133

<212> DNA

<213> Rattus norvegicus

<400> 93

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 <212> DNA
 <213> Rattus norvegicus

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 <212> DNA
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<400> 99
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 <212> DNA
 <213> Rattus norvegicus

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<210> 102
 <211> 865
 <212> DNA
 <213> Rattus norvegicus

<400> 102						
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<210> 103

<211> 859

<212> DNA

<213> Rattus norvegicus

<400> 103

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<210> 104

<211> 883

<212> DNA

<213> Rattus norvegicus

<400> 104

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<210> 105

<211> 987

<212> DNA

<213> Rattus norvegicus

<400> 105

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<211> 1031

<212> DNA

<213> Rattus norvegicus

<400> 106

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<210> 107

<211> 1138

<212> DNA

<213> Rattus norvegicus

<400> 107

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 <212> DNA
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 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

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 <212> DNA
 <213> Rattus norvegicus

<400> 113						
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 <211> 1083
 <212> DNA
 <213> Rattus norvegicus

<400> 114						
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 <212> DNA
 <213> Rattus norvegicus

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<210> 116

<211> 1123

<212> DNA

<213> Rattus norvegicus

<400> 116

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<210> 117

<211> 1116

<212> DNA

<213> Rattus norvegicus

<400> 117

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1116

<210> 118
 <211> 900
 <212> DNA
 <213> Rattus norvegicus

<400> 118

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<210> 119
 <211> 498
 <212> DNA
 <213> Rattus norvegicus

<400> 119

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<210> 120
 <211> 380
 <212> DNA
 <213> Rattus norvegicus

<400> 120

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 <211> 998
 <212> DNA
 <213> Rattus norvegicus

<400> 121

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acaaaaacca	aaacaaagaa	acaaacgcct	attttaaagg	gggttggagt	tgggcagggg	720
tgaggtngtt	agatcatctg	agagctccag	gacacgcana	tagttgaaga	ggaaaccaag	780
atccaaatgt	cttctgacat	cacacgggat	gcagcagcac	accaacatat	actttancct	840
cnccagagag	gaaaacaacc	gcctagttaa	taagcagagt	tgggctgttg	gcaaaccgtc	900
attccagatc	tgaggnaagt	tggatggttc	gggtgtctat	gttnacntaa	gacctgtttt	960
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<211> 970

<212> DNA

<213> Rattus norvegicus

<400> 122

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ntcctnecgt	ntttttttcc	ntnttttttt	cccaaaagta	acaanccggt	attggtttcc	240
aaggntnttn	ttgaaccctg	aatngcggnt	ttccgggtta	ccnagggttt	gttcctnngc	300
cgnttcctcc	aatttttgga	ntttcccagn	tnggggtccn	ttntcttggt	nacngttcca	360
aacntaattg	acanttaatt	tttcctgtgt	aanttgtccc	cgganattnt	gggntccttg	420
ngcagggcct	tttttcattg	gaagcaaccc	cntaaatttt	taccaggctt	gattgtttag	480
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ttttgcaata	tggggtttgc	ttgcttgctg	gctcntntcn	tgctntntca	gatggtgact	660
gaggctactt	cagcaggact	aggaataatc	atgtccaggt	ggntgccctt	ccgagcagaa	720
agggacagac	gtggggcgat	gaagttgcta	tcgttttttt	ttttttctgc	acagactgca	780
aagtgtgcag	agggagggag	gctgtgcaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaac	840
cgaggacgca	gaagttagac	tgctgaccca	tttgggtgcat	gtgtgcccat	ggagggaggg	900
gaccttctca	aaagggttca	cgcagcaagc	attgaaagnt	tccacntgta	gngtcgcaag	960
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<210> 123

