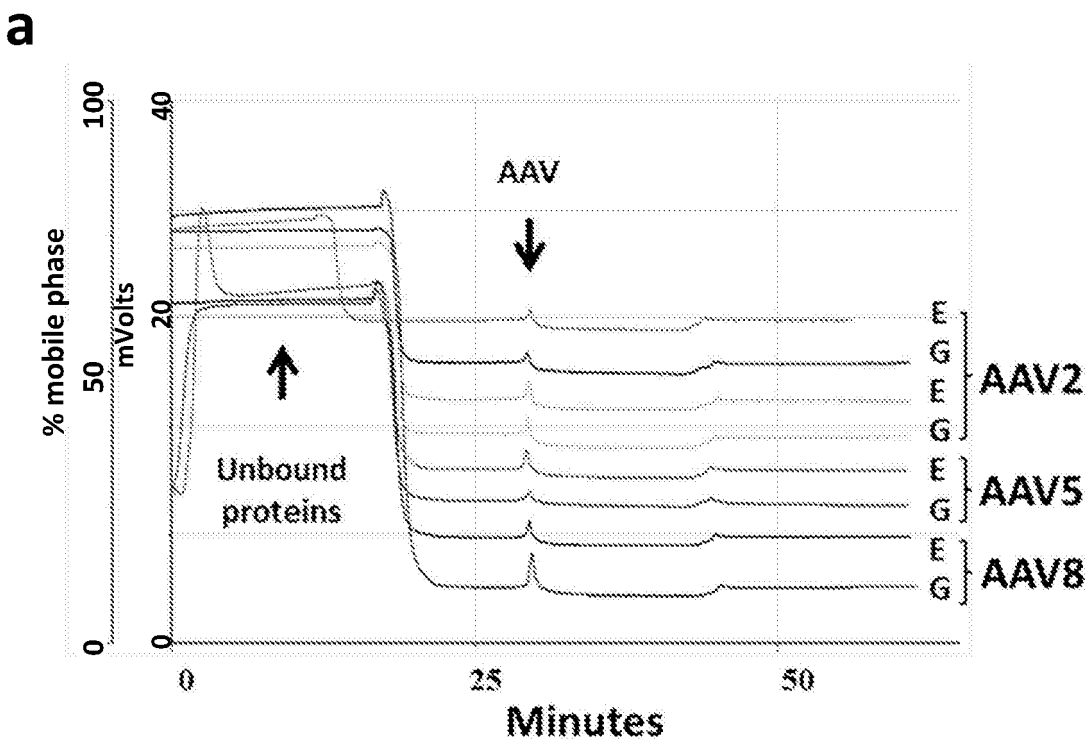
Figure 1


a
% mobile phase
100
50
0
mVolts
40
20
0
AAV
Unbound proteins
E
G
E
G
AAV2
E
G
AAV5
E
G
AAV8
0
25
50
Minutes

