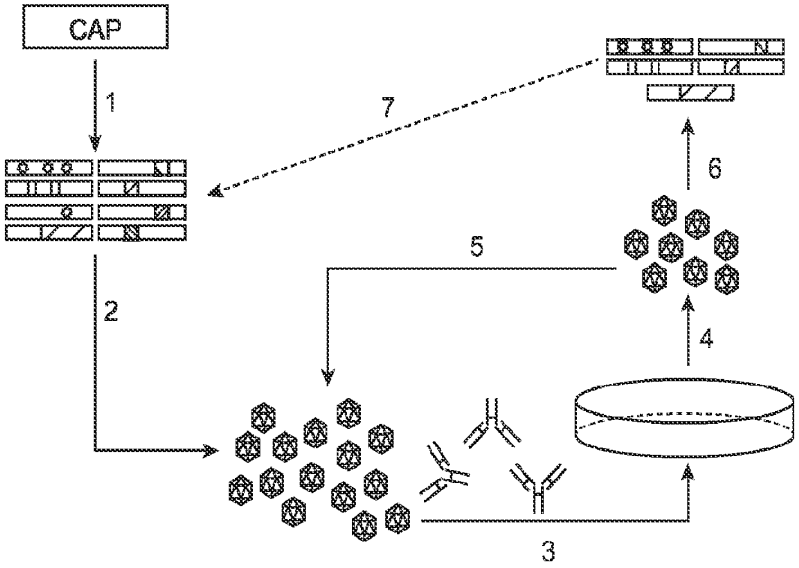

CAP
1
2
3
4
5
6
7

FIG. 1A

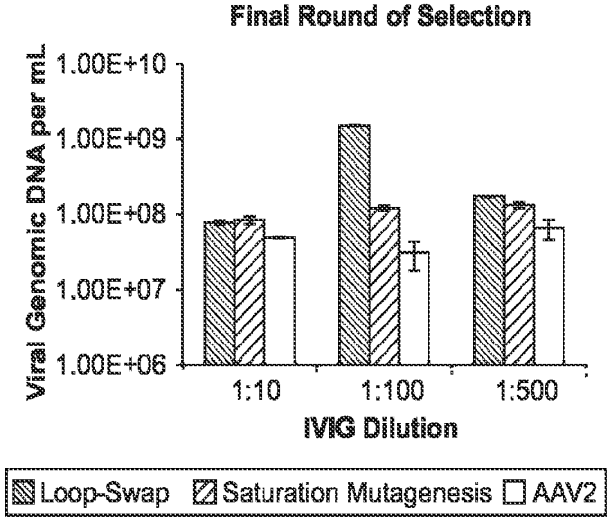

Final Round of Selection
Viral Genomic DNA per mL
1.00E+10
1.00E+09
1.00E+08
1.00E+07
1.00E+06
1:10
1:100
1:500
IVIG Dilution
Loop-Swap
Saturation Mutagenesis
AAV2

FIG. 1B

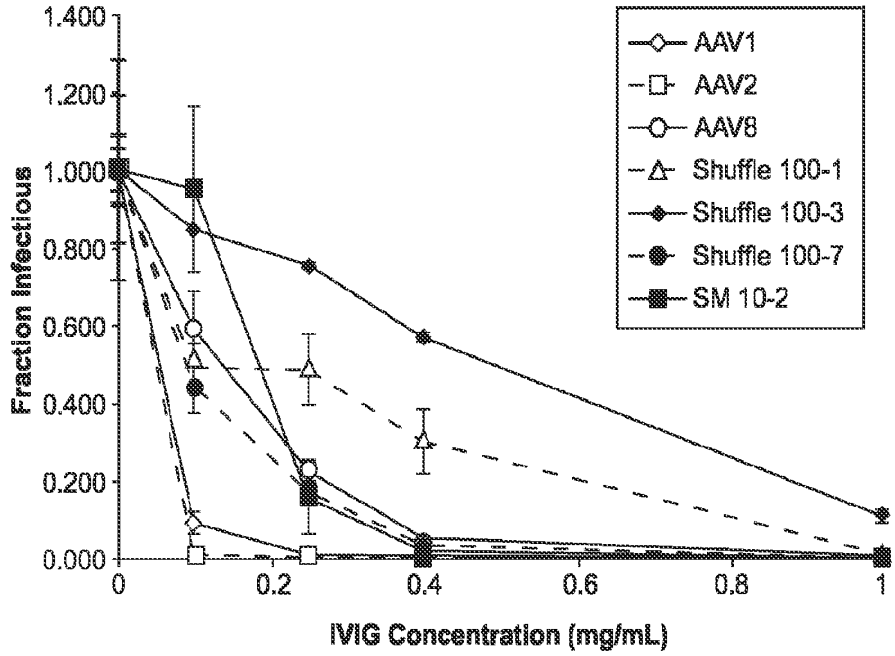

1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
Fraction Infectious
0
0.2
0.4
0.6
0.8
1
IVIG Concentration (mg/mL)
AAV1
AAV2
AAV8
Shuffle 100-1
Shuffle 100-3
Shuffle 100-7
SM 10-2

FIG. 2A

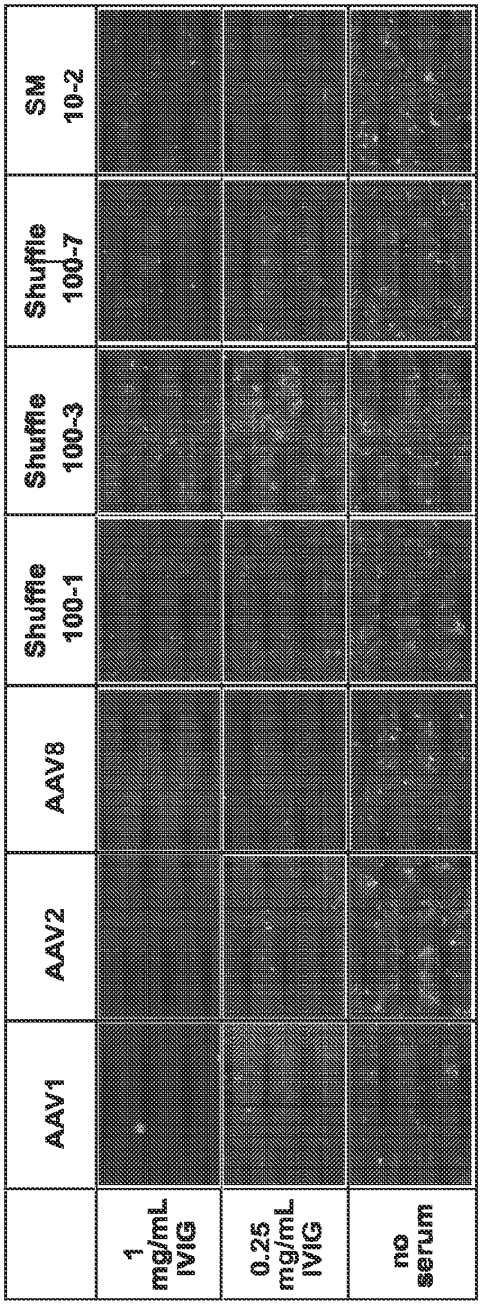

AAV1
AAV2
AAV8
Shuffle 100-1
Shuffle 100-3
Shuffle 100-7
SM 10-2
1 mg/mL IVIG
0.25 mg/mL IVIG
no serum

FIG. 2B

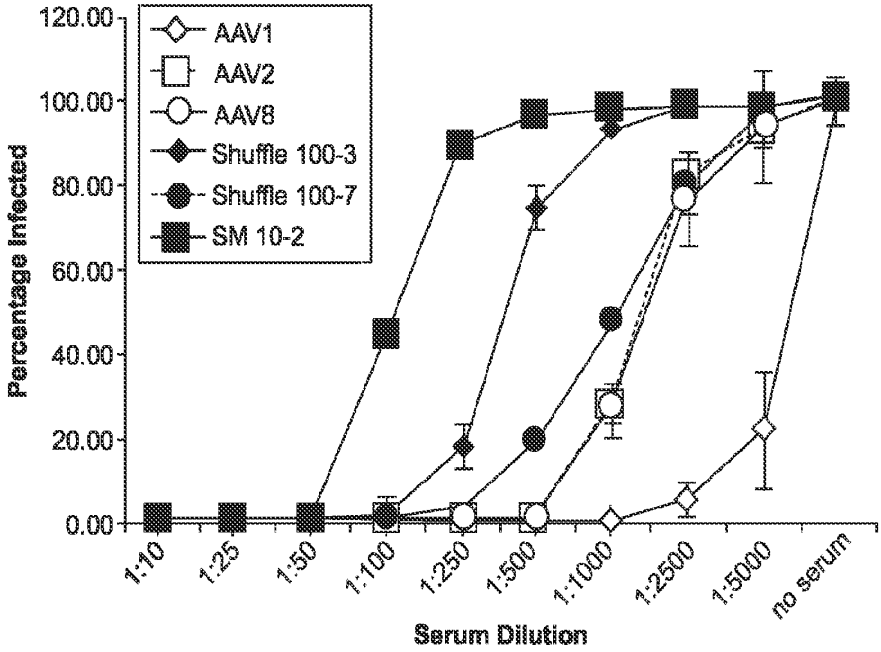

120.00
100.00
80.00
60.00
40.00
20.00
0.00
Percentage Infected
AAV1
AAV2
AAV8
Shuffle 100-3
Shuffle 100-7
SM 10-2
1:10
1:25
1:50
1:100
1:250
1:500
1:1000
1:2500
1:5000
no serum
Serum Dilution

FIG. 3A

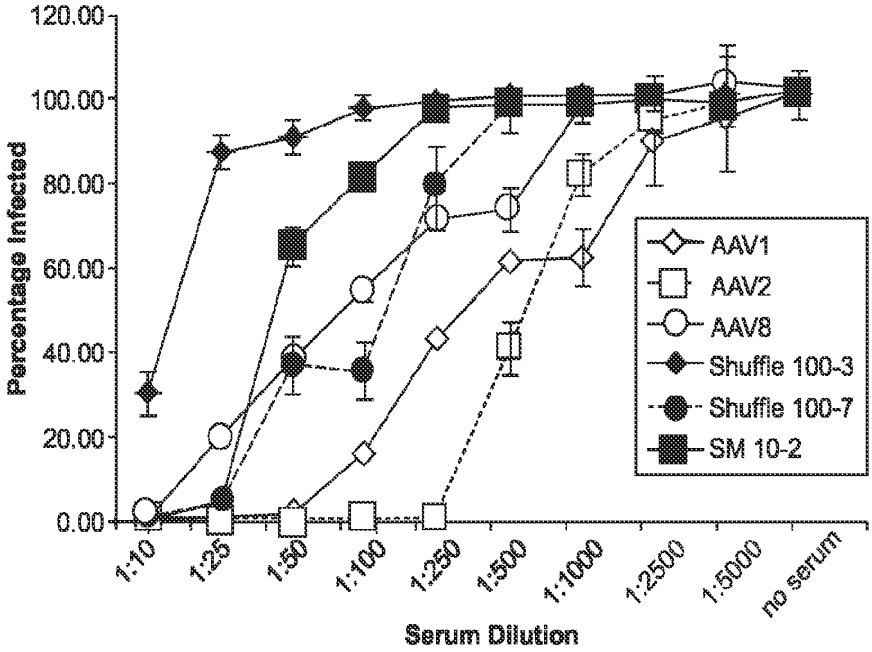

120.00
100.00
80.00
60.00
40.00
20.00
0.00
Percentage Infected
AAV1
AAV2
AAV8
Shuffle 100-3
Shuffle 100-7
SM 10-2
1:10
1:25
1:50
1:100
1:250
1:500
1:1000
1:2500
1:5000
no serum
Serum Dilution

FIG. 3B

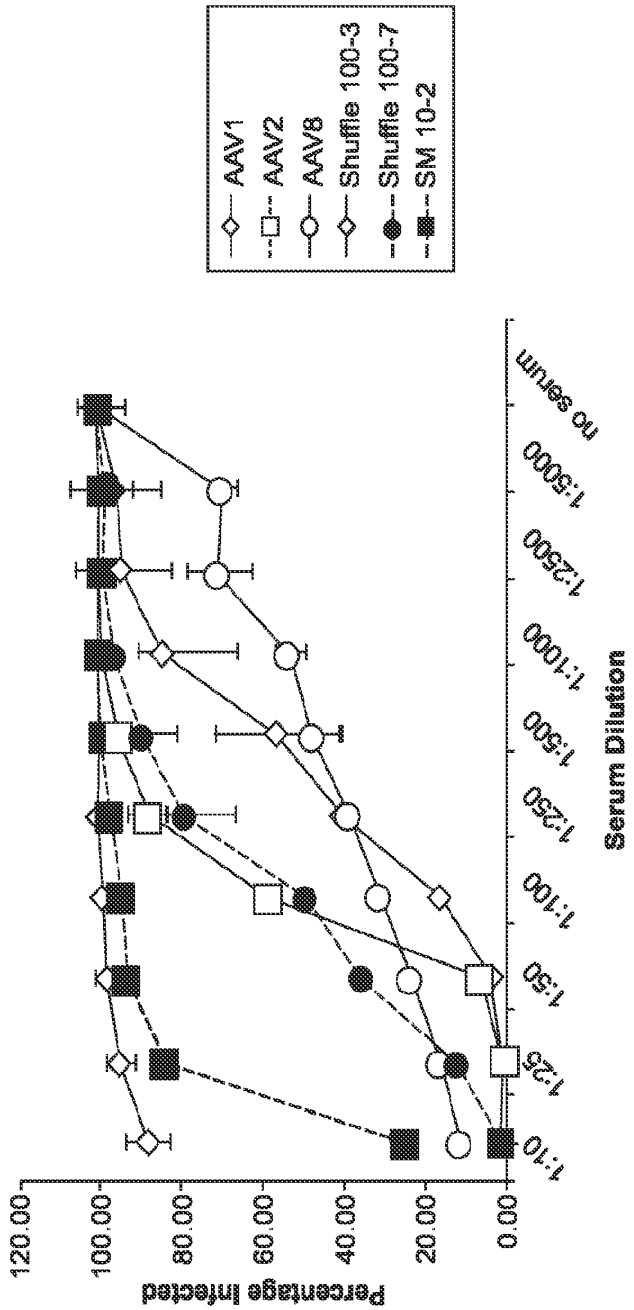

AAV1
AAV2
AAV8
Shuffle 100-3
Shuffle 100-7
SM 10-2
Percentage Infected
120.00
100.00
80.00
60.00
40.00
20.00
0.00
1:10
1:25
1:50
1:100
1:250
1:500
1:1000
1:2500
1:5000
no serum
Serum Dilution