<211> 884

<212> DNA

<213> Rattus norvegicus

<400> 123

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ggactgtaca	cacacacaca	cacacacaca	cacacacaca	cacacacgca	cgcacacaca	180
cccctcaagt	aaccgtggaa	taaagggtccg	accagaaacc	acgctggaac	gggagatgct	240
ggagcacatc	agggtgggtg	taagcagcag	atcggcctgt	aactggcagc	agaggggtgt	300
ggctctttca	gaaccaggag	ggcatcgccc	ctccagccag	actctccagc	tttcttcccc	360
tccttgccct	ctgttttctt	tctgcctacc	ttcctttggc	ctcaaaccat	aatgtgcaac	420
acattcaaac	tgtagtaagt	gttttaattt	tctactaaac	aataaaacct	ttagattttc	480
actgggccag	tgctggtaac	agcagactgg	gtggagtatc	acagaggggtg	tggagcaagc	540
tggctaccca	gggctgggca	cactcaacac	tctggcattc	ngtggaaagt	ctgggcagta	600
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tcccagggct	tccaggantt	aggggtatac	caggcccann	acattgggna	aacgtgtgtg	780
tnaannnttt	cntntnaaac	cncnnggtt	gacnactngn	nntccntttt	aanggnccca	840
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<210> 124

<211> 855

<212> DNA

<213> Rattus norvegicus

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<400> 124

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tnacgagggg	attnggggtt	anagtttttg	agtgggccaa	nangaacatg	gaggaatatt	180
tgtttttggt	tgngaaccat	accttggaag	gattgtattt	ttatccgcca	acaaccacng	240
tggtagggtg	tttttttggt	tgcagcagca	gataagggca	gaaaaaagat	ntcagagatc	300
ctttgatntt	tnttcggggg	ngacgttcat	gttgngngga	ttgggagcgg	anaacaattt	360
cacacagcaa	ggagaggagc	caatatagag	gggaaaaaaa	aagaagggga	aagcagttag	420
tttaaaaagt	tgagagaaca	aagtatgttt	tgnttggtatg	ggcaaccaa	gaagcntgcc	480
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acatgcaagg	aatttcttag	actggccagg	attggattgt	gggaaaggtn	tnttcaagcn	600
tccccttggc	ttttatggca	agaaaatagt	gcggactata	gagagcgtcg	ttctcaaagc	660
tttccccaat	agcagaaaag	cattgtccta	aattccctaa	aaggcaccgt	gaaataaata	720
ttacgggaca	cgatggcaca	agaaggagct	ttcaactctg	ccaccagaac	agttatactt	780
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<210> 125

<211> 1059

<212> DNA

<213> Rattus norvegicus

<400> 125

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aacccaacaa	tcaacggnta	tttggttcagg	ganttnttg	taccaggcnn	ttggttttga	180
naanacggta	ggtccgggaa	gcnttgacgg	taagcccngg	gganaagggc	caacggngat	240
cccaaattag	gagcttgacg	cattgttttc	ntttgcntgg	aatgncattc	ttctcttctc	300
cntttatcta	gaaaacgntt	actcatgctt	caaanccacn	gttgacttcc	ccagcattgn	360
ttcncntagc	tccttctttg	aaacaactga	ttgggaaatc	aggaggatan	gaaaagcttt	420
aacaagagct	ttcaggggct	ttcgagagaga	actcattctt	gtaggacgca	ggccatgcaa	480
gcatcaggct	ctgccttctg	gaccccgagta	tacagacata	tgcacaactg	cagtgggtca	540
tacttgtaat	cccagtgtta	ggaagactta	gacttgagac	ttgctgggtca	gactggtaag	600
cccagttcag	tgagaccctg	acttaaaaat	gaagtgggaa	agaaatttgg	aaagataatc	660
tggtattcat	ctctgggctc	tatttgcaca	ggcacacaca	caaatatacc	aatataacat	720
acacagaaag	agaaggggag	ggaggaagag	agggagggcg	gtagagaact	tgtgaatgtc	780
ttttgatagg	ttttttttta	agttattgga	ttaaaccatc	agcagtgtca	cattgggtta	840
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tttgataaaa	aaaaagagga	gtctcccaca	gttttctctg	ctcatctttt	actccagggg	960
acggtcacac	tattcagtaa	gatacctagg	ctatctggct	cactggactn	ggcgtgaaag	1020
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<210> 126