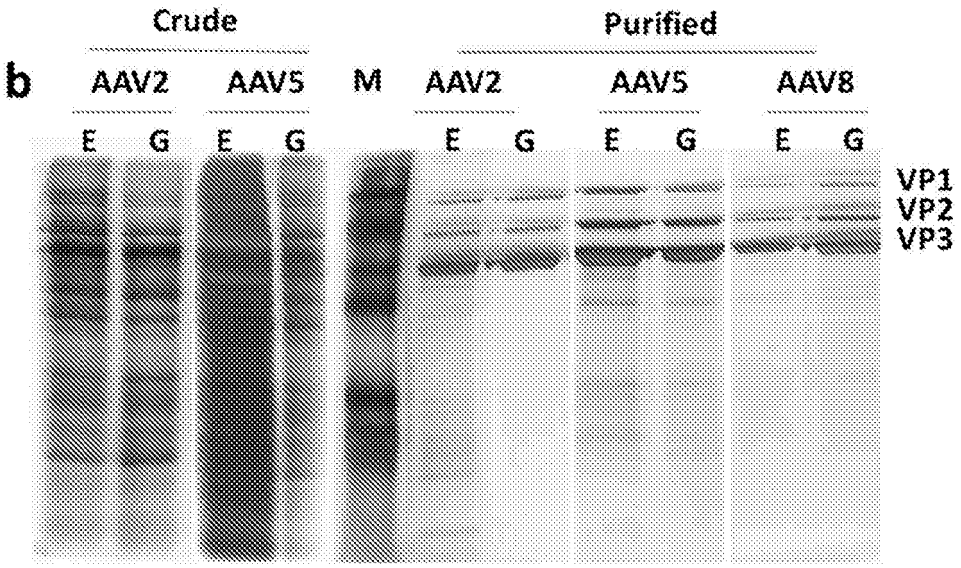

b
Crude
Purified
AAV2
AAV5
M
AAV2
AAV5
AAV8
E
G
E
G
E
G
E
G
E
G
VP1
VP2
VP3

Figure 2

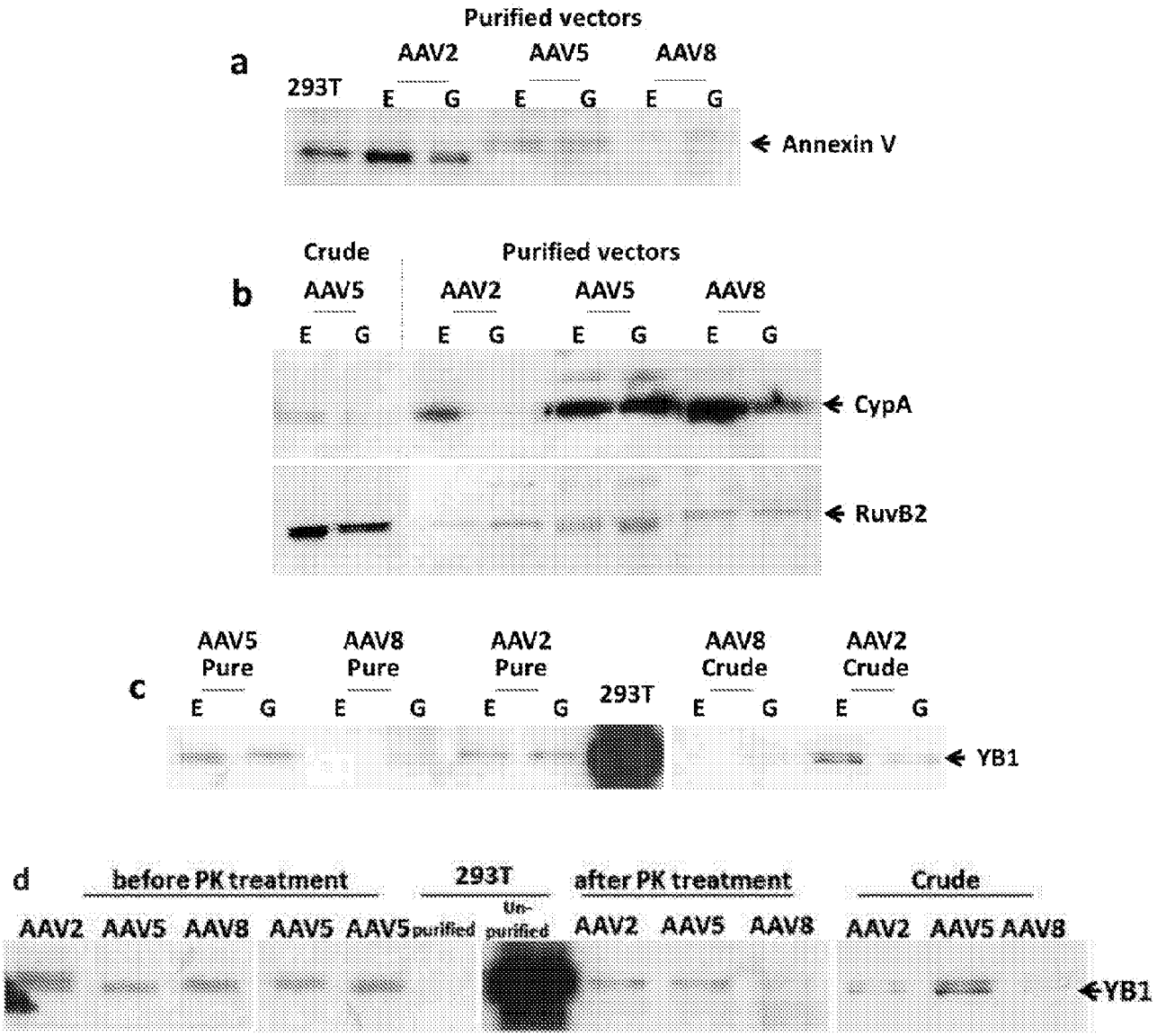

a
Purified vectors
AAV2
AAV5
AAV8
293T
E
G
Annexin V
b
Crude
AAV5
Purified vectors
AAV2
AAV5
AAV8
CypA
RuvB2
c
AAV5 Pure
AAV8 Pure
AAV2 Pure
293T
AAV8 Crude
AAV2 Crude
YB1
d
before PK treatment
293T
after PK treatment
Crude
AAV2
AAV5
AAV8
Un-purified
YB1

Figure 3

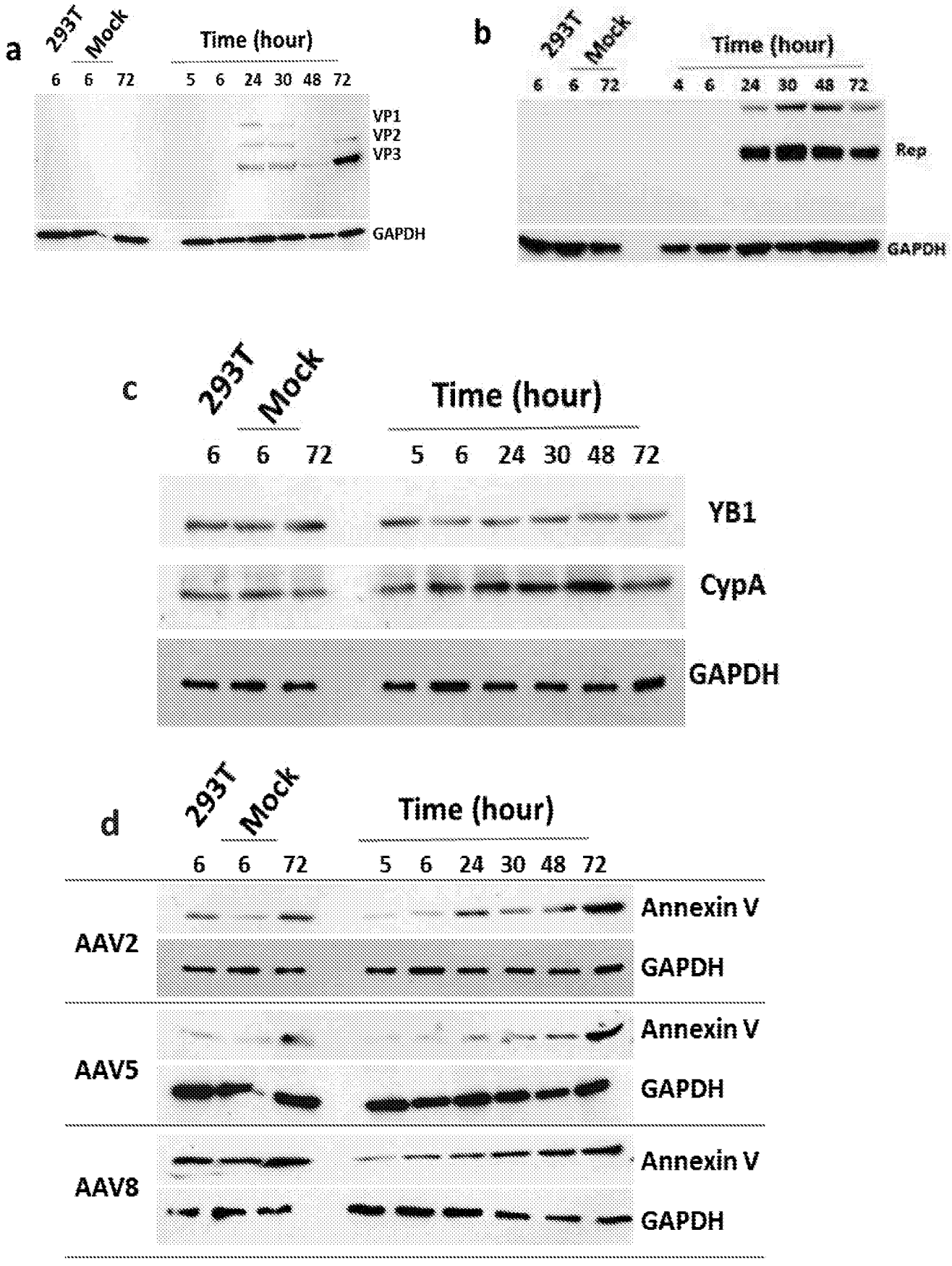

a
293T
Mock
Time (hour)
6 6 72 5 6 24 30 48 72
VP1
VP2
VP3
GAPDH
b
293T
Mock
Time (hour)
6 6 72 4 6 24 30 48 72
Rep
GAPDH
c
293T
Mock
Time (hour)
6 6 72 5 6 24 30 48 72
YB1
CypA
GAPDH
d
293T
Mock
Time (hour)
6 6 72 5 6 24 30 48 72
AAV2
Annexin V
GAPDH
AAV5
Annexin V
GAPDH
AAV8
Annexin V
GAPDH