FIG. 3C

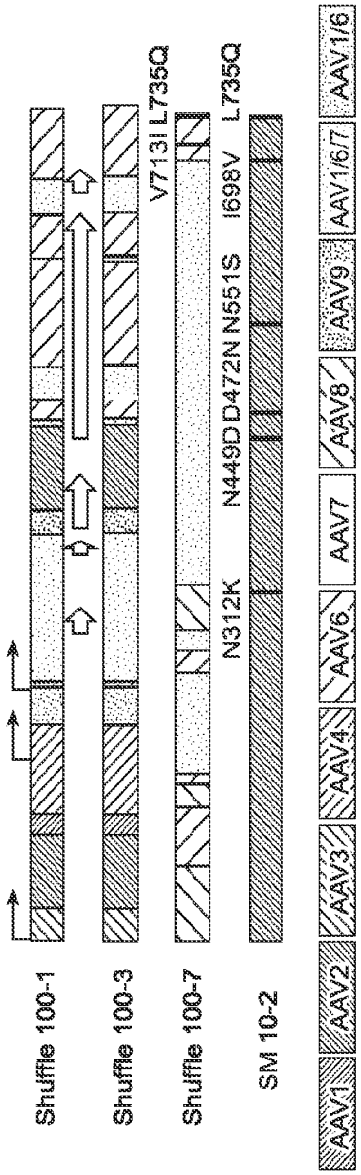

Shuffle 100-1
Shuffle 100-3
Shuffle 100-7
SM 10-2
V713I L735Q
N312K N449D D472N N551S I698V L735Q
AAV1
AAV2
AAV3
AAV4
AAV6
AAV7
AAV8
AAV9
AAV1/6/7
AAV1/6

FIG. 4A

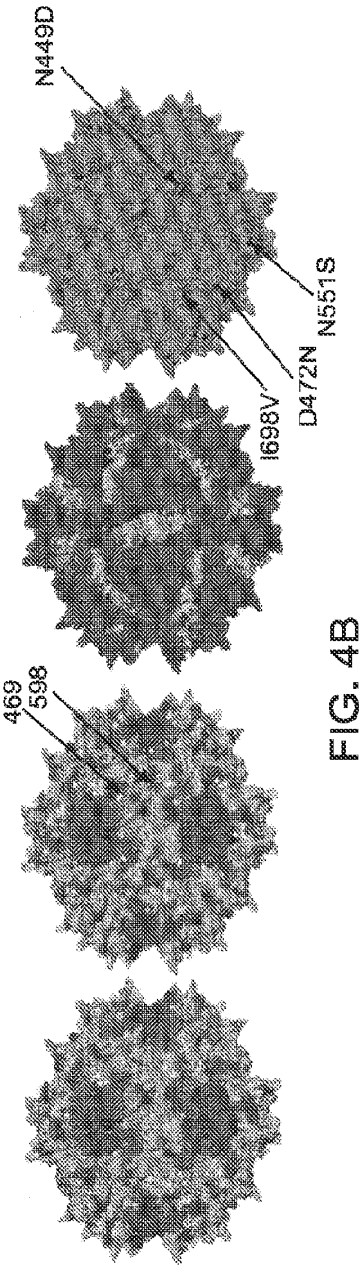

Shuffle 100-1
Shuffle 100-3
Shuffle 100-7
SM 10-2
469
598
N449D
I698V
D472N
N551S

FIG. 4B

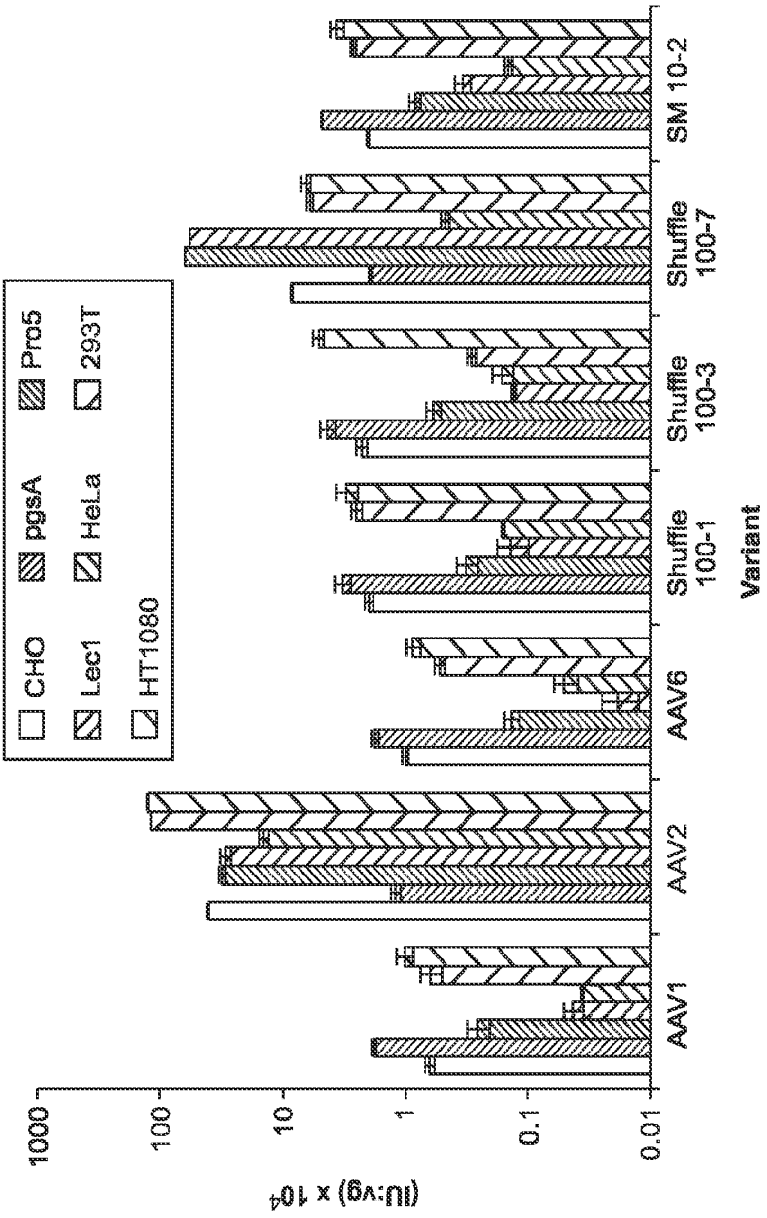

CHO
pgsA
Pro5
Lec1
HeLa
293T
HT1080
1000
100
10
1
0.1
0.01
(IU:vg) x 10^4
AAV1
AAV2
AAV6
Shuffle 100-1
Shuffle 100-3
Shuffle 100-7
SM 10-2
Variant

FIG. 5

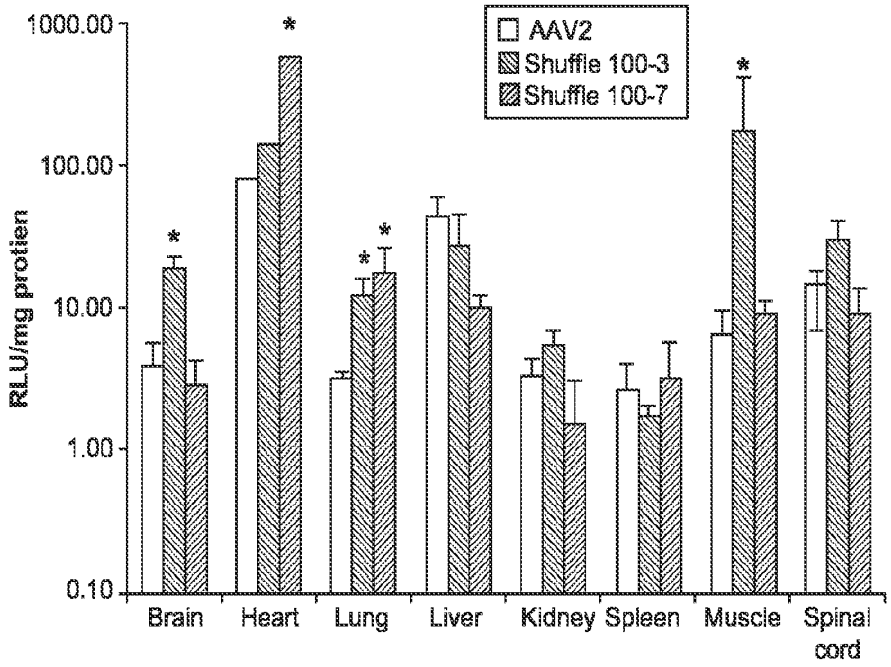

1000.00
100.00
10.00
1.00
0.10
RLU/mg protien
AAV2
Shuffle 100-3
Shuffle 100-7
Brain
Heart
Lung
Liver
Kidney
Spleen
Muscle
Spinal cord

FIG. 6A

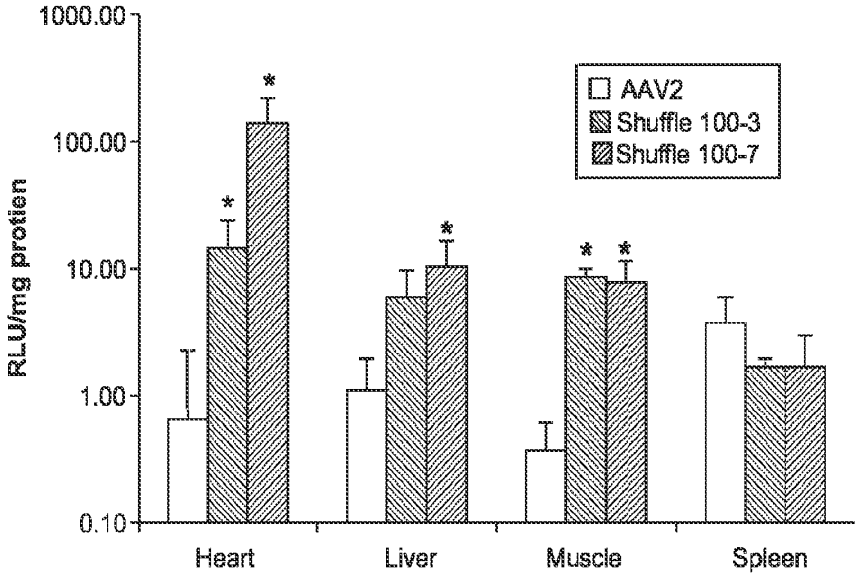

1000.00
100.00
10.00
1.00
0.10
RLU/mg protien
AAV2
Shuffle 100-3
Shuffle 100-7
Heart
Liver
Muscle
Spleen