<211> 1042

<212> DNA

<213> Rattus norvegicus

<400> 126

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ccctttttnt	naatcnncat	ngagggttct	aantgaacct	naaggnnatt	taacttttna	180
tggaacaaac	ccgttggtgt	gtccccctct	tggaganttg	agttggaact	taaaaaaaac	240
ctttccnaaa	aattgtgtaa	tctgantcca	aacccaaatg	aggacaaatc	cagtgtagga	300
ggnatttagg	caaattaaac	tgacttggtc	aactttctga	aaatgatgtc	ttgatttcag	360
gaaggatccc	cagtgcntcg	gggacntgaa	aggagatgt	aacccttgag	ctcatggnta	420
ggaagggaaa	tcttagagac	agcttggtaa	aatctgagtg	aggttgagag	gttgaggagc	480
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agaactgtta	ggcagacact	tagagaatat	atgtcatggc	aaangacatc	caccaacaa	600
gtcttcagta	acaaagcact	aaacagaaag	gggttggaag	gacttggtca	gtggcatgag	660
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atatctgggg	ccaggaatta	ttctgggtta	ttgccttttt	cggaagccta	atatcacaca	900
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caagtattga catggactat tnttaaggcc aaangagagg tcnccagaaa gttatacatg	1020
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ntgcncccaa	agtaaagncc	aanttgaggg	nggannttn	ttgaaacgta	attaanattt	180
ttccgataag	gaaacggagg	cccgggaant	gatccntttg	gagttaccag	gtcagtttag	240
cattaggntg	acagttgnga	ccaattnatc	cttgcccgtt	ggttggaagg	agaggggant	300
aagggttaag	ctcntgagtc	cettgaaggc	cttggaatcg	ggaattccct	taaagccaac	360
ccctttgccg	ttgaactgca	ccaaccagat	gtctnccagt	ttgcttgaag	agacgggatt	420
cantgntgtg	gagaggggca	ggagggntgg	gaggtgacnt	nacagggttc	agggattcct	480
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ccgtctctgg	gagaggccaa	gccctctggc	tcacttgtgg	atttccttta	agcaagactt	660
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gcaggcagaa	cagacattcc	ccgatgactc	acaagcctgg	aactctgtgg	gccagcagga	780
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caagggagaa	acaggtcaga	ggtagagaga	gctcagtcca	gggactcacg	gtgaggtccc	900
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What is claimed:

1. An isolated nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, and SEQ ID NO:127.
2. A nucleic acid comprising at least 20 consecutive nucleotides of a nucleotide sequence of claim 1.
3. A nucleic acid comprising at least 30 consecutive nucleotides of a nucleotide sequence of claim 1.
4. A nucleic acid comprising at least 40 consecutive nucleotides of a nucleotide sequence of claim 1.
5. An isolated nucleic acid encoding the protein encoded by the gene comprising the nucleotide sequence set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:5,

SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, and SEQ ID NO:127, or a homolog thereof.

6. A host cell containing the nucleic acid of claim 1 or 5.
7. A nucleic acid comprising a nucleic acid that selectively hybridizes under stringent conditions with the nucleic acid of claim 1 or 5.
8. A nucleic acid having a region within an exon wherein the region has at least 50 % homology with a nucleic acid of claim 1 or 5.
9. A nucleic acid having a region within an exon wherein the region has at least 60 % homology with a nucleic acid of claim 1 or 5.
10. A nucleic acid having a region within an exon wherein the region has at least 70 % homology with a nucleic acid of claim 1 or 5.

11. A nucleic acid having a region within an exon wherein the region has at least 80 % homology with a nucleic acid of claim 1 or 5.
12. A nucleic acid having a region within an exon wherein the region has at least 90 % homology with a nucleic acid of claim 1 or 5.
13. A nucleic acid having a region within an exon wherein the region has at least 95 % homology with a nucleic acid of claim 1 or 5.
14. A polypeptide comprising the amino acid sequence encoded by the nucleic acid of claims 1 or 5.
15. A nucleic acid comprising a regulatory region of a gene comprising the nucleotide sequence set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, and SEQ ID NO:127, or a homolog thereof.