Figure 4

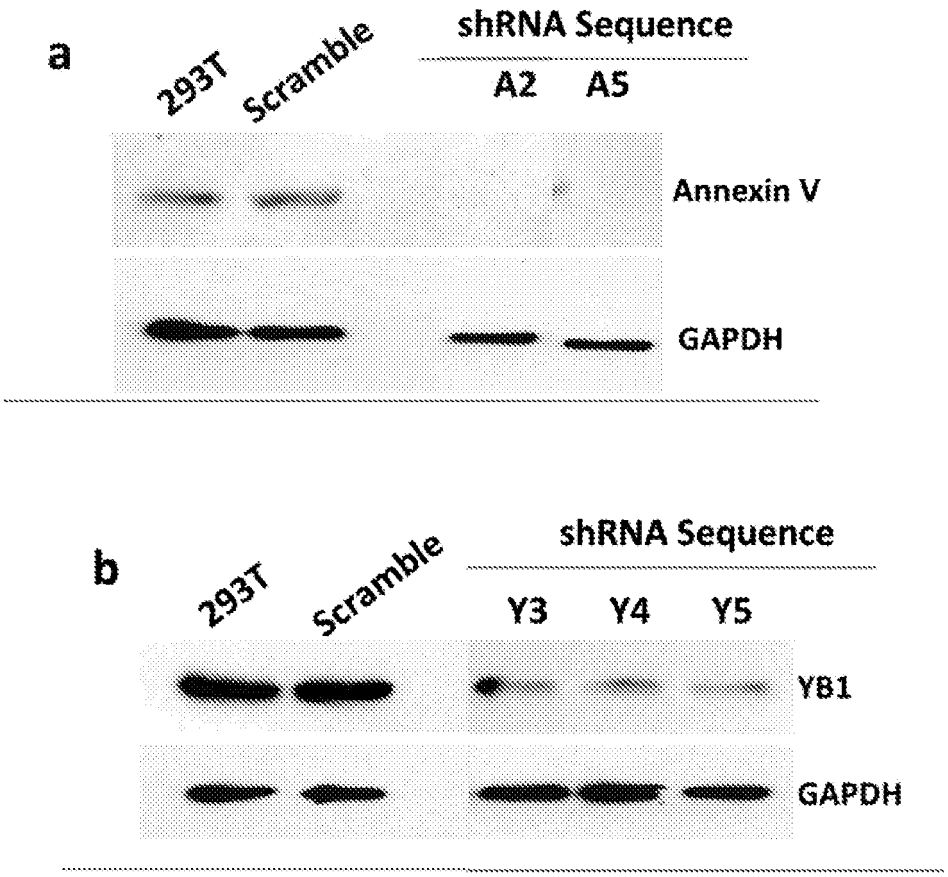

a
293T
Scramble
shRNA Sequence
A2
A5
Annexin V
GAPDH
b
293T
Scramble
shRNA Sequence
Y3
Y4
Y5
Y81
GAPDH