FIG. 6B

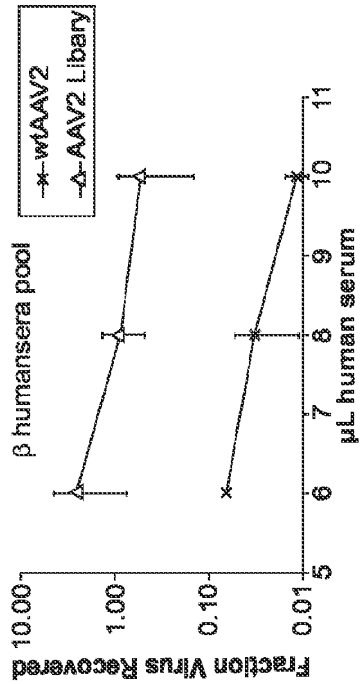


FIG. 7B

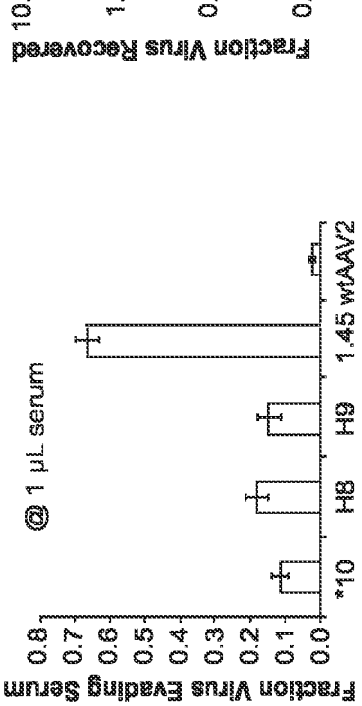


FIG. 7A

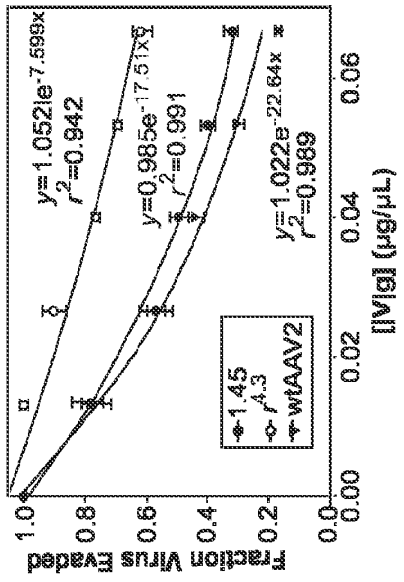


FIG. 7D

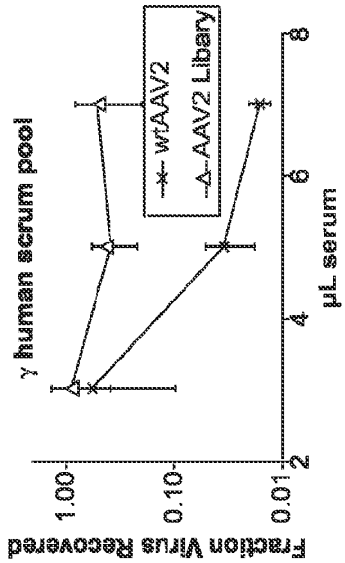


FIG. 7C

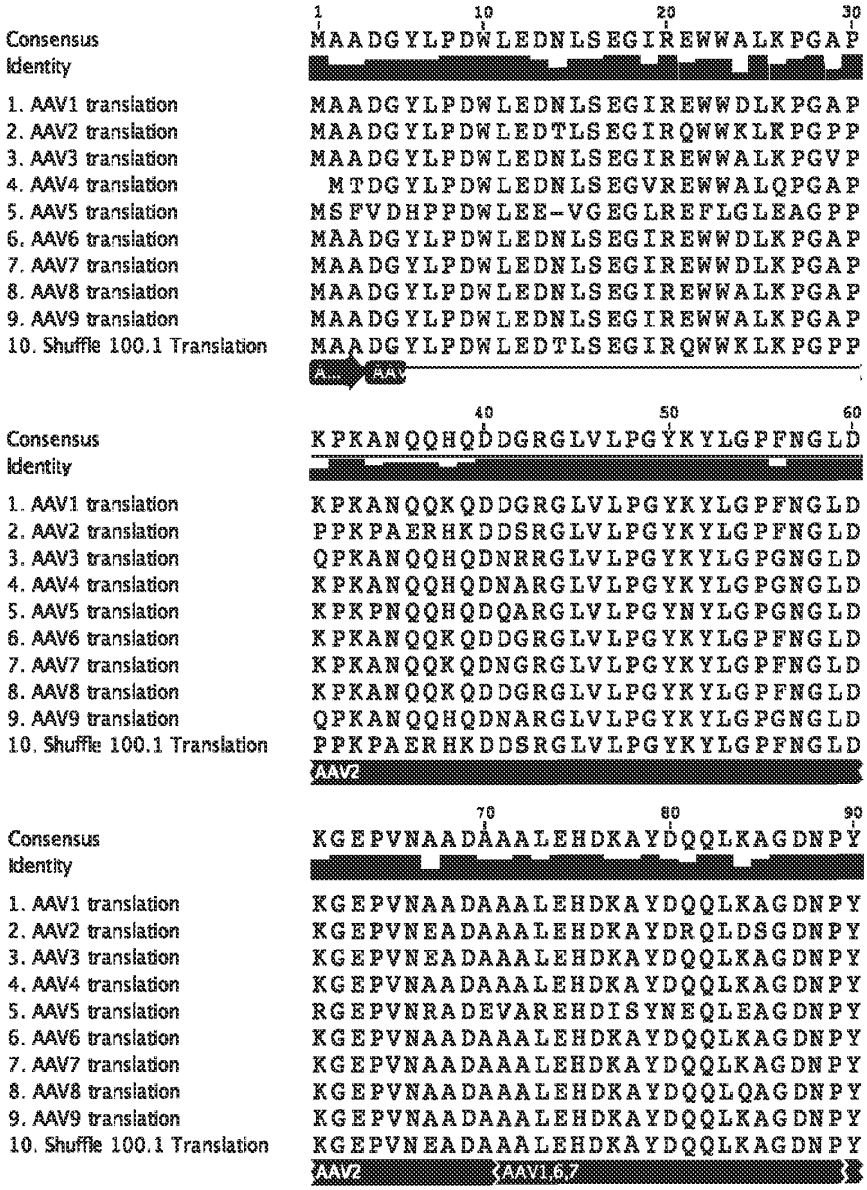

1 10 20 30
Consensus MAADGYLPDWLEDNLSEGIREWWALKPGAP
Identity
1. AAV1 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
2. AAV2 translation MAADGYLPDWLEDTLSEGIRQWWKLKPGPP
3. AAV3 translation MAADGYLPDWLEDNLSEGIREWWALKPGVP
4. AAV4 translation MTDGYLPDWLEDNLSEGVREWWALQPGAP
5. AAV5 translation MSFVDHPPDWLEE-VGEGLREFLGLEAGPP
6. AAV6 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
7. AAV7 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
8. AAV8 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
9. AAV9 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
10. Shuffle 100.1 Translation MAADGYLPDWLEDTLSEGIRQWWKLKPGPP
A... AA...
40 50 60
Consensus KPKANQQHQDDGRGLVLPGYKYLGPFNGLD
Identity
1. AAV1 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
2. AAV2 translation PPKPAERHKDDSRGLVLPGYKYLGPFNGLD
3. AAV3 translation QPKANQQHQDNRRGLVLPGYKYLGPGNGLD
4. AAV4 translation KPKANQQHQDNARGLVLPGYKYLGPGNGLD
5. AAV5 translation KPKPNQQHQDQARGLVLPGYNYLGPGNGLD
6. AAV6 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
7. AAV7 translation KPKANQQKQDNGRGLVLPGYKYLGPFNGLD
8. AAV8 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
9. AAV9 translation QPKANQQHQDNARGLVLPGYKYLGPGNGLD
10. Shuffle 100.1 Translation PPKPAERHKDDSRGLVLPGYKYLGPFNGLD
AAV2
70 80 90
Consensus KGEPVNAADAAALEHDKAYDQQLKAGDNPY
Identity
1. AAV1 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
2. AAV2 translation KGEPVNEADAAALEHDKAYDRQLDSGDNPY
3. AAV3 translation KGEPVNEADAAALEHDKAYDQQLKAGDNPY
4. AAV4 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
5. AAV5 translation RGEPVNRADEVAREHDISYNEQLEAGDNPY
6. AAV6 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
7. AAV7 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
8. AAV8 translation KGEPVNAADAAALEHDKAYDQQLQAGDNPY
9. AAV9 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
10. Shuffle 100.1 Translation KGEPVNEADAAALEHDKAYDQQLKAGDNPY
AAV2 AAV1&7

FIG. 8A

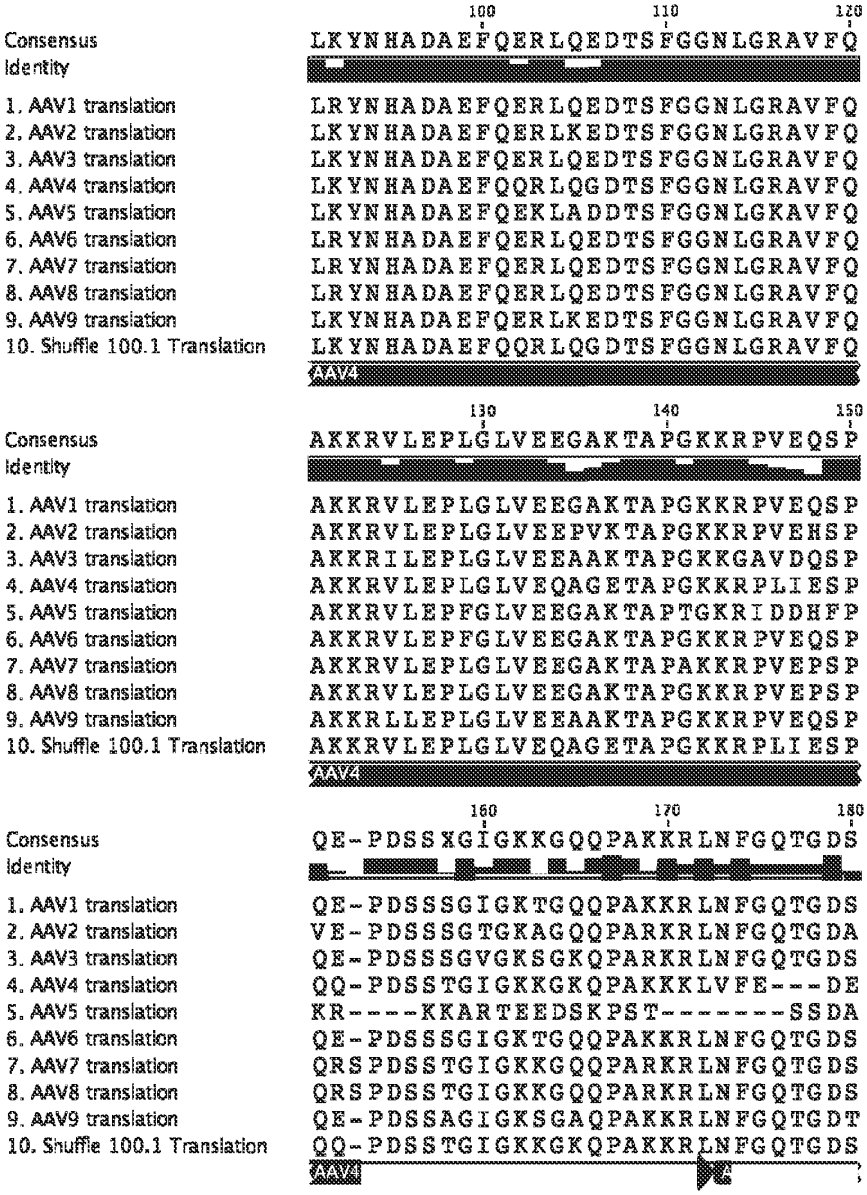

100 110 120
Consensus LKYNHADAEFQERLQEDTSFGGNLGRAVFQ
Identity
1. AAV1 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
2. AAV2 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
3. AAV3 translation LKYNHADAEFQERLQEDTSFGGNLGRAVFQ
4. AAV4 translation LKYNHADAEFQQRLQGDTSFGGNLGRAVFQ
5. AAV5 translation LKYNHADAEFQEKLADDTSFGGNLGKAVFQ
6. AAV6 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
7. AAV7 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
8. AAV8 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
9. AAV9 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
10. Shuffle 100.1 Translation LKYNHADAEFQQRLQGDTSFGGNLGRAVFQ
AAV4
130 140 150
Consensus AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
Identity
1. AAV1 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
2. AAV2 translation AKKRVLEPLGLVEEPVKTAPGKKRPVEHSP
3. AAV3 translation AKKRILEPLGLVEEAAKTAPGKKGAVDQSP
4. AAV4 translation AKKRVLEPLGLVEQAGETAPGKKRPLIESP
5. AAV5 translation AKKRVLEPFGLVEEGAKTAPTGKRIDDHFP
6. AAV6 translation AKKRVLEPFGLVEEGAKTAPGKKRPVEQSP
7. AAV7 translation AKKRVLEPLGLVEEGAKTAPAKKRPVEPSP
8. AAV8 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEPSP
9. AAV9 translation AKKRLLEPLGLVEEAAKTAPGKKRPVEQSP
10. Shuffle 100.1 Translation AKKRVLEPLGLVEQAGETAPGKKRPLIESP
AAV4
160 170 180
Consensus QE-PDSSXGIGKKGQQPAKKRLNFGQTGDS
Identity
1. AAV1 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
2. AAV2 translation VE-PDSSSGTGKAGQQPARKRLNFGQTGDA
3. AAV3 translation QE-PDSSSGVGKSGKQPARKRLNFGQTGDS
4. AAV4 translation QQ-PDSSTGIGKKGKQPAKKKLVFE---DE
5. AAV5 translation KR----KKARTEEDSKPST--------SSDA
6. AAV6 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
7. AAV7 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
8. AAV8 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
9. AAV9 translation QE-PDSSAGIGKSGAQPAKKRLNFGQTGDT
10. Shuffle 100.1 Translation QQ-PDSSTGIGKKGKQPAKKRLNFGQTGDS
AAV4