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16. A construct comprising a regulatory region of claim 15, wherein the regulatory region is functionally linked to a reporter gene.

17. A method of reducing or inhibiting a viral infection in a subject, comprising administering to the subject an amount of a composition that inhibits expression or functioning of a gene product encoded by a gene comprising the nucleic acid set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, or SEQ ID NO:127 or a homolog thereof, thereby treating the viral infection.

18. The method of claim 17, wherein the gene is selected from a nucleic acid encoding a gene product from the group consisting or, or the gene product is selected from the group

consisting of: tristetraprolin (human ZFP-36), 6-pyruvoyltetrahydropterin synthase, a eukaryotic DnaJ-like protein, ID3 (inhibitor of DNA binding 3), N-acetylglucosaminyltransferase I (mGAT-1), cleavage stimulation factor (CSTF2), TAK1 binding protein, human zinc transcription factor ZPF207, Dlx2, Smad7 (Mad-related protein), and P-glycoprotein (mdr1b).

19. The method of claim 17, wherein the subject is a human.

20. A method of reducing or inhibiting a viral infection in a subject comprising mutating *ex vivo* in a selected cell an endogenous gene comprising the nucleic acid set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, or SEQ ID NO:127 or a homolog thereof, to a mutated gene

incapable of producing a functional gene product of the gene or to a mutated gene producing a reduced amount of a functional gene product of the gene, and placing the cell in the subject, thereby reducing viral infection of cells in the subject.

21. The method of claim 20, wherein the cell is a hematopoietic cell.
22. The method of claim 20, wherein the subject is a human.
23. The method of claim 20, wherein the cell is from the subject.
24. A method of screening a compound for effectiveness in treating or preventing a viral infection, comprising administering the compound to a cell containing a cellular gene comprising the nucleic acid set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117,

SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, or SEQ ID NO:127, or a homolog thereof, and functionally encoding a gene product necessary for reproduction of the virus in the cell but not necessary for survival of the cell and detecting the level and/or activity of the gene product produced, a decrease or elimination of the gene product and/or gene product activity indicating a compound effective for treating or preventing the viral infection.

25. A method of screening a compound for reducing or inhibiting a viral infection, comprising administering the compound to a cell containing the construct of claim 16 and detecting the level of the reporter gene product produced, a decrease or elimination of the reporter gene product indicating a compound for reducing or inhibiting the viral infection.

26. A method of screening a compound for effectiveness in treating or preventing a viral infection comprising contacting the compound with the gene product of a cellular gene comprising nucleic acid set forth in SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID

NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, or SEQ ID NO:127, or a homolog thereof, and detecting the function of the gene product, a decrease or elimination of the function indicating a compound for reducing or inhibiting viral function.

27. A method of suppressing a malignant phenotype in a cell in a subject, comprising administering to the subject an amount of a composition that inhibits expression or functioning of a gene product encoded by a gene comprising the nucleic acid set forth in SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:36 or SEQ ID NO:94, or a homolog thereof, thereby suppressing a malignant phenotype.

28. A method of screening a compound for effectiveness in treating a viral infection, comprising administering the compound to a cell containing a cellular gene functionally encoding a gene product whose overexpression inhibits reproduction of the virus but does not prevent survival of the cell and detecting the level of the gene product produced, an increase in the gene product indicating a compound effective for treating the viral infection.

29. A method of screening for a compound that can suppress a malignant phenotype in a cell comprising administering the compound to a cell containing a nucleic acid functionally encoding a gene product encoded by a gene comprising the nucleic acid set forth in SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:36 or SEQ ID NO:94, or a homolog thereof, and detecting the level of the gene product produced, an increase in the gene product indicating a compound effective for suppressing the malignant phenotype.