Figure 5

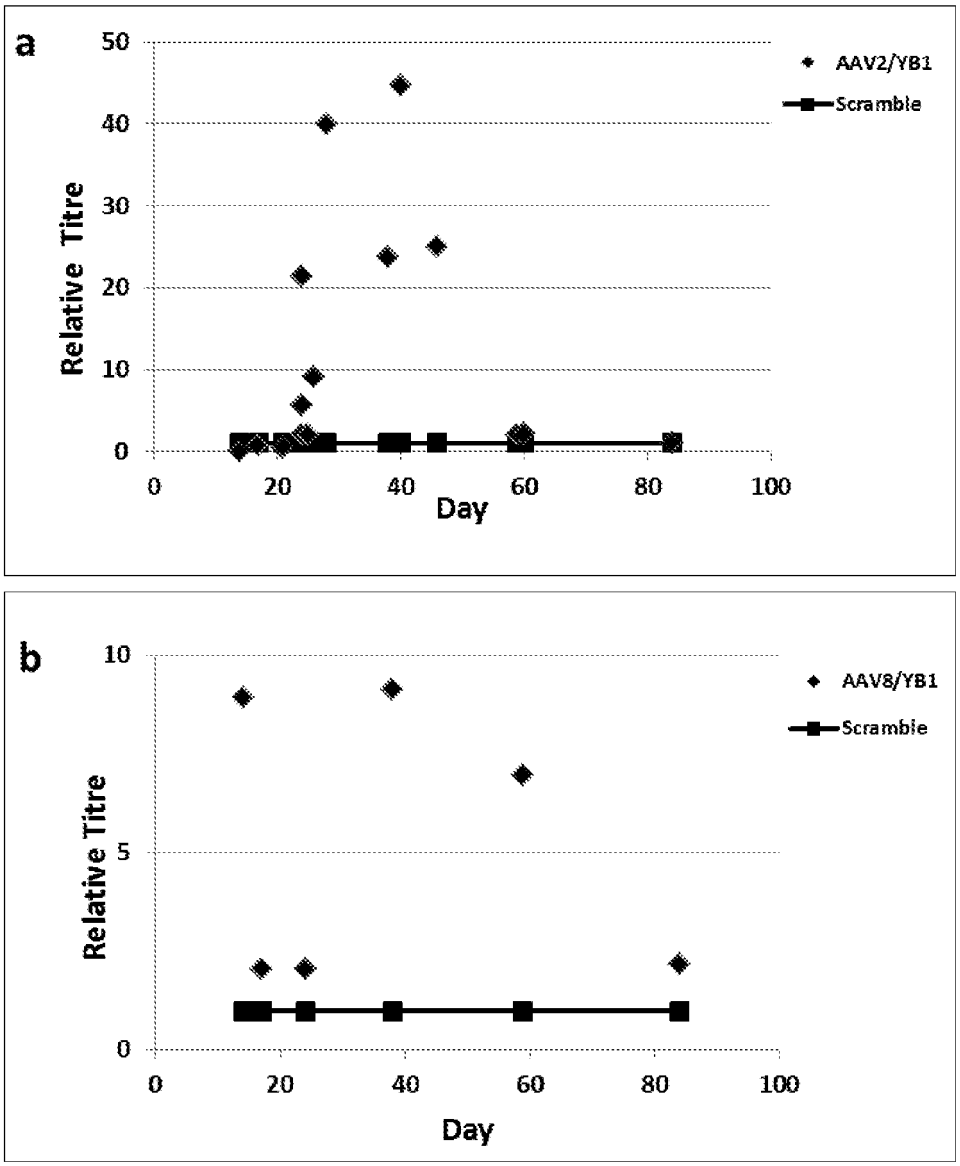


Figure 6

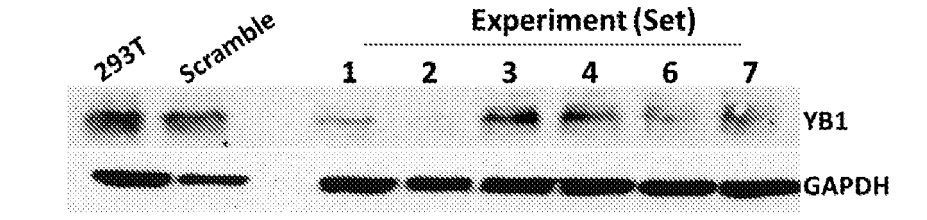


Figure 7

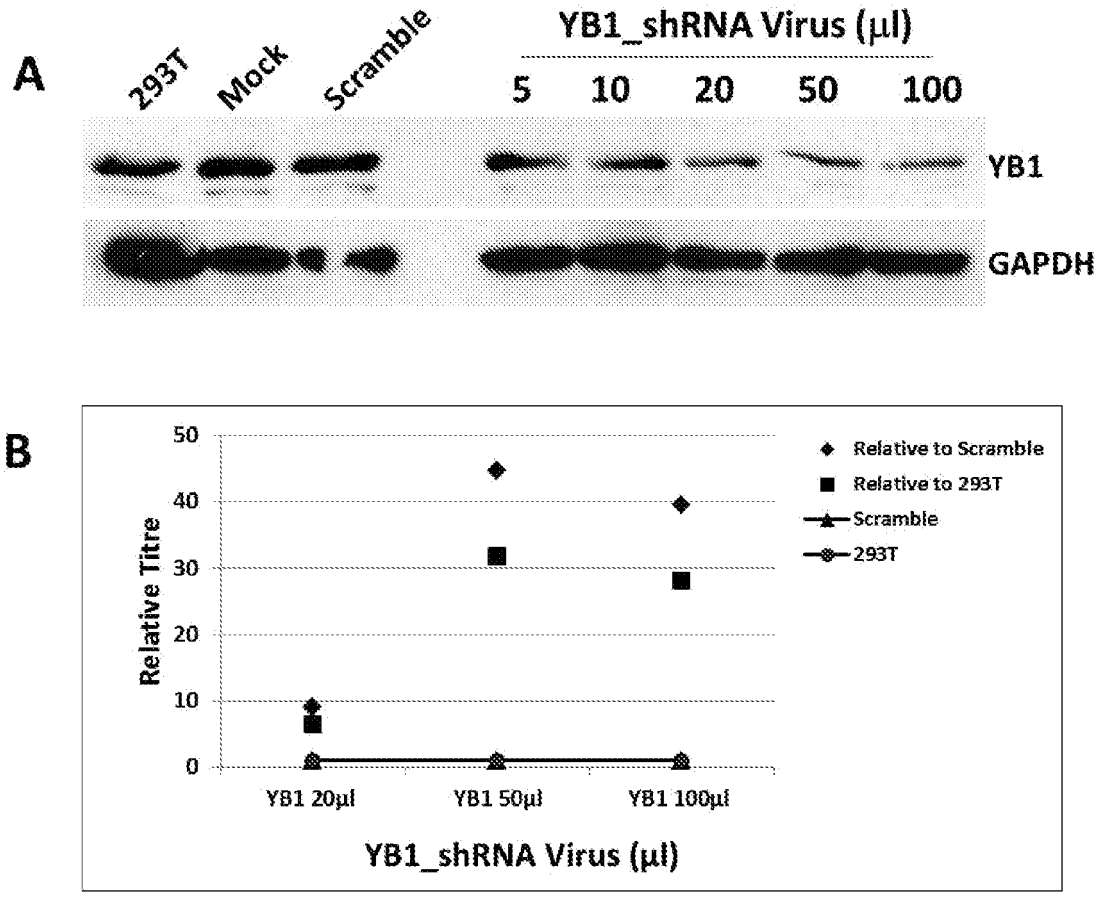

A
293T
Mock
Scramble
YB1_shRNA Virus (µl)
5
10
20
50
100
YB1
GAPDH
B
Relative Titre
50
40
30
20
10
0
YB1 20µl
YB1 50µl
YB1 100µl
YB1_shRNA Virus (µl)
Relative to Scramble
Relative to 293T
Scramble
293T

Figure 8

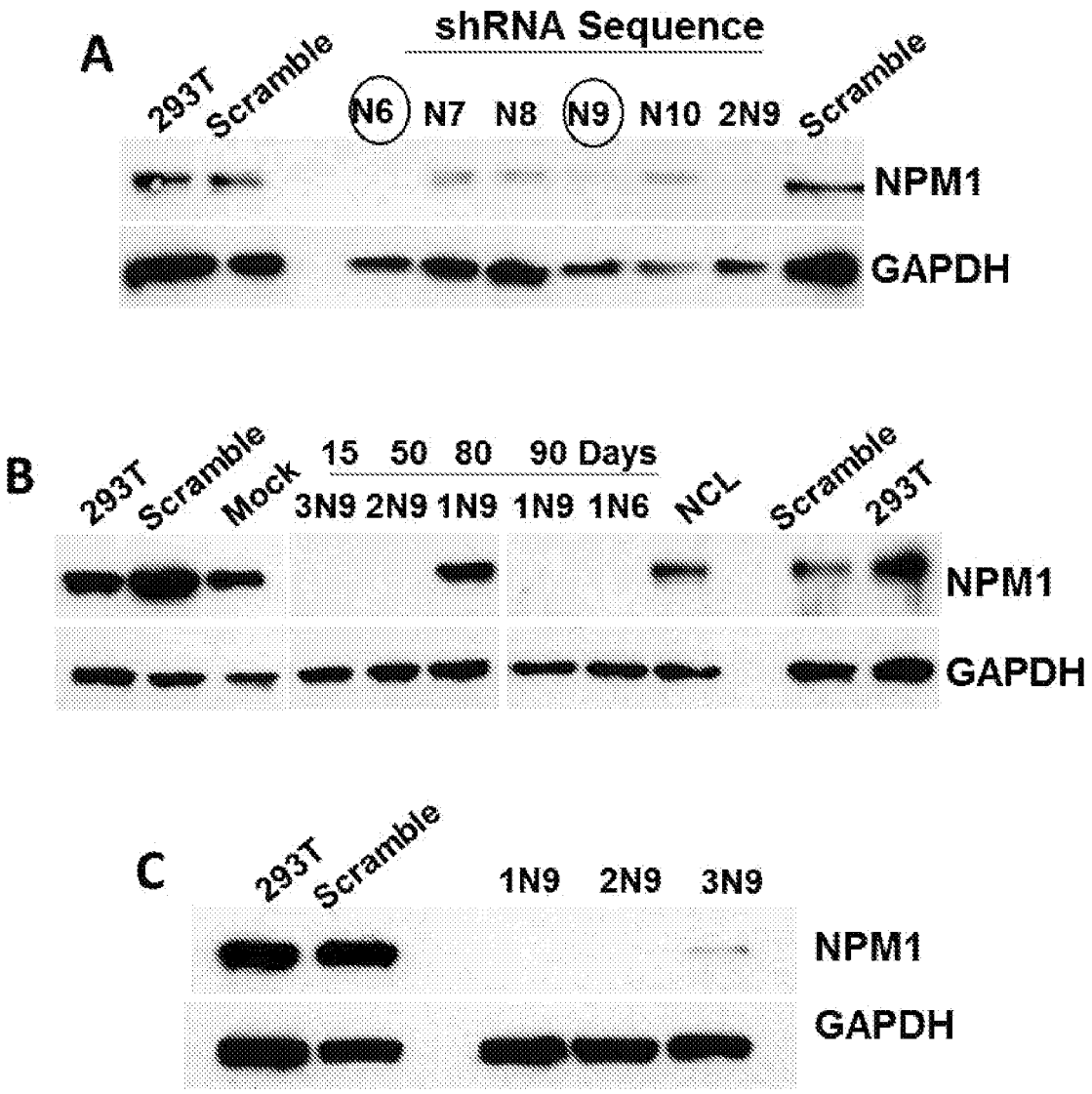

A
shRNA Sequence
293T
Scramble
N6
N7
N8
N9
N10
2N9
Scramble
NPM1
GAPDH
B
293T
Scramble
Mock
15
50
80
90 Days
3N9
2N9
1N9
1N9
1N6
NCL
Scramble
293T
NPM1
GAPDH
C
293T
Scramble
1N9
2N9
3N9
NPM1
GAPDH