FIG. 8B

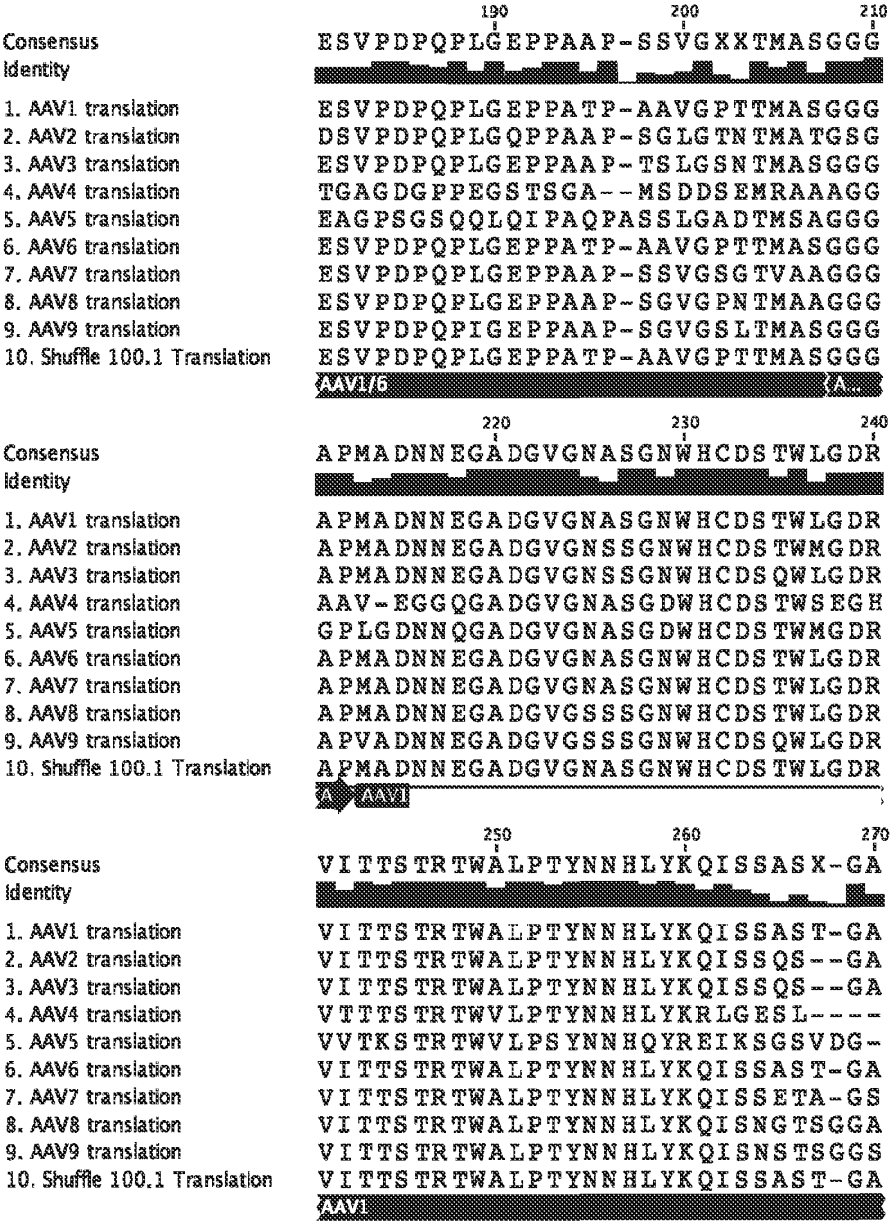

190 200 210
Consensus ESVPDPQPLGEPPAAP-SSVGXXTMASGGG
Identity
1. AAV1 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
2. AAV2 translation DSVPDPQPLGQPPAAP-SGLGTNTMATGSG
3. AAV3 translation ESVPDPQPLGEPPAAP-TSLGSNTMASGGG
4. AAV4 translation TGAGDGPPEGSTSGA--MSDDSEMRAAAGG
5. AAV5 translation EAGPSGSQQLQIPAQPASSLGADTMSAGGG
6. AAV6 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
7. AAV7 translation ESVPDPQPLGEPPAAP-SSVGSGTVAAGGG
8. AAV8 translation ESVPDPQPLGEPPAAP-SGVGPNTMAAGGG
9. AAV9 translation ESVPDPQPIGEPPAAP-SGVGSLTMASGGG
10. Shuffle 100.1 Translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
AAV1/6
220 230 240
Consensus APMADNNEGADGVGNASGNWHCDSTWLGDR
Identity
1. AAV1 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
2. AAV2 translation APMADNNEGADGVGNSSGNWHCDSTWMGDR
3. AAV3 translation APMADNNEGADGVGNSSGNWHCDSQWLGDR
4. AAV4 translation AAV-EGGQGADGVGNASGDWHCDSTWSEGH
5. AAV5 translation GPLGDNNQGADGVGNASGDWHCDSTWMGDR
6. AAV6 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
7. AAV7 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
8. AAV8 translation APMADNNEGADGVGSSSGNWHCDSTWLGDR
9. AAV9 translation APVADNNEGADGVGSSSGNWHCDSQWLGDR
10. Shuffle 100.1 Translation APMADNNEGADGVGNASGNWHCDSTWLGDR
AAV1
250 260 270
Consensus VITTSTRTWALPTYNNHLYKQISSASX-GA
Identity
1. AAV1 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
2. AAV2 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
3. AAV3 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
4. AAV4 translation VTTTSTRTWVLPTYNNHLYKRLGESL----
5. AAV5 translation VVTKSTRTWVLPSYNNHQYREIKSGSVDG-
6. AAV6 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
7. AAV7 translation VITTSTRTWALPTYNNHLYKQISSETA-GS
8. AAV8 translation VITTSTRTWALPTYNNHLYKQISNGTSGGA
9. AAV9 translation VITTSTRTWALPTYNNHLYKQISNSTSGGS
10. Shuffle 100.1 Translation VITTSTRTWALPTYNNHLYKQISSAST-GA
AAV1

FIG. 8C

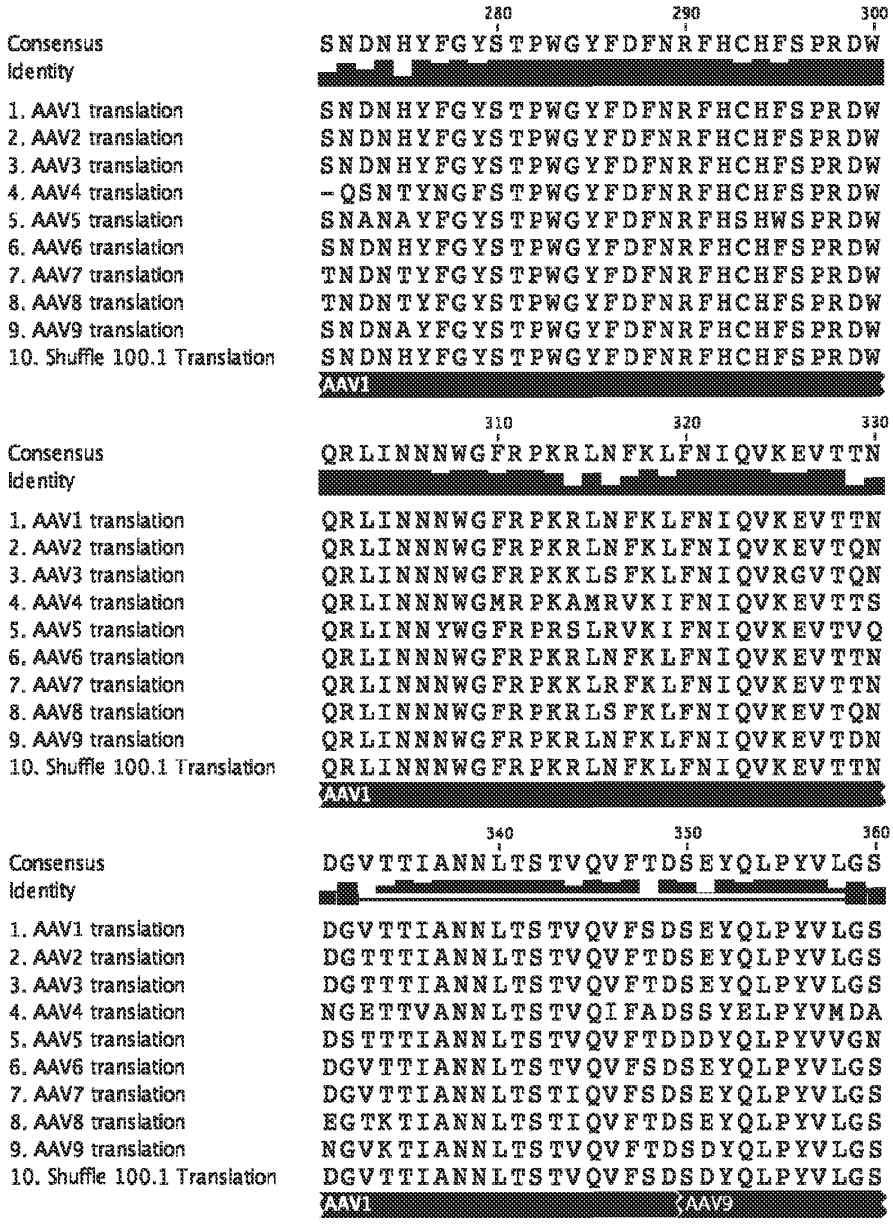

280
290
300
Consensus
Identity
SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
1. AAV1 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
2. AAV2 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
3. AAV3 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
4. AAV4 translation -QSNTYNGFSTPWGYFDFNRFHCHFSPRDW
5. AAV5 translation SNANAYFGYSTPWGYFDFNRFHSHWSPRDW
6. AAV6 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
7. AAV7 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
8. AAV8 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
9. AAV9 translation SNDNAYFGYSTPWGYFDFNRFHCHFSPRDW
10. Shuffle 100.1 Translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
AAV1
310
320
330
Consensus
Identity
QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
1. AAV1 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
2. AAV2 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTQN
3. AAV3 translation QRLINNNWGFRPKKLSFKLFNIQVRGVTQN
4. AAV4 translation QRLINNNWGMRPKAMRVKIFNIQVKEVTTS
5. AAV5 translation QRLINNYWGFRPRSLRVKIFNIQVKEVTVQ
6. AAV6 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
7. AAV7 translation QRLINNNWGFRPKKLRFKLFNIQVKEVTTN
8. AAV8 translation QRLINNNWGFRPKRLSFKLFNIQVKEVTQN
9. AAV9 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTDN
10. Shuffle 100.1 Translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
AAV1
340
350
360
Consensus
Identity
DGVTTIANNLTSTVQVFTDSEYQLPYVLGS
1. AAV1 translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
2. AAV2 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
3. AAV3 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
4. AAV4 translation NGETTVANNLTSTVQIFADSSYELPYVMDA
5. AAV5 translation DSTTTIANNLTSTVQVFTDDDYQLPYVVGN
6. AAV6 translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
7. AAV7 translation DGVTTIANNLTSTIQVFSDSEYQLPYVLGS
8. AAV8 translation EGTKTIANNLTSTIQVFTDSEYQLPYVLGS
9. AAV9 translation NGVKTIANNLTSTVQVFTDSDYQLPYVLGS
10. Shuffle 100.1 Translation DGVTTIANNLTSTVQVFSDSDYQLPYVLGS
AAV1
AAV9

FIG. 8D

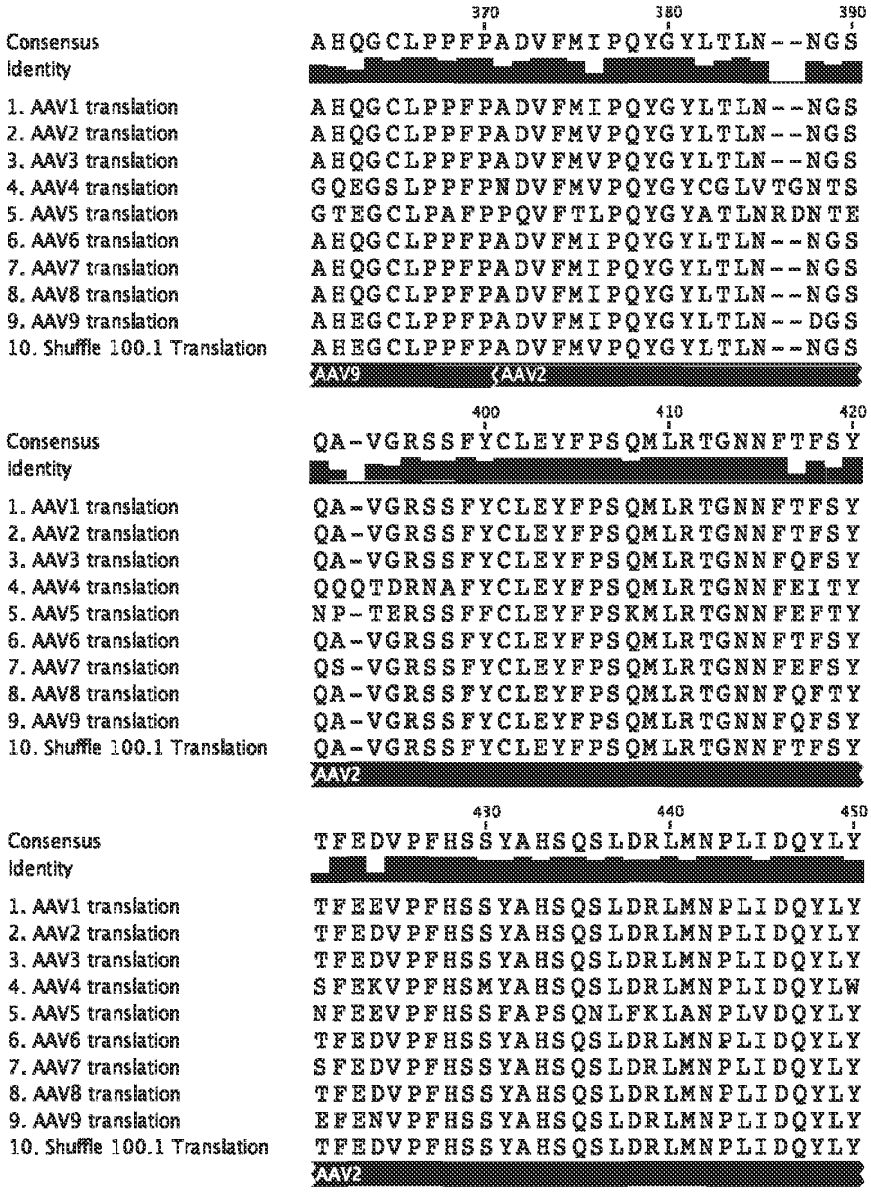

370 380 390
Consensus AHQGCLPPFPADVFMIPQYGYLTLN--NGS
Identity
1. AAV1 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
2. AAV2 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
3. AAV3 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
4. AAV4 translation GQEGSLPPFPNDVFMVPQYGYCGLVTGNTS
5. AAV5 translation GTEGCLPAFPPQVFTLPQYGYATLNRDNTE
6. AAV6 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
7. AAV7 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
8. AAV8 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
9. AAV9 translation AHEGCLPPFPADVFMIPQYGYLTLN--DGS
10. Shuffle 100.1 Translation AHEGCLPPFPADVFMVPQYGYLTLN--NGS
AAV9 AAV2
400 410 420
Consensus QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
Identity
1. AAV1 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
2. AAV2 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
3. AAV3 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFSY
4. AAV4 translation QQQTDRNAFYCLEYFPSQMLRTGNNFEITY
5. AAV5 translation NP-TERSSFFCLEYFPSKMLRTGNNFEFTY
6. AAV6 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
7. AAV7 translation QS-VGRSSFYCLEYFPSQMLRTGNNFEFSY
8. AAV8 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFTY
9. AAV9 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFSY
10. Shuffle 100.1 Translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
AAV2
430 440 450
Consensus TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
Identity
1. AAV1 translation TFEEVPFHSSYAHSQSLDRLMNPLIDQYLY
2. AAV2 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
3. AAV3 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
4. AAV4 translation SFEKVPFHSMYAHSQSLDRLMNPLIDQYLW
5. AAV5 translation NFEEVPFHSSFAPSQNLFKLANPLVDQYLY
6. AAV6 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
7. AAV7 translation SFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
8. AAV8 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
9. AAV9 translation EFENVPFHSSYAHSQSLDRLMNPLIDQYLY
10. Shuffle 100.1 Translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
AAV2

FIG. 8E

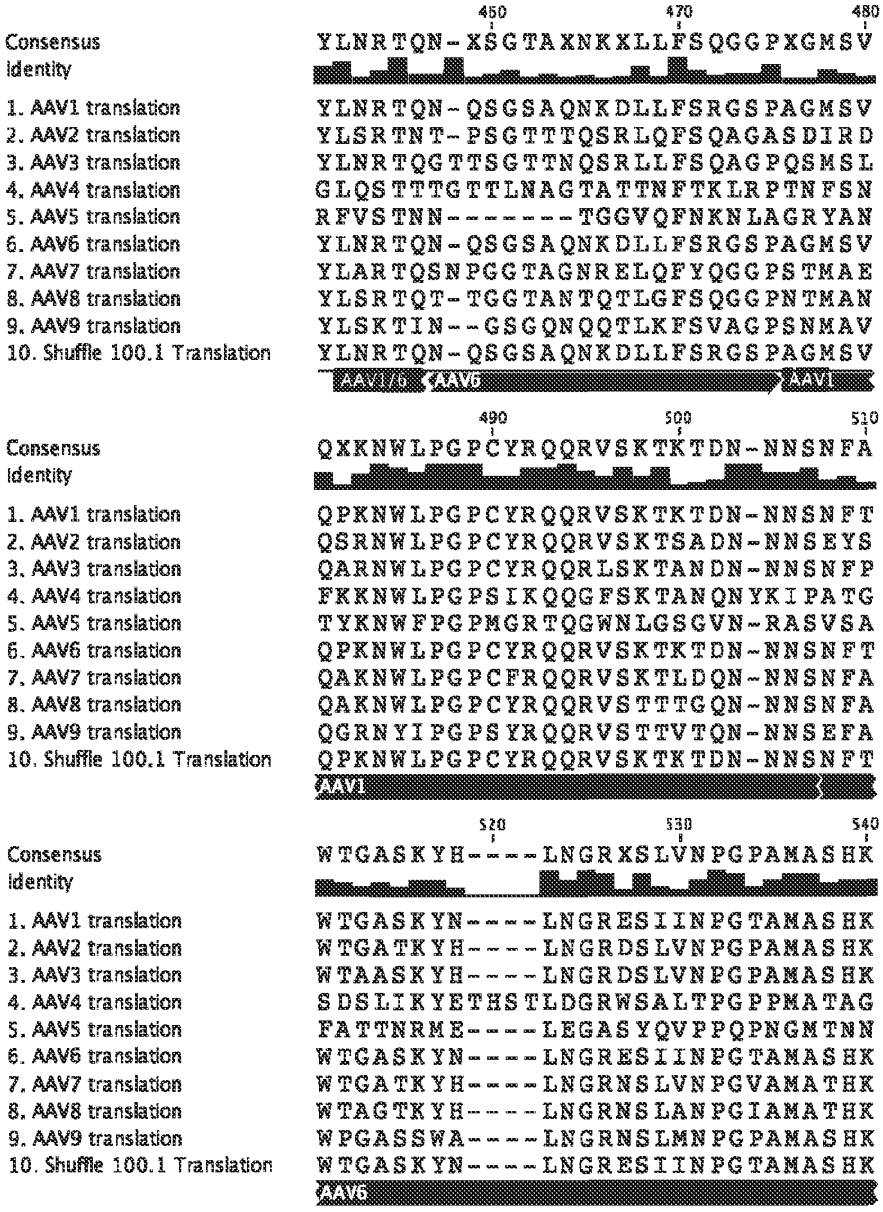

460 470 480
Consensus YLNRTQN-XSGTAXNKKLLFSQGGPXGMSV
Identity
1. AAV1 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
2. AAV2 translation YLSRTNT-PSGTTTQSRLQFSQAGASDIRD
3. AAV3 translation YLNRTQGTTSGTTNQSRLLFSQAGPQSMSL
4. AAV4 translation GLQSTTTGTTLNAGTATTNFTKLRPTNFSN
5. AAV5 translation RFVSTNN-------TGGVQFNKNLAGRYAN
6. AAV6 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
7. AAV7 translation YLARTQSNPGGTAGNRELQFYQGGPSTMAE
8. AAV8 translation YLSRTQT-TGGTANTQTLGFSQGGPNTMAN
9. AAV9 translation YLSKTIN--GSGQNQQTLKFSVAGPSNMAV
10. Shuffle 100.1 Translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
AAV1/6 AAV6 AAV1
490 500 510
Consensus QXKNWLPGPCYRQQRVSKTKTDN-NNSNFA
Identity
1. AAV1 translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
2. AAV2 translation QSRNWLPGPCYRQQRVSKTSADN-NNSEYS
3. AAV3 translation QARNWLPGPCYRQQRLSKTANDN-NNSNFP
4. AAV4 translation FKKNWLPGPSIKQQGFSKTANQNYKIPATG
5. AAV5 translation TYKNWFPGPMGRTQGWNLGSGVN-RASVSA
6. AAV6 translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
7. AAV7 translation QAKNWLPGPCFRQQRVSKTLDQN-NNSNFA
8. AAV8 translation QAKNWLPGPCYRQQRVSTTTGQN-NNSNFA
9. AAV9 translation QGRNYIPGPSYRQQRVSTTVTQN-NNSEFA
10. Shuffle 100.1 Translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
AAV1
520 530 540
Consensus WTGASKYH----LNGRXSLVNPGPAMASHK
Identity
1. AAV1 translation WTGASKYN----LNGRESIINPGTAMASHK
2. AAV2 translation WTGATKYH----LNGRDSLVNPGPAMASHK
3. AAV3 translation WTAASKYH----LNGRDSLVNPGPAMASHK
4. AAV4 translation SDSLIKYETHSTLDGRWSALTPGPPMATAG
5. AAV5 translation FATTNRME----LEGASYQVPPQPNGMTNN
6. AAV6 translation WTGASKYN----LNGRESIINPGTAMASHK
7. AAV7 translation WTGATKYH----LNGRNSLVNPGVAMATHK
8. AAV8 translation WTAGTKYH----LNGRNSLANPGIAMATHK
9. AAV9 translation WPGASSWA----LNGRNSLMNPGPAMASHK
10. Shuffle 100.1 Translation WTGASKYN----LNGRESIINPGTAMASHK
AAV6

FIG. 8F

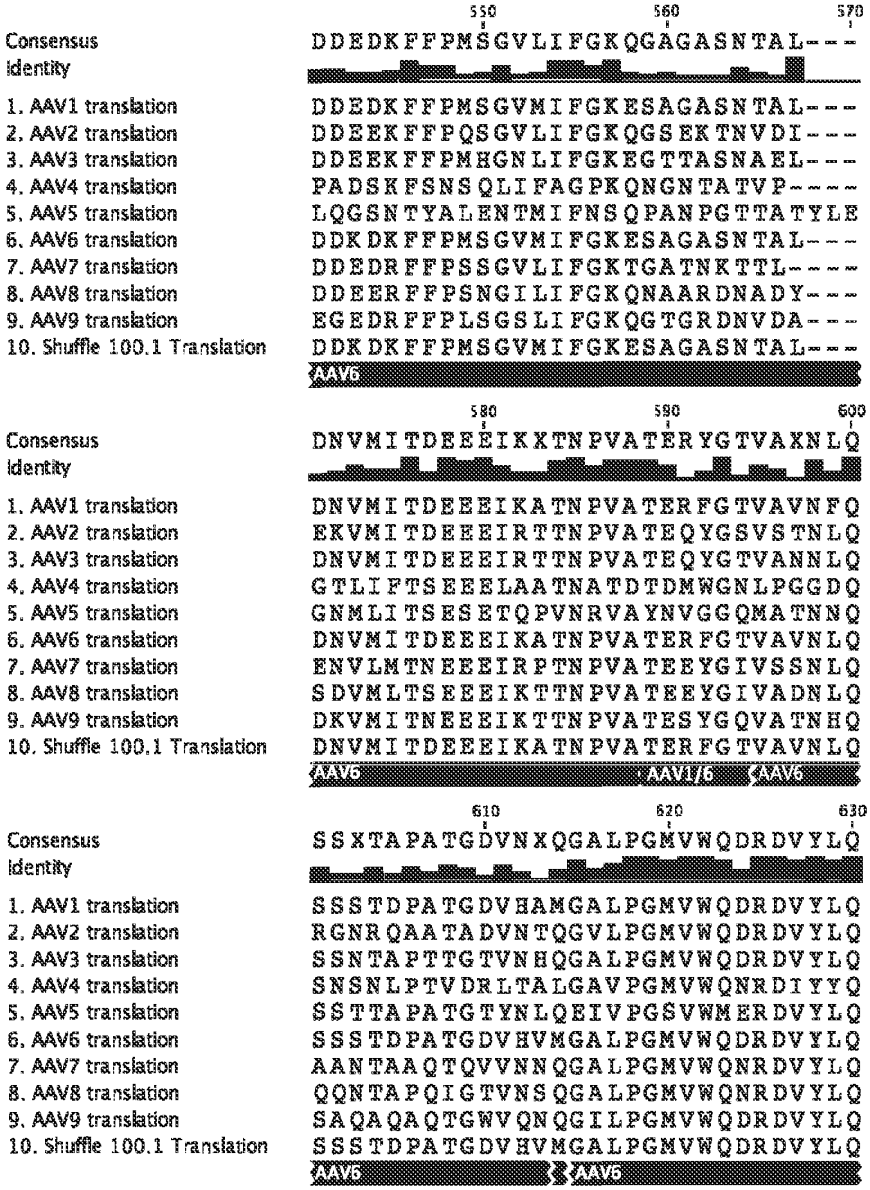

550 560 570
Consensus DDEDKFFPMSGVLIFGKQGAGASNTAL---
Identity
1. AAV1 translation DDEDKFFPMSGVMIFGKESAGASNTAL---
2. AAV2 translation DDEEKFFPQSGVLIFGKQGSEKTNVDI---
3. AAV3 translation DDEEKFFPMHGNLIFGKEGTTASNAEL---
4. AAV4 translation PADSKFSNSQLIFAGPKQNGNTATVP----
5. AAV5 translation LQGSNTYALENTMIFNSQPANPGTTATYLE
6. AAV6 translation DDKDKFFPMSGVMIFGKESAGASNTAL---
7. AAV7 translation DDEDRFFPSSGVLIFGKTGATNKTTL----
8. AAV8 translation DDEERFFPSNGILIFGKQNAARDNADY----
9. AAV9 translation EGEDRFFPLSGSLIFGKQGTGRDNVDA---
10. Shuffle 100.1 Translation DDKDKFFPMSGVMIFGKESAGASNTAL---
AAV6
580 590 600
Consensus DNVMITDEEEIKKTNPVATERYGTVAKNLQ
Identity
1. AAV1 translation DNVMITDEEEIKATNPVATERFGTVAVNFQ
2. AAV2 translation EKVMITDEEEIRTTNPVATEQYGSVSTNLQ
3. AAV3 translation DNVMITDEEEIRTTNPVATEQYGTVANNLQ
4. AAV4 translation GTLIFTSEEELAATNATDTDMWGNLPGGDQ
5. AAV5 translation GNMLITSESETQPVNRVAYNVGGQMATNNQ
6. AAV6 translation DNVMITDEEEIKATNPVATERFGTVAVNLQ
7. AAV7 translation ENVLMTNEEEIRPTNPVATEEYGIVSSNLQ
8. AAV8 translation SDVMLTSEEEIKTTNPVATEEYGIVADNLQ
9. AAV9 translation DKVMITNEEEIKTTNPVATESYGQVATNHQ
10. Shuffle 100.1 Translation DNVMITDEEEIKATNPVATERFGTVAVNLQ
AAV6 AAV1/6 AAV6
610 620 630
Consensus SSXTAPATGDVNXQGALPGMVWQDRDVYLQ
Identity
1. AAV1 translation SSSTDPATGDVHAMGALPGMVWQDRDVYLQ
2. AAV2 translation RGNRQAATADVNTQGVLPGMVWQDRDVYLQ
3. AAV3 translation SSNTAPTTGTVNHQGALPGMVWQDRDVYLQ
4. AAV4 translation SNSNLPTVDRLTALGAVPGMVWQNRDIYYQ
5. AAV5 translation SSTTAPATGTYNLQEIVPGSVWMERDVYLQ
6. AAV6 translation SSSTDPATGDVHVMGALPGMVWQDRDVYLQ
7. AAV7 translation AANTAAQTQVVNNQGALPGMVWQNRDVYLQ
8. AAV8 translation QQNTAPQIGTVNSQGALPGMVWQNRDVYLQ
9. AAV9 translation SAQAQAQTGWVQNQGILPGMVWQDRDVYLQ
10. Shuffle 100.1 Translation SSSTDPATGDVHVMGALPGMVWQDRDVYLQ
AAV6 AAV6

FIG. 8G

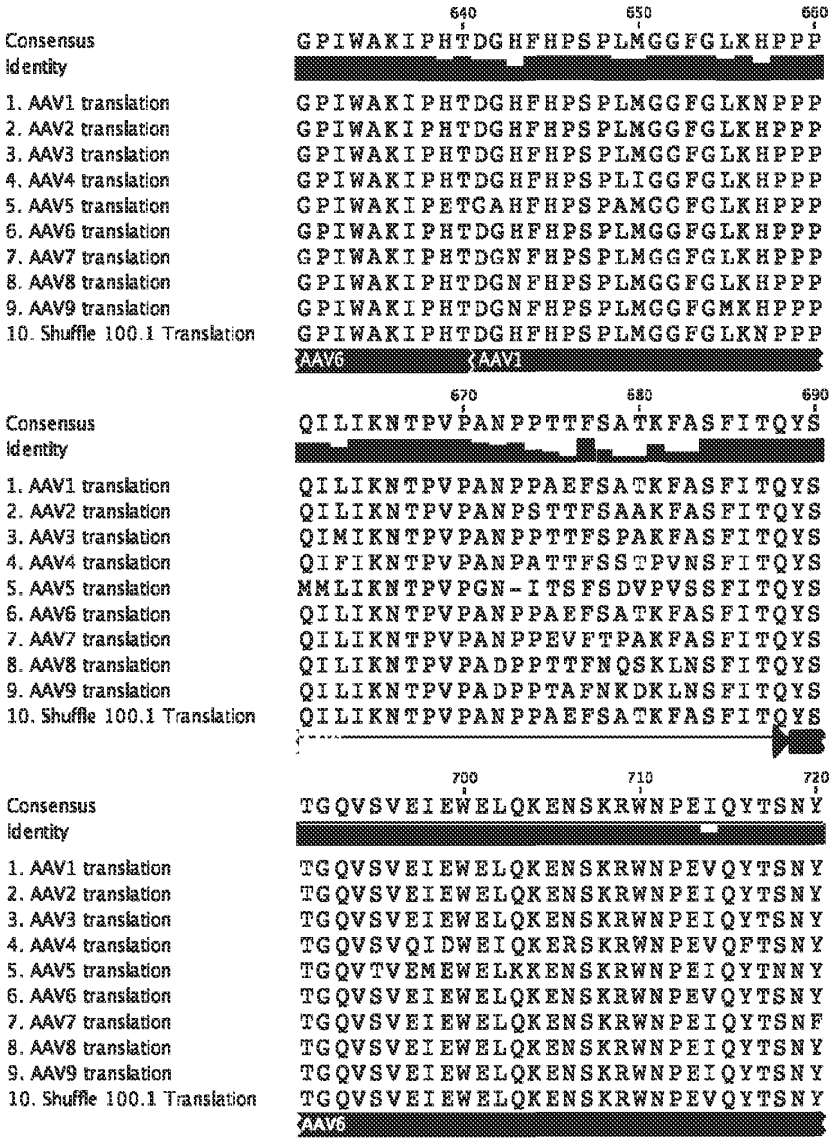

640 650 660
Consensus GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
Identity
1. AAV1 translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
2. AAV2 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
3. AAV3 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
4. AAV4 translation GPIWAKIPHTDGHFHPSPLIGGFGLKHPPP
5. AAV5 translation GPIWAKIPETGAHFHPSPAMGGFGLKHPPP
6. AAV6 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
7. AAV7 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
8. AAV8 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
9. AAV9 translation GPIWAKIPHTDGNFHPSPLMGGFGMKHPPP
10. Shuffle 100.1 Translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
AAV6
AAV1
670 680 690
Consensus QILIKNTPVPANPPTTFSATKFASFITQYS
Identity
1. AAV1 translation QILIKNTPVPANPPAEFSATKFASFITQYS
2. AAV2 translation QILIKNTPVPANPSTTFSAAKFASFITQYS
3. AAV3 translation QIMIKNTPVPANPPTTFSPAKFASFITQYS
4. AAV4 translation QIFIKNTPVPANPATTFSSTPVNSFITQYS
5. AAV5 translation MMLIKNTPVPGN-ITSFSDVPVSSFITQYS
6. AAV6 translation QILIKNTPVPANPPAEFSATKFASFITQYS
7. AAV7 translation QILIKNTPVPANPPEVFTPAKFASFITQYS
8. AAV8 translation QILIKNTPVPADPPTTFNQSKLNSFITQYS
9. AAV9 translation QILIKNTPVPADPPTAFNKDKLNSFITQYS
10. Shuffle 100.1 Translation QILIKNTPVPANPPAEFSATKFASFITQYS
700 710 720
Consensus TGQVSVEIEWELQKENSKRWNPEIQYTSNY
Identity
1. AAV1 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
2. AAV2 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
3. AAV3 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
4. AAV4 translation TGQVSVQIDWEIQKERSKRWNPEVQFTSNY
5. AAV5 translation TGQVTVEMEWELKKENSKRWNPEIQYTNNY
6. AAV6 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
7. AAV7 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNF
8. AAV8 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
9. AAV9 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
10. Shuffle 100.1 Translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
AAV6