Figure 9

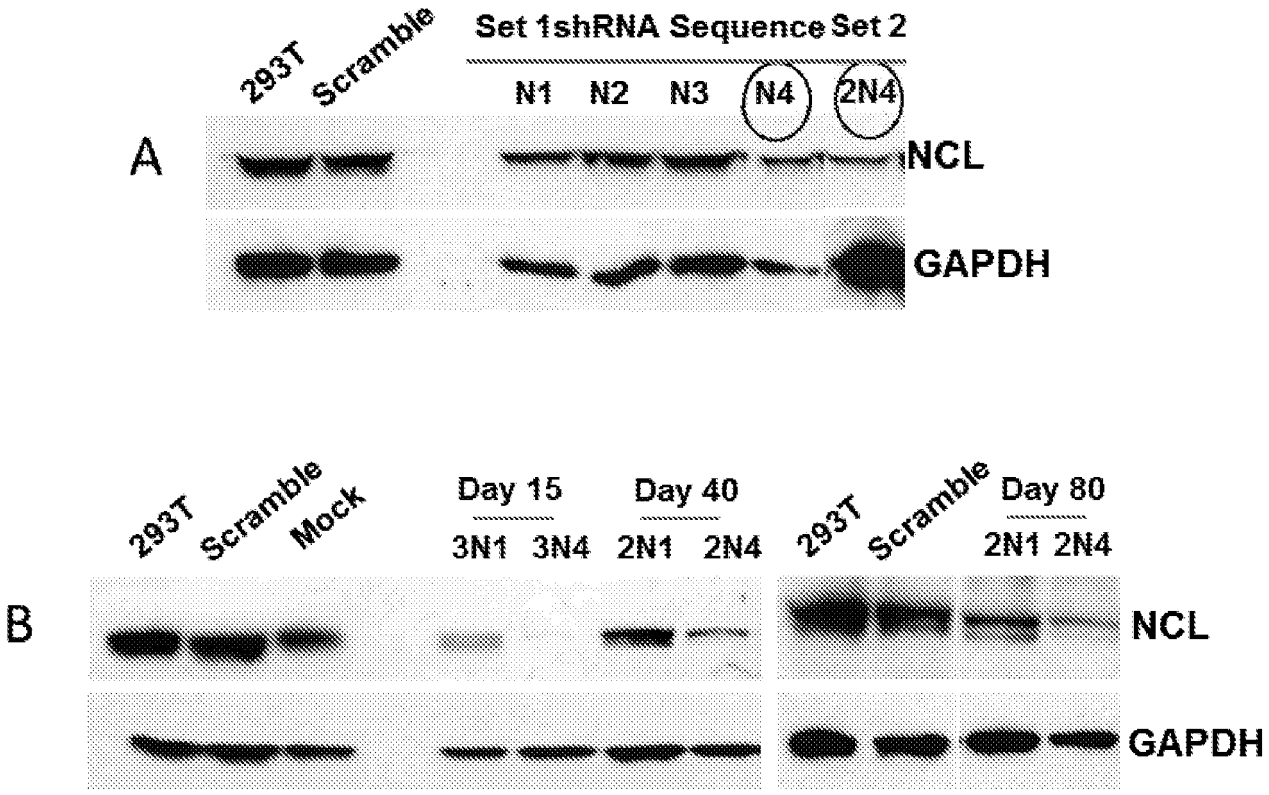

A
293T
Scramble
Set 1shRNA Sequence Set 2
N1
N2
N3
N4
2N4
NCL
GAPDH
B
293T
Scramble
Mock
Day 15
Day 40
3N1
3N4
2N1
2N4
293T
Scramble
Day 80
2N1
2N4
NCL
GAPDH

Figure 10

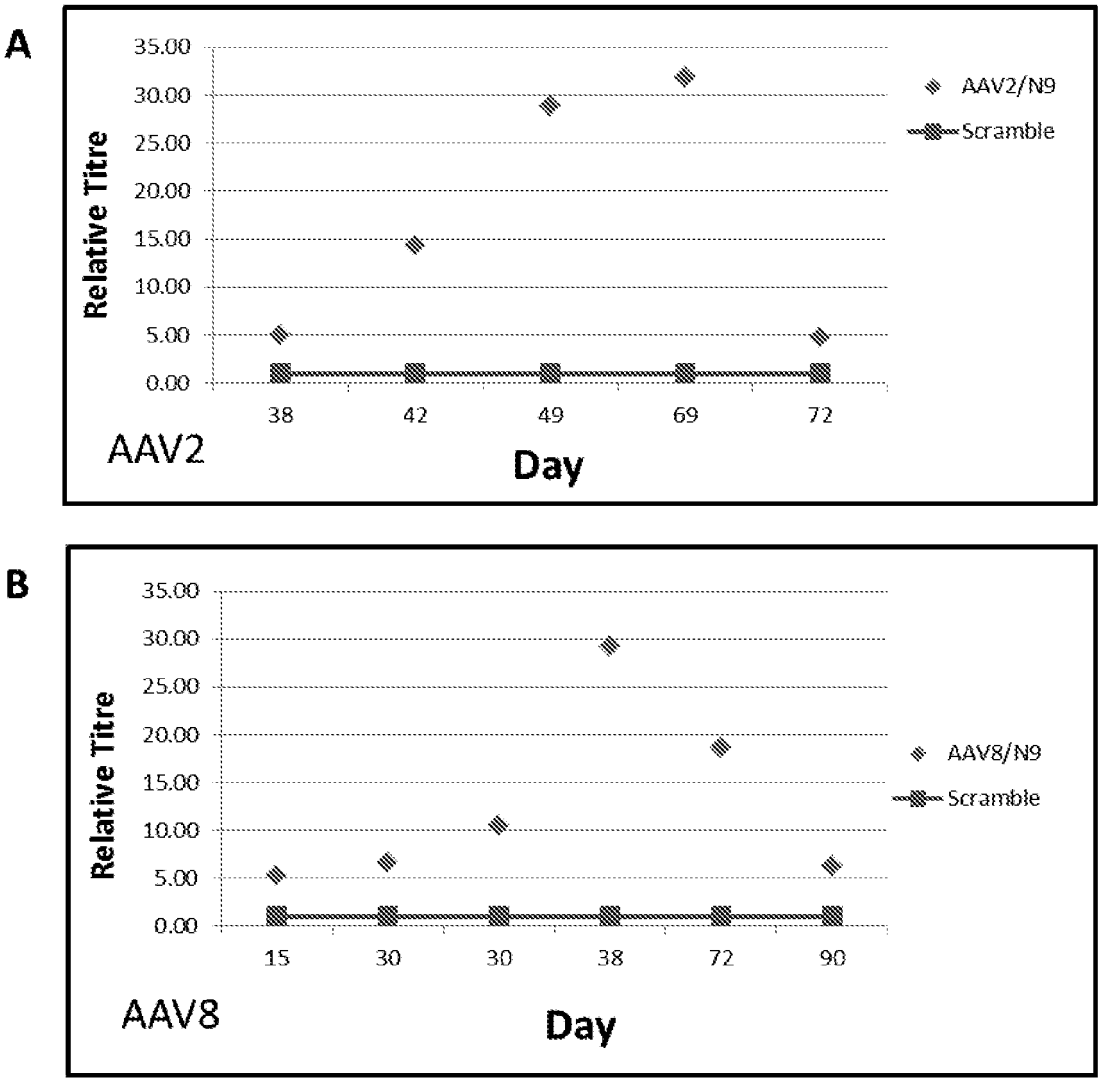
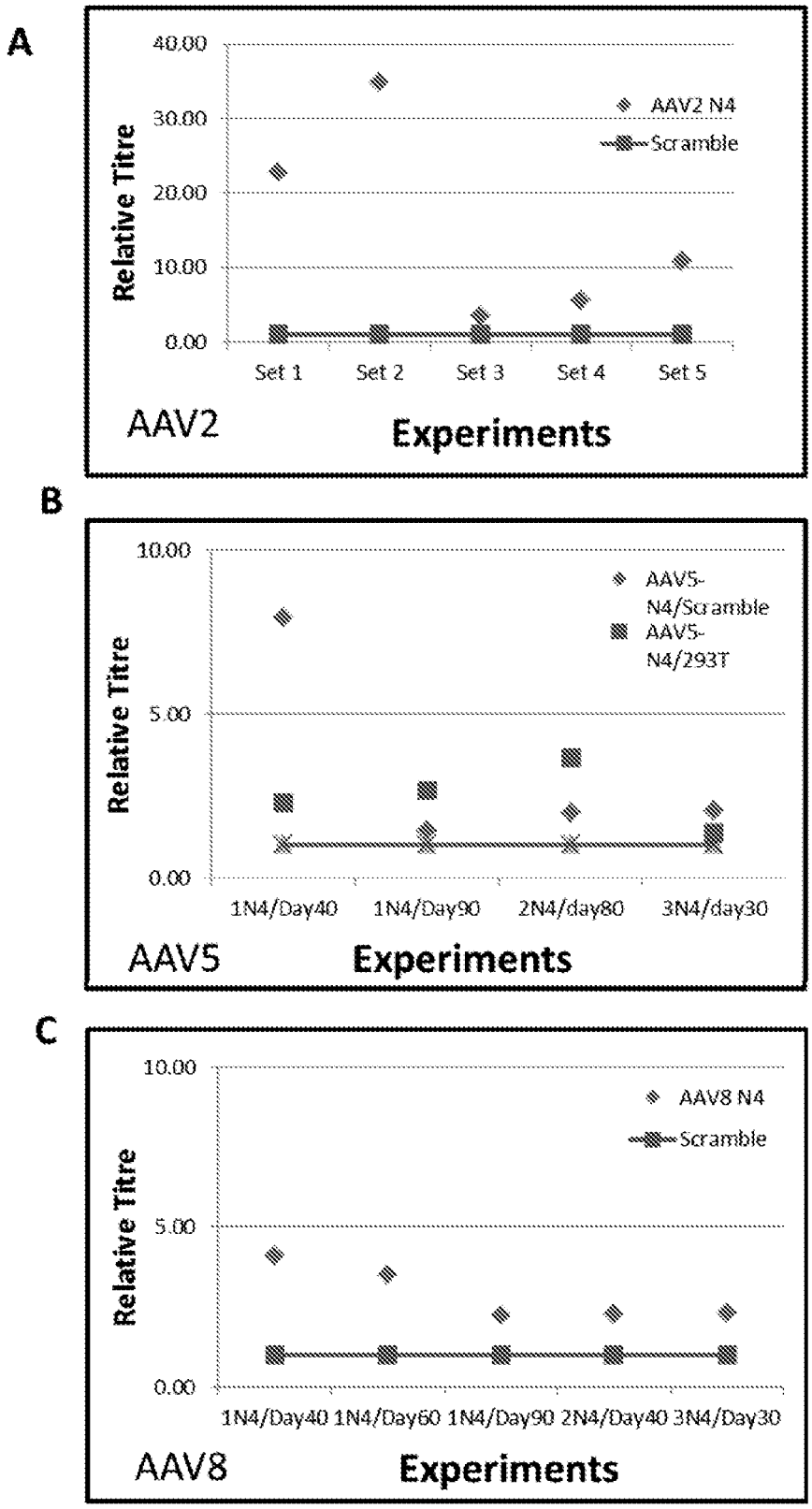

A
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Relative Titre
38
42
49
69
72
AAV2
Day
AAV2/N9
Scramble
B
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Relative Titre
15
30
30
38
72
90
AAV8
Day
AAV8/N9
Scramble

Figure 11


A
40.00
30.00
20.00
10.00
0.00
Relative Titre
AAV2 N4
Scramble
Set 1
Set 2
Set 3
Set 4
Set 5
AAV2
Experiments
B
10.00
5.00
0.00
Relative Titre
AAV5-N4/Scramble
AAV5-N4/293T
1N4/Day40
1N4/Day90
2N4/day80
3N4/day30
AAV5
Experiments
C
10.00
5.00
0.00
Relative Titre
AAV8 N4
Scramble
1N4/Day40
1N4/Day60
1N4/Day90
2N4/Day40
3N4/Day30
AAV8
Experiments

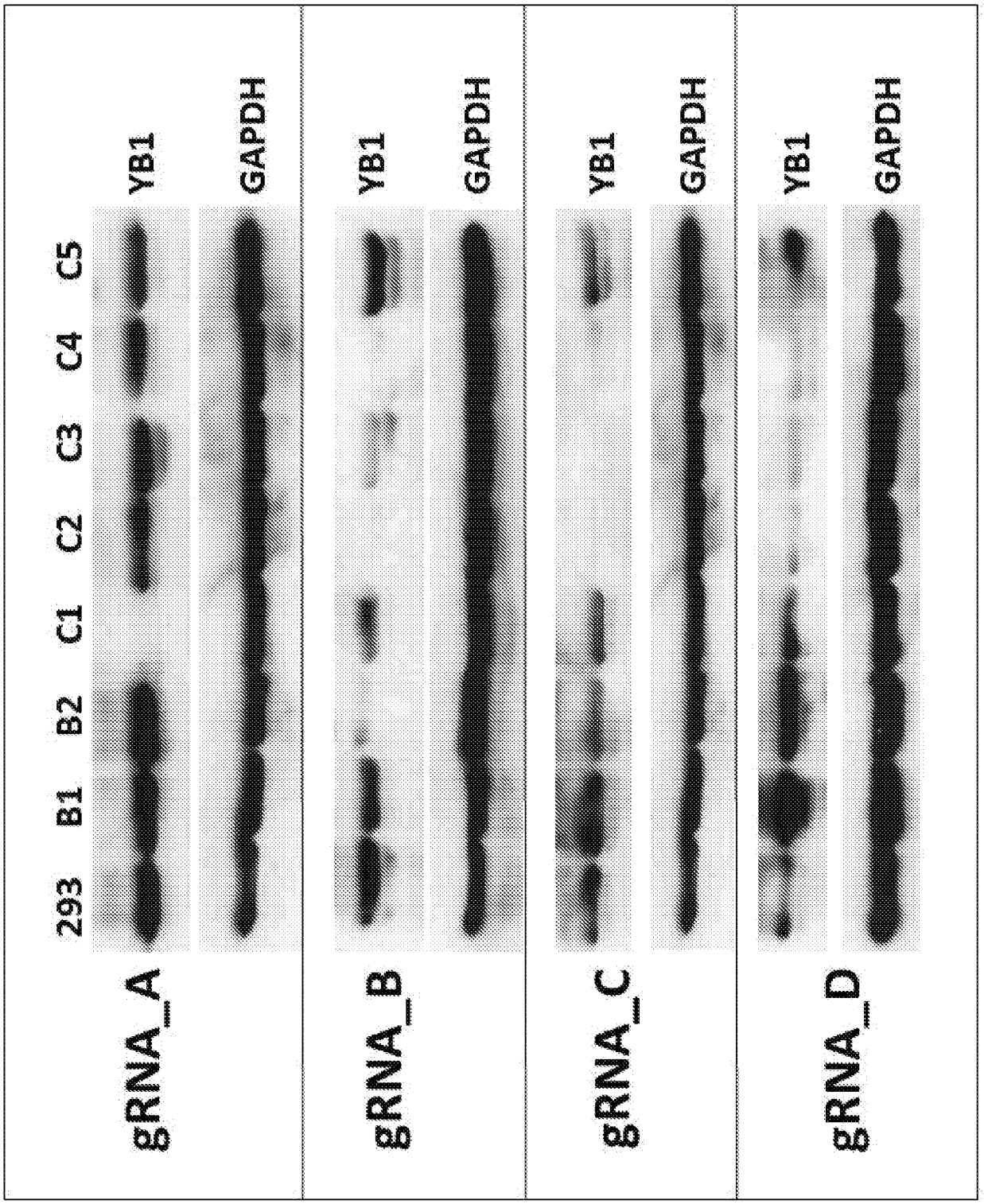
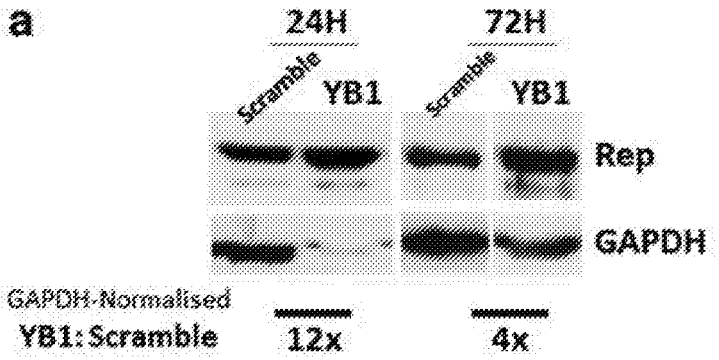