FIG. 8H

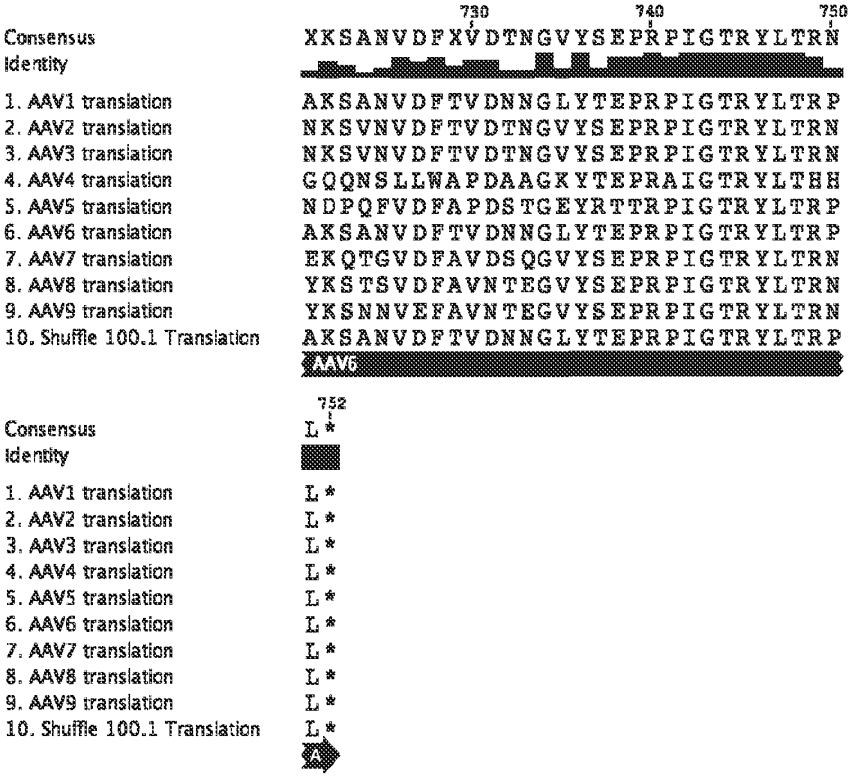

730
740
750
Consensus XKSANVDFXVDTNGVYSEPRPIGTRYLTRN
Identity
1. AAV1 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
2. AAV2 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
3. AAV3 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
4. AAV4 translation GQQNSLLWAPDAAGKYTEPRAIGTRYLTHH
5. AAV5 translation NDPQFVDFAPDSTGEYRTTRPIGTRYLTRP
6. AAV6 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
7. AAV7 translation EKQTGVDFAVDSQGVYSEPRPIGTRYLTRN
8. AAV8 translation YKSTSVDFAVNTEGVYSEPRPIGTRYLTRN
9. AAV9 translation YKSNNVEFAVNTEGVYSEPRPIGTRYLTRN
10. Shuffle 100.1 Translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
AAV6
752
Consensus L*
Identity
1. AAV1 translation L*
2. AAV2 translation L*
3. AAV3 translation L*
4. AAV4 translation L*
5. AAV5 translation L*
6. AAV6 translation L*
7. AAV7 translation L*
8. AAV8 translation L*
9. AAV9 translation L*
10. Shuffle 100.1 Translation L*
A

FIG. 8I

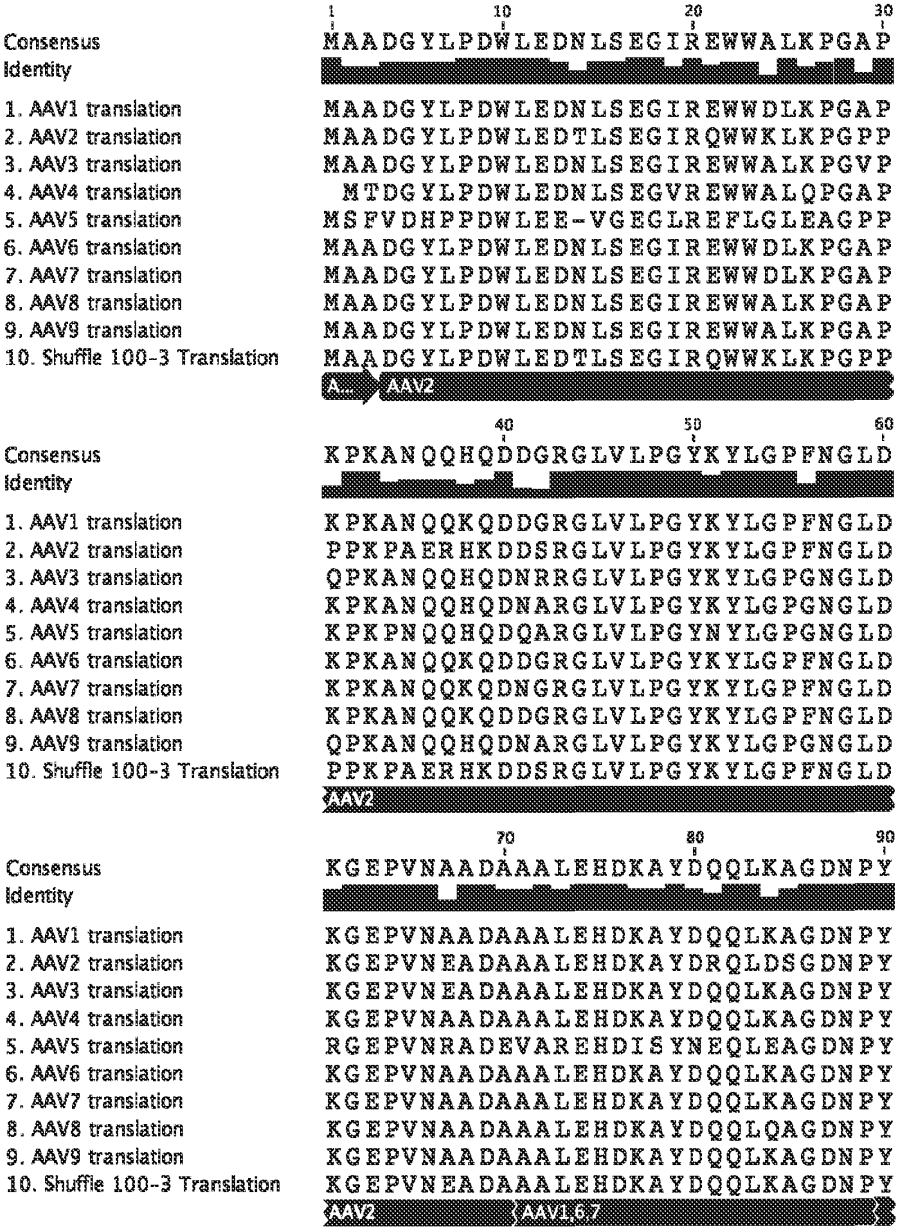

1 10 20 30
Consensus MAADGYLPDWLEDNLSEGIREWWALKPGAP
Identity
1. AAV1 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
2. AAV2 translation MAADGYLPDWLEDTLSEGIRQWWKLKPGPP
3. AAV3 translation MAADGYLPDWLEDNLSEGIREWWALKPGVP
4. AAV4 translation MTDGYLPDWLEDNLSEGVREWWALQPGAP
5. AAV5 translation MSFVDHPPDWLEE-VGEGLREFLGLEAGPP
6. AAV6 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
7. AAV7 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
8. AAV8 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
9. AAV9 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
10. Shuffle 100-3 Translation MAADGYLPDWLEDTLSEGIRQWWKLKPGPP
A... AAV2
40 50 60
Consensus KPKANQQHQDDGRGLVLPGYKYLGPFNGLD
Identity
1. AAV1 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
2. AAV2 translation PPKPAERHKDDSRGLVLPGYKYLGPFNGLD
3. AAV3 translation QPKANQQHQDNRRGLVLPGYKYLGPGNGLD
4. AAV4 translation KPKANQQHQDNARGLVLPGYKYLGPGNGLD
5. AAV5 translation KPKPNQQHQDQARGLVLPGYNYLGPGNGLD
6. AAV6 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
7. AAV7 translation KPKANQQKQDNGRGLVLPGYKYLGPFNGLD
8. AAV8 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
9. AAV9 translation QPKANQQHQDNARGLVLPGYKYLGPGNGLD
10. Shuffle 100-3 Translation PPKPAERHKDDSRGLVLPGYKYLGPFNGLD
AAV2
70 80 90
Consensus KGEPVNAADAAALEHDKAYDQQLKAGDNPY
Identity
1. AAV1 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
2. AAV2 translation KGEPVNEADAAALEHDKAYDRQLDSGDNPY
3. AAV3 translation KGEPVNEADAAALEHDKAYDQQLKAGDNPY
4. AAV4 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
5. AAV5 translation RGEPVNRADEVAREHDISYNEQLEAGDNPY
6. AAV6 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
7. AAV7 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
8. AAV8 translation KGEPVNAADAAALEHDKAYDQQLQAGDNPY
9. AAV9 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
10. Shuffle 100-3 Translation KGEPVNEADAAALEHDKAYDQQLKAGDNPY
AAV2 (AAV1,6,7