Figure 12

Figure 13



	b ELISA Proteins (Capsid/10^8 cells)				c Real Time qPCR DNA (Copies/10^8 cells)					
n=3	Cell lysate	S:Y	Vector	S:Y	Total DNA (+PK)	Y:S	Unpackaged DNA (-PK)	Y:S	Packaged DNA (+DNAase I/+PK)	Y:S
Scramble	$8.87\pm0.1 \times 10^{14}$	7x	$6.77\pm0.2 \times 10^{13}$	1x	$1.46\pm0.5 \times 10^{12}$		$2.61\pm0.8 \times 10^{11}$		$2.16\pm0.3 \times 10^{10}$	
YB1	$1.29\pm0.2 \times 10^{14}$		$6.27\pm0.3 \times 10^{13}$		$1.93\pm0.08 \times 10^{13}$	13x	$2.02\pm0.5 \times 10^{12}$	8x	$7.97\pm0.5 \times 10^{10}$	4x

Figure 14

YB1 mRNA sequence (SEQ ID NO: 3)

```
   1 gggcttatcc cgcctgtccc gccattctcg ctagttcgat cggtagcggg agcggagagc
  61 ggaccccaga gagccctgag cagccccacc gccgccgccg gcctagttac catcacaccc
 121 cgggaggagc cgcagctgcc gcagccggcc ccagtcacca tcaccgcaac catgagcagc
 181 gaggccgaga cccagcagcc gcccgccgcc ccccccgccg ccccccgccc cagcgccgcc
 241 gacaccaagc ccggcactac gggcagcggc gcagggagcg gtggcccggg cggcctcaca
 301 tcggcggcgc ctgccggcgg ggacaagaag gtcatcgcaa cgaaggtttt gggaacagta
 361 aaatggttca atgtaaggaa cggatatggt ttcatcaaca ggaatgacac caaggaagat
 421 gtatttgtac accagactgc cataaagaag aataacccca ggaagtacct tcgcagtgta
 481 ggagatggag agactgtgga gtttgatgtt gttgaaggag aaaagggtgc ggaggcagca
 541 aatgttacag gtcctggtgg tgttccagtt caaggcagta aatatgcagc agaccgtaac
 601 cattatagac gctatccacg tcgtaggggt cctccacgca attaccagca aaattaccag
 661 aatagtgaga gtggggaaaa gaacgaggga tcggagagtg ctcccgaagg ccaggcccaa
 721 caacgccggc cctaccgcag gcgaaggttc ccaccttact acatgcggag accctatggg
 781 cgtcgaccac agtattccaa ccctcctgtg cagggagaag tgatggaggg tgctgacaac
 841 cagggtgcag gagaacaagg tagaccagtg aggcagaata tgtatcgggg atatagacca
 901 cgattccgca ggggccctcc tcgccaaaga cagcctagag aggacggcaa tgaagaagat
 961 aaagaaaatc aaggagatga gacccaaggt cagcagccac ctcaacgtcg gtaccgccgc
1021 aacttcaatt accgacgcag acgcccagaa aaccctaaac cacaagatgg caaagagaca
1081 aaagcagccg atccaccagc tgagaattcg tccgctcccg aggctgagca gggcggggct
1141 gagtaaatgc cggcttacca tctctaccat catccggttt agtcatccaa caagaagaaa
1201 tatgaaattc cagcaataag aaatgaacaa aagattggag ctgaagacct aaagtgcttg
1261 ctttttgccc gttgaccaga taaatagaac tatctgcatt atctatgcag catggggttt
1321 ttattatttt tacctaaaga cgtctctttt tggtaataac aaacgtgttt tttaaaaaag
1381 cctggttttt ctcaatacgc ctttaaaggt ttttaaattg tttcatatct ggtcaagttg
1441 agatttttaa gaacttcatt tttaatttgt aataaaagtt tacaacttga ttttttcaaa
1501 aaagtcaaca aactgcaagc acctgttaat aaaggtctta aataataaaa aaaaaaaaaa
1561 a
```

YB1 amino acid sequence (SEQ ID NO: 29)

```
1    MSSEAETQQPPAAPPAAPALSAADTKPGTTGSGAGSGGPGGLTSAAPAGGDKKVIATKVL  60
61   GTVKWFNVRNGYGFINRNDTKEDVFVHQTAIKKNNPRKYLRSVGDGETVEFDVVEGEKGA  120
121  EAANVTGPGGVPVQGSKYAADRNHYRRYPRRRGPPRNYQQNYQNSESGEKNEGSESAPEG  180
181  QAQQRRPYRRRRFPPYYMRRPYGRRPQYSNPPVQGEVMEGADNQGAGEQGRPVRQNMYRG  240
241  YRPRFRRGPPRQRQPREDGNEEDKENQGDETQGQQPPQRRYRRNFNYRRRRPENPKPQDG  300
301  KETKAADPPAENSSAPEAEQGGAE  324
```

Figure 15

NPM1 mRNA sequence (SEQ ID NO: 1)

```
   1 ggggcctggt gtgattccgt cctgcgcggt tgttctctgg agcagcgttc ttttatctcc
  61 gtccgccttc tctcctacct aagtgcgtgc cgccacccga tggaagattc gatggacatg
 121 gacatgagcc ccctgaggcc ccagaactat ctttteggtt gtgaactaaa ggccgacaaa
 181 gattatcact ttaaggtgga taatgatgaa aatgagcacc agttatcttt aagaacggtc
 241 agtttagggg ctggtgcaaa ggatgagttg cacattgttg aagcagaggc aatgaattac
 301 gaaggcagtc caattaaagt aacactggca actttgaaaa tgtctgtaca gccaacggtt
 361 tcccttgggg gctttgaaat aacaccacca gtggtcttaa ggttgaagtg tggttcaggg
 421 ccagtgcata ttagtggaca gcacttagta gctgtggagg aagatgcaga gtcagaagat
 481 gaagaggagg aggatgtgaa actcttaagt atatctggaa agcggtctgc ccctggaggt
 541 ggtagcaagg ttccacagaa aaaagtaaaa cttgctgctg atgaagatga tgacgatgat
 601 gatgaagagg atgatgatga agatgatgat ggtgatgatt ttgatgatga ggaagctgaa
 661 gaaaaagcgc cagtgaagaa atctatacga gatactccag ccaaaaatgc acaaaagtca
 721 aatcagaatg gaaaagactc aaaaccatca tcaacaccaa gatcaaaagg acaagaatcc
 781 ttcaagaaac aggaaaaaac tcctaaaaca ccaaaaggac ctagttctgt agaagacatt
 841 aaagcaaaaa tgcaagcaag tatagaaaaa ggtggttctc ttcccaaagt ggaagccaaa
 901 ttcatcaatt gtgtgaagaa ttgcttccgg atgactgacc aagaggctat tcaagatctc
 961 tggcagtgga ggaagtctct ttaagaaaat agtttaaaca atttgttaaa aaatttccg
1021 tcttatttca tttctgtaac agttgatatc tggctgtcct ttttataatg cagagtgaga
1081 actttcccta ccgtgtttga taaatgttgt ccaggttcta ttgccaagaa tgtgttgtcc
1141 aaaatgccgt ttagttttta aagatggaac tccacccttt gcttggtttt aagtatgtat
1201 ggaatgttat gataggacat agtagtagcg gtggtcagac atggaaatgg tggggagaca
1261 aaaatataca tgtgaaataa aactcagtat tttaataaag tgaaaaaaaa aaaaaaaaaa
1321 aaaaaaaaaa a
```