FIG. 9A

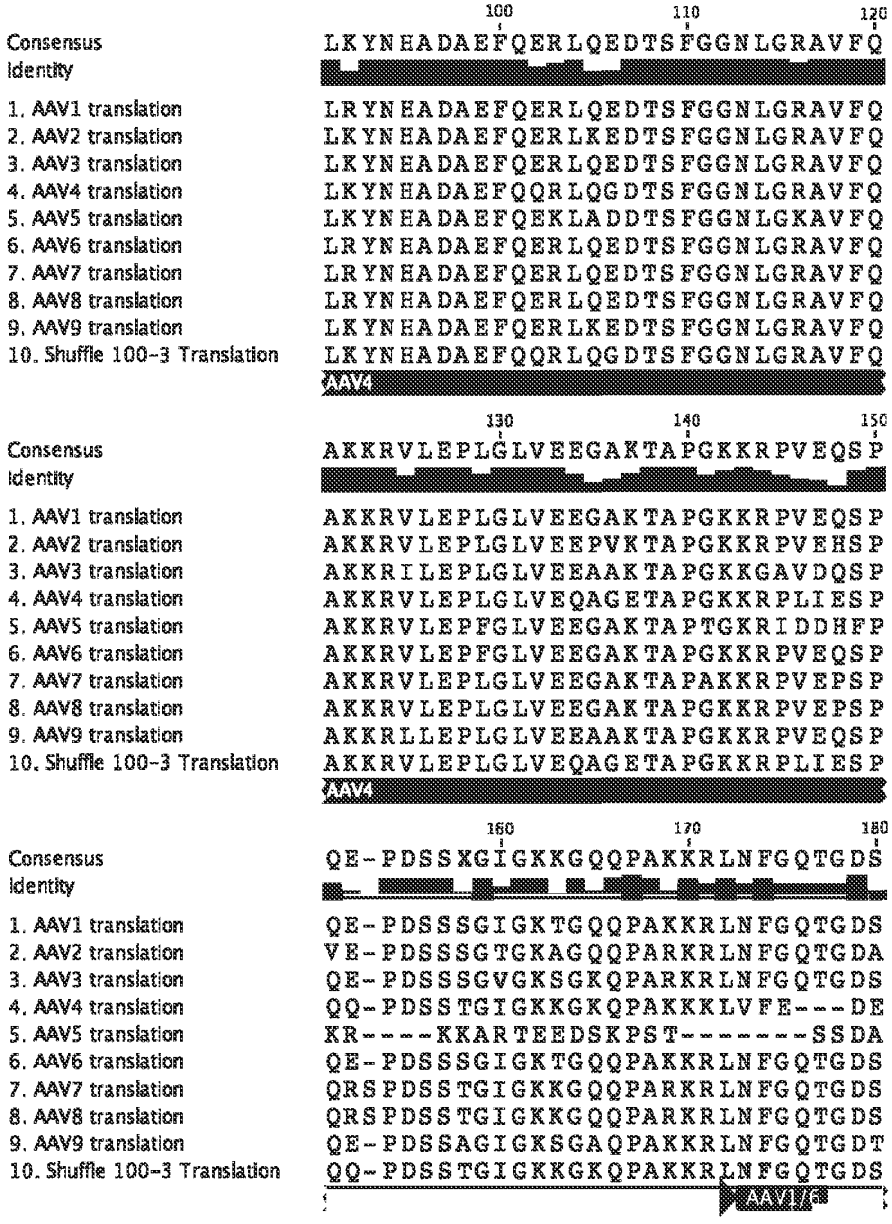

100 110 120
Consensus LKYNHADAEFQERLQEDTSFGGNLGRAVFQ
Identity
1. AAV1 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
2. AAV2 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
3. AAV3 translation LKYNHADAEFQERLQEDTSFGGNLGRAVFQ
4. AAV4 translation LKYNHADAEFQQRLQGDTSFGGNLGRAVFQ
5. AAV5 translation LKYNHADAEFQEKLADDTSFGGNLGKAVFQ
6. AAV6 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
7. AAV7 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
8. AAV8 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
9. AAV9 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
10. Shuffle 100-3 Translation LKYNHADAEFQQRLQGDTSFGGNLGRAVFQ
AAV4
130 140 150
Consensus AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
Identity
1. AAV1 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
2. AAV2 translation AKKRVLEPLGLVEEPVKTAPGKKRPVEHSP
3. AAV3 translation AKKRILEPLGLVEEAAKTAPGKKGAVDQSP
4. AAV4 translation AKKRVLEPLGLVEQAGETAPGKKRPLIESP
5. AAV5 translation AKKRVLEPFGLVEEGAKTAPTGKRIDDHFP
6. AAV6 translation AKKRVLEPFGLVEEGAKTAPGKKRPVEQSP
7. AAV7 translation AKKRVLEPLGLVEEGAKTAPAKKRPVEPSP
8. AAV8 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEPSP
9. AAV9 translation AKKRLLEPLGLVEEAAKTAPGKKRPVEQSP
10. Shuffle 100-3 Translation AKKRVLEPLGLVEQAGETAPGKKRPLIESP
AAV4
160 170 180
Consensus QE-PDSSXGIGKKGQQPAKKRLNFGQTGDS
Identity
1. AAV1 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
2. AAV2 translation VE-PDSSSGTGKAGQQPARKRLNFGQTGDA
3. AAV3 translation QE-PDSSSGVGKSGKQPARKRLNFGQTGDS
4. AAV4 translation QQ-PDSSTGIGKKGKQPAKKKLVFE---DE
5. AAV5 translation KR----KKARTEEDSKPST--------SSDA
6. AAV6 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
7. AAV7 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
8. AAV8 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
9. AAV9 translation QE-PDSSAGIGKSGAQPAKKRLNFGQTGDT
10. Shuffle 100-3 Translation QQ-PDSSTGIGKKGKQPAKKRLNFGQTGDS
AAV1/6

FIG. 9B

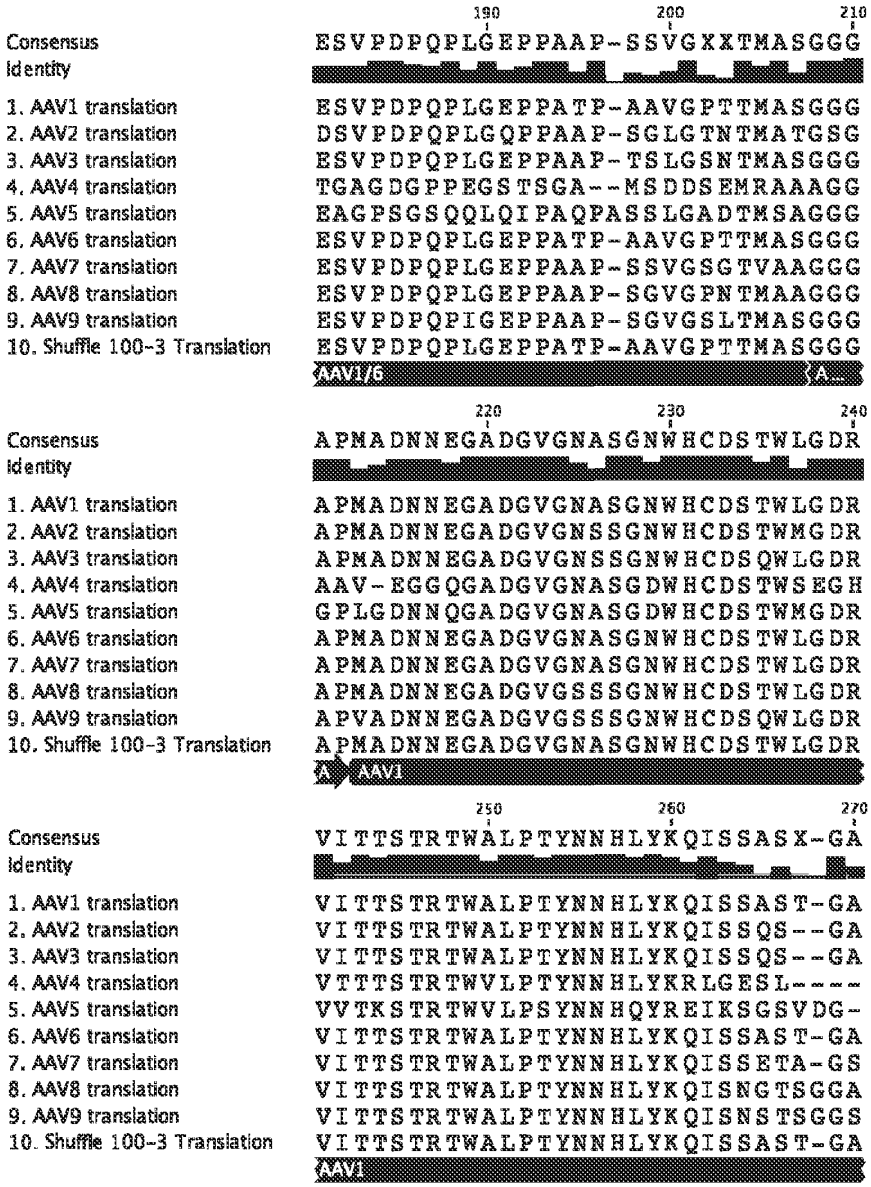

190 200 210
Consensus ESVPDPQPLGEPPAAP-SSVGXXTMASGGG
Identity
1. AAV1 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
2. AAV2 translation DSVPDPQPLGQPPAAP-SGLGTNTMATGSG
3. AAV3 translation ESVPDPQPLGEPPAAP-TSLGSNTMASGGG
4. AAV4 translation TGAGDGPPEGSTSGA--MSDDSEMRAAAGG
5. AAV5 translation EAGPSGSQQLQIPAQPASSLGADTMSAGGG
6. AAV6 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
7. AAV7 translation ESVPDPQPLGEPPAAP-SSVGSGTVAAGGG
8. AAV8 translation ESVPDPQPLGEPPAAP-SGVGPNTMAAGGG
9. AAV9 translation ESVPDPQPIGEPPAAP-SGVGSLTMASGGG
10. Shuffle 100-3 Translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
AAV1/6 A...
220 230 240
Consensus APMADNNEGADGVGNASGNWHCDSTWLGDR
Identity
1. AAV1 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
2. AAV2 translation APMADNNEGADGVGNSSGNWHCDSTWMGDR
3. AAV3 translation APMADNNEGADGVGNSSGNWHCDSQWLGDR
4. AAV4 translation AAV-EGGQGADGVGNASGDWHCDSTWSEGH
5. AAV5 translation GPLGDNNQGADGVGNASGDWHCDSTWMGDR
6. AAV6 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
7. AAV7 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
8. AAV8 translation APMADNNEGADGVGSSSGNWHCDSTWLGDR
9. AAV9 translation APVADNNEGADGVGSSSGNWHCDSQWLGDR
10. Shuffle 100-3 Translation APMADNNEGADGVGNASGNWHCDSTWLGDR
A AAV1
250 260 270
Consensus VITTSTRTWALPTYNNHLYKQISSASX-GA
Identity
1. AAV1 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
2. AAV2 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
3. AAV3 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
4. AAV4 translation VTTTSTRTWVLPTYNNHLYKRLGESL----
5. AAV5 translation VVTKSTRTWVLPSYNNHQYREIKSGSVDG-
6. AAV6 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
7. AAV7 translation VITTSTRTWALPTYNNHLYKQISSETA-GS
8. AAV8 translation VITTSTRTWALPTYNNHLYKQISNGTSGGA
9. AAV9 translation VITTSTRTWALPTYNNHLYKQISNSTSGGS
10. Shuffle 100-3 Translation VITTSTRTWALPTYNNHLYKQISSAST-GA
AAV1

FIG. 9C

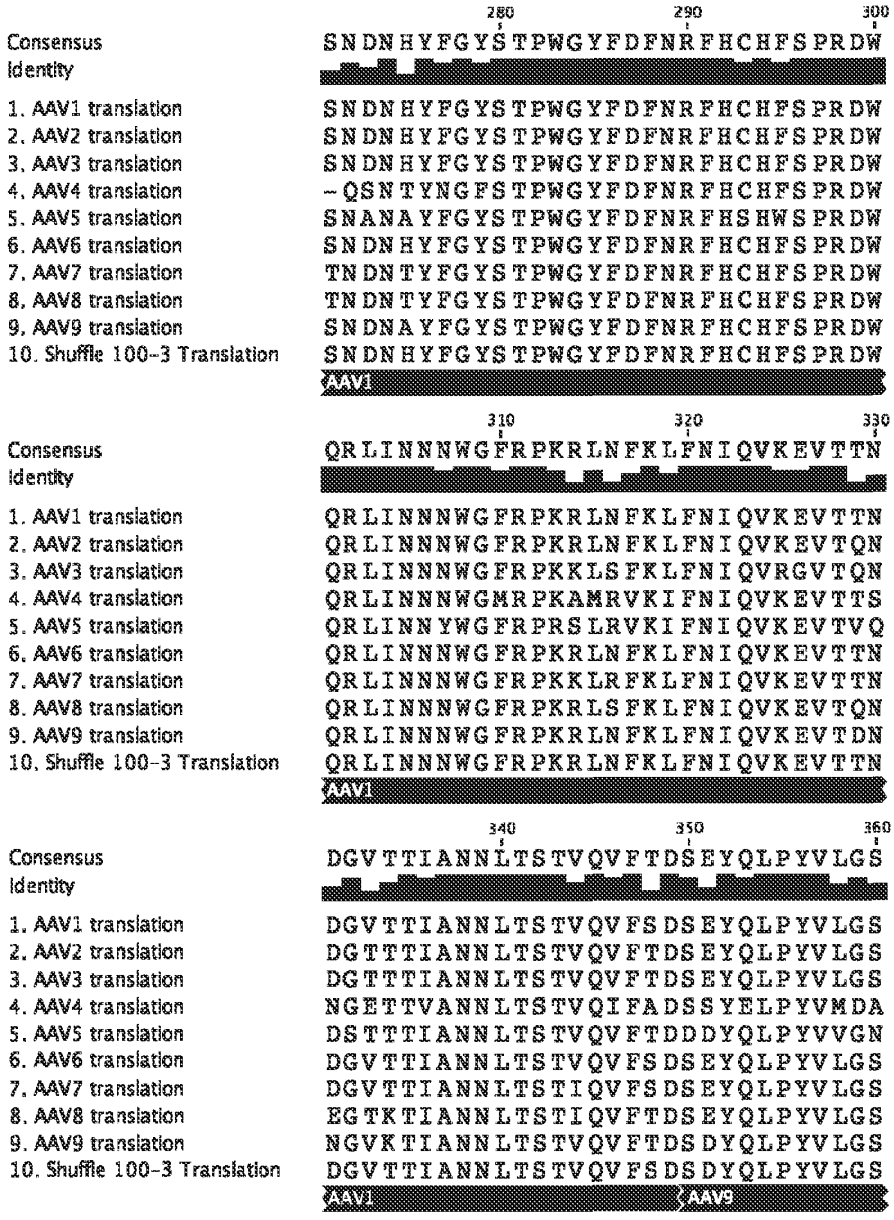

280
290
300
Consensus
Identity
1. AAV1 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
2. AAV2 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
3. AAV3 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
4. AAV4 translation -QSNTYNGFSTPWGYFDFNRFHCHFSPRDW
5. AAV5 translation SNANAYFGYSTPWGYFDFNRFHSHWSPRDW
6. AAV6 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
7. AAV7 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
8. AAV8 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
9. AAV9 translation SNDNAYFGYSTPWGYFDFNRFHCHFSPRDW
10. Shuffle 100-3 Translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
AAV1
310
320
330
Consensus
Identity
1. AAV1 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
2. AAV2 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTQN
3. AAV3 translation QRLINNNWGFRPKKLSFKLFNIQVRGVTQN
4. AAV4 translation QRLINNNWGMRPKAMRVKIFNIQVKEVTTS
5. AAV5 translation QRLINNYWGFRPRSLRVKIFNIQVKEVTVQ
6. AAV6 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
7. AAV7 translation QRLINNNWGFRPKKLRFKLFNIQVKEVTTN
8. AAV8 translation QRLINNNWGFRPKRLSFKLFNIQVKEVTQN
9. AAV9 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTDN
10. Shuffle 100-3 Translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
AAV1
340
350
360
Consensus
Identity
1. AAV1 translation DGVTTIANNLTSTVQVFTDSEYQLPYVLGS
2. AAV2 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
3. AAV3 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
4. AAV4 translation NGETTVANNLTSTVQIFADSSYELPYVMDA
5. AAV5 translation DSTTTIANNLTSTVQVFTDDDYQLPYVVGN
6. AAV6 translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
7. AAV7 translation DGVTTIANNLTSTIQVFSDSEYQLPYVLGS
8. AAV8 translation EGTKTIANNLTSTIQVFTDSEYQLPYVLGS
9. AAV9 translation NGVKTIANNLTSTVQVFTDSDYQLPYVLGS
10. Shuffle 100-3 Translation DGVTTIANNLTSTVQVFSDSDYQLPYVLGS
AAV1
AAV9