NPM1 amino acid sequence (SEQ ID NO: 27)

```
1    MEDSMDMDMSPLRPQNYLFGCELKADKDYHFKVDNDENEHQLSLRTVSLGAGAKDELHIV  60
61   EAEAMNYEGSPIKVTLATLKMSVQPTVSLGGFEITPPVVLRLKCGSGPVHISGQHLVAVE  120
121  EDAESEDEEEEDVKLLSISGKRSAPGGGSKVPQKKVKLAADEDDDDDEEDDDEDDDGDD  180
181  FDDEEAEEKAPVKKSIRDTPAKNAQKSNQNGKDSKPSSTPRSKGQESFKKQEKTPKTPKG  240
241  PSSVEDIKAKMQASIEKGGSLPKVEAKFINCVKNCFRMTDQEAIQDLWQWRKSL  294
```

Figure 16

NCL mRNA sequence (SEQ ID NO: 2)

```
   1 attctgctgt agacatagag atgatgatca tagctgacta tgatgatgat ccccgcgag
  61 cctgaaagag gaaatgctct ggtttgctaa gcccgcgaat cgagtgagac ccacccacaa
 121 agctaaccgt ggaagtcact ggcggcctcc ttcgccctgc cagccgggga acccatccgg
 181 tggctctcga cctgctcccg ggccatctgg tgacactgac ttcgcagcca ccaccttaat
 241 tggcgcattc gacccaaata ataacctggg aacctgtggg cggtctaagg cccggctctg
 301 cggtcgccct cccaggcccc tctccctggc cctgtgaggc cagaaagtta cttctccgag
 361 gccagttccc catgtctgag aaatatctcc caacttgagg ttctgtgggg taggggaggg
 421 ttcgtgactt tctcacagaa aacctcgtac agaccccgcc actgccttta ttaacagctc
 481 tcaggagact gcctgcagga ggggggtcgc tccggcccca tgctcgcggg caagcaggga
 541 taagctgtgc ctccaaaagg gccaacggga actccgcggt ccctgaactt ccggtgctgg
 601 aggactcctc gctccagggc caccaggagc cgcggcgtga gtgcgtgccg gaaccgaggg
 661 cggggtctct gaggaactcc aaggctgccc aagcctacgg acccagccac attggcgaac
 721 cggagaccgc ccgattccac caccccgcg ctcccctcac agccggcgcc aaaaacgcca
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 961 gccgcgagct ttggttggtc ggcgcggagt cacgaggcgc cgtcgtcgcc tttccacagg
1021 cgttactggg caggctcagt ctttcgcctc agtctcgagc tctcgctggc ttcgggtgta
1081 cgtgctccgg gatcttcagc acccgcggcc gccatcgccg tcgcttggct tcttctggac
1141 tcatctgcgc cacttgtccg cttcacactc cgccgccatc atggtgaagc tcgcgaaggt
1201 aaacggcctt gagcgcgacg cagacgtgta ggcctgcttc cgaggggcga gcgcggcgcc
1261 gcggggagga gggcctgcgc gcagtcccgg gcgcgttcta gggcgccatg ctgcgggaag
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1381 ttctgcaggt gctgggggag ggggcgctgg gcctcggggt ggagagatga gaccaaactt
1441 ttgcgacgcg tacgagctgg gactgactct gacgcacgtg cccgggagcg tgcctgccac
1501 gtgggccggc gtaggtctgg aatctccaga gggaccgggt gccttgggcc gggaaatggc
1561 ggtatcggcc ctagtcggag tcccggctgc gctcggatgt ctccgccccg gcctggcaag
1621 ccgatacgtg gtgggccccg gaaggtggct ctgccgcgtg ccttttgcgc tgtgtttcgg
1681 gcaagaggtg gtcctgccag gtacccccac gtggccgcac ccgcctcttt aaggggcggg
1741 gtagtgctgg ggaaaggcat aagcttcatg agaaaataag gtagtatttt taagtgcctt
1801 aatgatcttc accgttaatt tgattcaaat aagggtggta gataaagtac cgggatttgt
1861 agtataaaaa cacggttgtg cttaactaag gtaacgggag gagaaatcat ttcctcaggt
1921 tgacttttta ccttagggca ggttttctgt tggtaaagcc tgggaggaaa aatgtgggcg
1981 gttgagaagt agtccctctt gcattgccat caggagtagt ttctatgtta gttgtggtgt
2041 ttggcactat gagaaatgat ctgagacgga gatgatggcg tatgaacact aatggcaaaa
2101 tatgaatggc ctgaaatgtc gaggtggagg tgtaatgatc tatttgtgtc cattttaggc
2161 aggtaaaaat caaggtgacc ccaagaaaat ggctcctcct ccaaaggagg tagaagaaga
2221 tagtgaagat gaggaaatgt cagaagatga agaagatgat agcagtggag aagaggtaat
2281 tttatccaac ttaatgcaga attatgttaa aactacaaaa tggagagtta agacatgaaa
```

2341 ttggatatct gtggcaaaaa taagatttta tcaggtatgt cttattgtag tggttgagtg
2401 tttcacaagc tcttcattga catgtcaaga tgtcatttgg ctagtatttg aatgtgagtg
2461 ctaagacgag actgggaatt tcttttacat gttcctctgc agggcttgga gtgtgatttg
2521 ttgtgttaaa tcattacatt tttccagttt caacatgtta gctcaccccc acatgtagag
2581 ctgggcattg tattcagagc tgagaataac cttaccagat tcctttccta tcctccgaat
2641 taaaattaat tggtctccat tccatatata tataactgta tcactactgg ttaagtactc
2701 gggtgtagac tgagggctgc cacctctctt tggtaccatt gaccctcttt agccacctcc
2761 tggcctttta tttgcctcca ctataaagac agctgagcac tgaattgtgc tcaggttttc
2821 gttgagaacc tgaatgaaag ttttactctc cacacattgc cttgataaaa ctacgggatt
2881 ttaatgtagc taaatgatga cttttatcaa actaccatgc acactctttg atgtgtgata
2941 gttttgtaag gaatatttat atttagccta ttcatttttt gtctcaggtc ctaagaattg
3001 agcttcactg ggcttggtgg accgcaacca cgagggcccc aatgatttaa taagttaatg
3061 cttggagcct cctatgtgta acgttctgaa taatttacac atagcaattc atgaccttaa
3121 acatgtaagg atgatactat taccattttc agatgagaaa gttggggctt gggaaagtat
3181 gaggtgtaag aattcagagg gtctggttca gaggtatttt cagtgttcaa aagagttcct
3241 tatgtctggg tattcacctt attatagggg ctctgactta agacaacata acagaagcct
3301 ggagttttaa catgtcatat gtgtcatgcg tatgtcttga accagaggca ttgccagagt
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3541 aaagcagctg tcactccagg caaaaaggca gcagcaacac ctgccaagaa gacagttaca
3601 ccagccaaag cagttaccac acctggcaag aagggagcca caccaggcaa agcattggta
3661 gcaactcctg gtaagaaggg tgctgccatc ccagccaagg gggcaaagaa tggcaagaat
3721 gccaagaagg aagacagtga tgaagaggag gatgatgaca gtgaggagga tgaggaggat
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