FIG. 9D

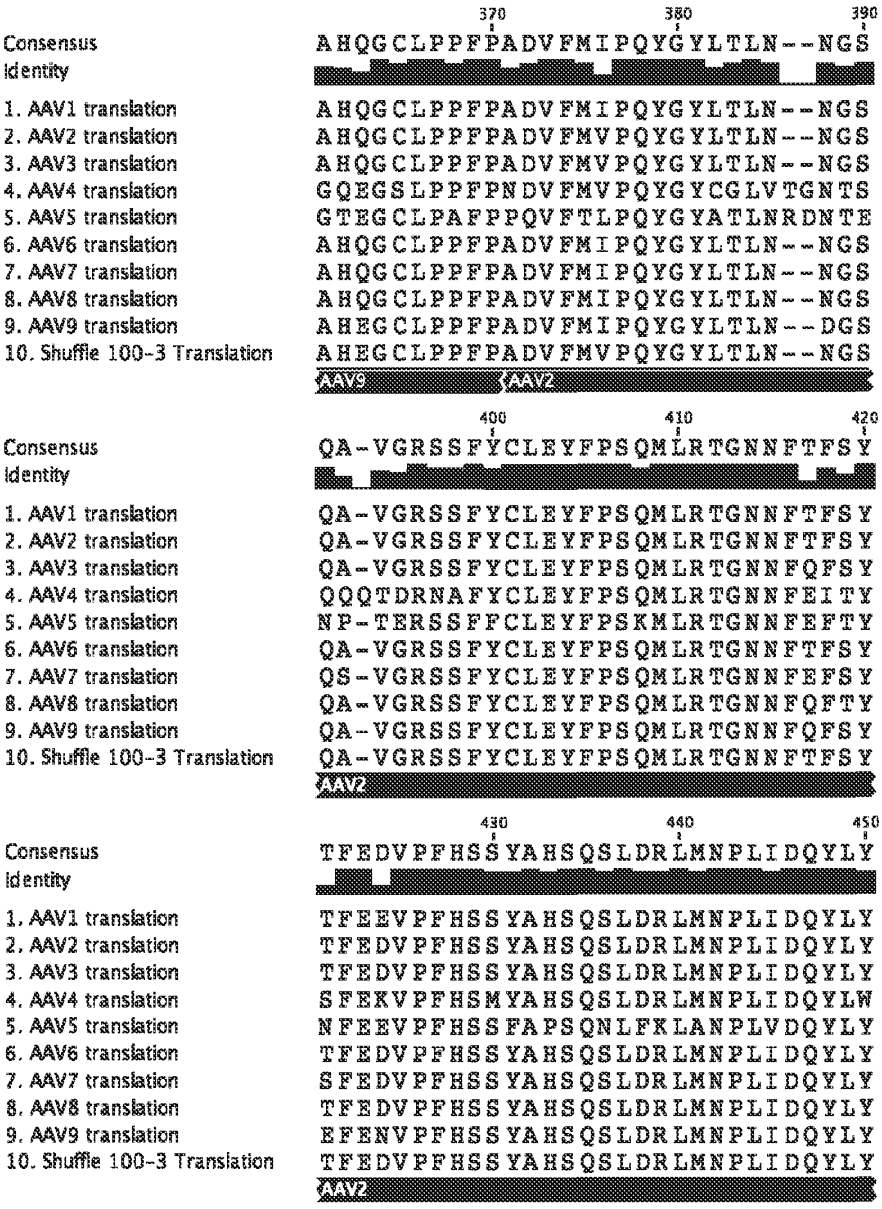

370 380 390
Consensus AHQGCLPPFPADVFMIPQYGYLTLN--NGS
Identity
1. AAV1 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
2. AAV2 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
3. AAV3 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
4. AAV4 translation GQEGSLPPFPNDVFMVPQYGYCGLVTGNTS
5. AAV5 translation GTEGCLPAFPPQVFTLPQYGYATLNRDNTE
6. AAV6 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
7. AAV7 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
8. AAV8 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
9. AAV9 translation AHEGCLPPFPADVFMIPQYGYLTLN--DGS
10. Shuffle 100-3 Translation AHEGCLPPFPADVFMVPQYGYLTLN--NGS
AAV9
AAV2
400 410 420
Consensus QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
Identity
1. AAV1 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
2. AAV2 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
3. AAV3 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFSY
4. AAV4 translation QQQTDRNAFYCLEYFPSQMLRTGNNFEITY
5. AAV5 translation NP-TERSSFFCLEYFPSKMLRTGNNFEFTY
6. AAV6 translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
7. AAV7 translation QS-VGRSSFYCLEYFPSQMLRTGNNFEFSY
8. AAV8 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFTY
9. AAV9 translation QA-VGRSSFYCLEYFPSQMLRTGNNFQFSY
10. Shuffle 100-3 Translation QA-VGRSSFYCLEYFPSQMLRTGNNFTFSY
AAV2
430 440 450
Consensus TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
Identity
1. AAV1 translation TFEEVPFHSSYAHSQSLDRLMNPLIDQYLY
2. AAV2 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
3. AAV3 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
4. AAV4 translation SFEKVPFHSMYAHSQSLDRLMNPLIDQYLW
5. AAV5 translation NFEEVPFHSSFAPSQNLFKLANPLVDQYLY
6. AAV6 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
7. AAV7 translation SFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
8. AAV8 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
9. AAV9 translation EFENVPFHSSYAHSQSLDRLMNPLIDQYLY
10. Shuffle 100-3 Translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
AAV2

FIG. 9E

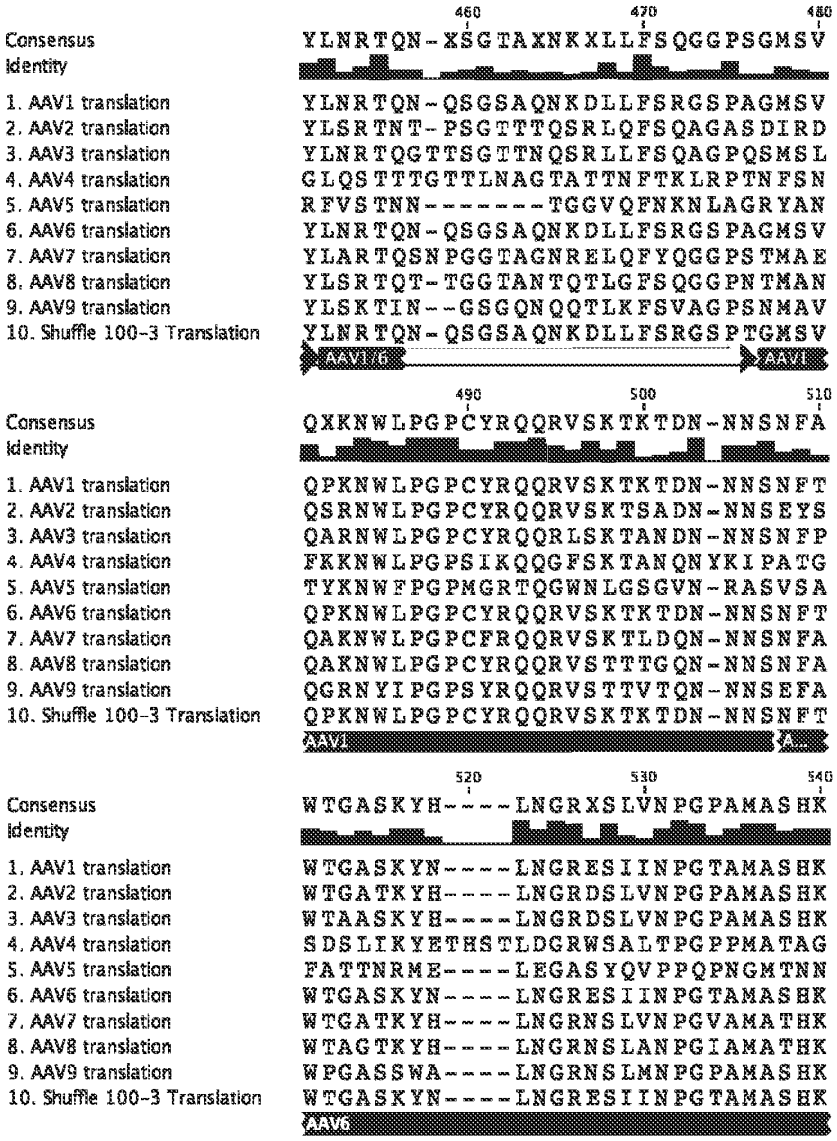

460 470 480
Consensus YLNRTQN-XSGTAXNKXLLFSQGGPSGMSV
Identity
1. AAV1 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
2. AAV2 translation YLSRTNT-PSGTTTQSRLQFSQAGASDIRD
3. AAV3 translation YLNRTQGTTSGTTNQSRLLFSQAGPQSMSL
4. AAV4 translation GLQSTTTGTTLNAGTATTNFTKLRPTNFSN
5. AAV5 translation RFVSTNN--------TGGVQFNKNLAGRYAN
6. AAV6 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
7. AAV7 translation YLARTQSNPGGTAGNRELQFYQGGPSTMAE
8. AAV8 translation YLSRTQT-TGGTANTQTLGFSQGGPNTMAN
9. AAV9 translation YLSKTIN--GSGQNQQTLKFSVAGPSNMAV
10. Shuffle 100-3 Translation YLNRTQN-QSGSAQNKDLLFSRGSPTGMSV
AAV1/6
AAV1
490 500 510
Consensus QXKNWLPGPCYRQQRVSKTKTDN-NNSNFA
Identity
1. AAV1 translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
2. AAV2 translation QSRNWLPGPCYRQQRVSKTSADN-NNSEYS
3. AAV3 translation QARNWLPGPCYRQQRLSKTANDN-NNSNFP
4. AAV4 translation FKKNWLPGPSIKQQGFSKTANQNYKIPATG
5. AAV5 translation TYKNWFPGPMGRTQGWNLGSGVN-RASVSA
6. AAV6 translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
7. AAV7 translation QAKNWLPGPCFRQQRVSKTLDQN-NNSNFA
8. AAV8 translation QAKNWLPGPCYRQQRVSTTTGQN-NNSNFA
9. AAV9 translation QGRNYIPGPSYRQQRVSTTVTQN-NNSEFA
10. Shuffle 100-3 Translation QPKNWLPGPCYRQQRVSKTKTDN-NNSNFT
AAV1
520 530 540
Consensus WTGASKYH-----LNGRXSLVNPGPAMASHK
Identity
1. AAV1 translation WTGASKYN-----LNGRESIINPGTAMASHK
2. AAV2 translation WTGATKYH-----LNGRDSLVNPGPAMASHK
3. AAV3 translation WTAASKYH-----LNGRDSLVNPGPAMASHK
4. AAV4 translation SDSLIKYETHSTLDGRWSALTPGPPMATAG
5. AAV5 translation FATTNRME-----LEGASYQVPPQPNGMTNN
6. AAV6 translation WTGASKYN-----LNGRESIINPGTAMASHK
7. AAV7 translation WTGATKYH-----LNGRNSLVNPGVAMATHK
8. AAV8 translation WTAGTKYH-----LNGRNSLANPGIAMATHK
9. AAV9 translation WPGASSWA-----LNGRNSLMNPGPAMASHK
10. Shuffle 100-3 Translation WTGASKYN-----LNGRESIINPGTAMASHK
AAV6

FIG. 9F

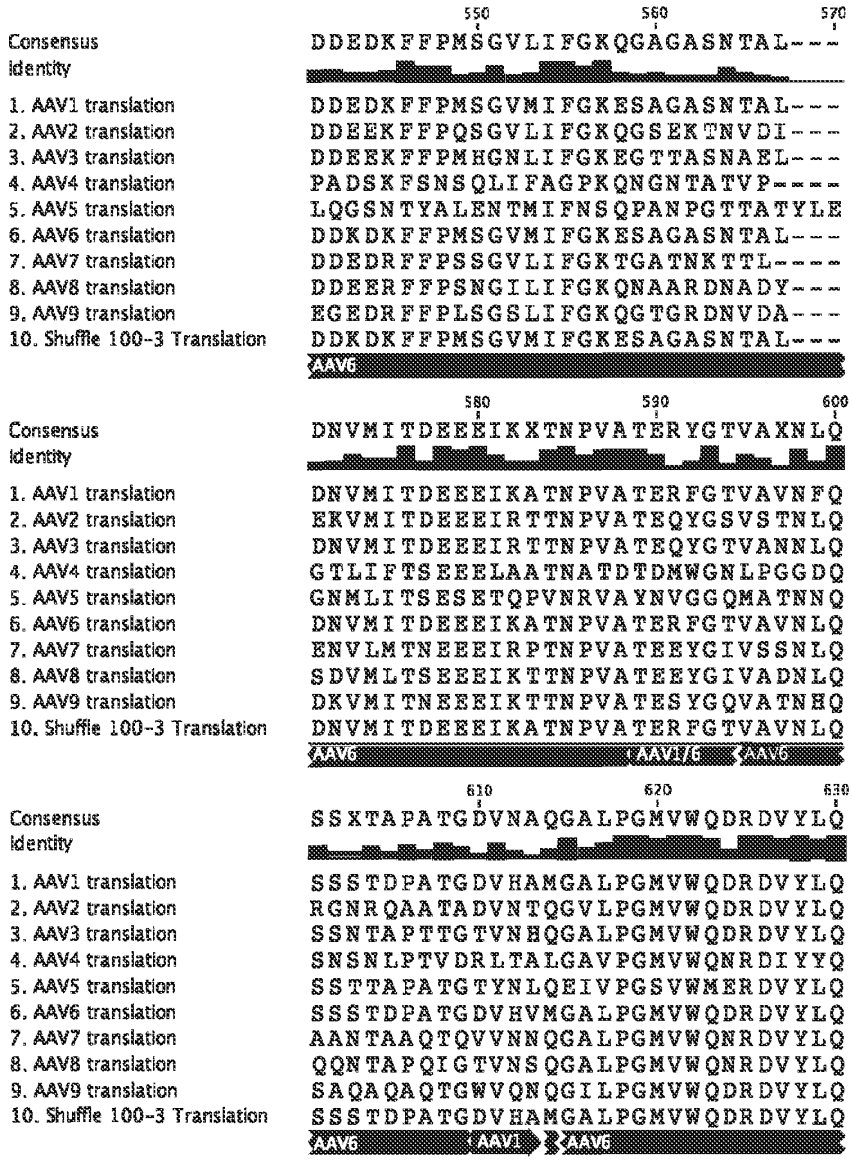

550 560 570
Consensus DDEDKFFPMSGVLIFGKQGAGASNTAL---
Identity
1. AAV1 translation DDEDKFFPMSGVMIFGKESAGASNTAL---
2. AAV2 translation DDEEKFFPQSGVLIFGKQGSEKTNVDI---
3. AAV3 translation DDEEKFFPMHGNLIFGKEGTTASNAEL---
4. AAV4 translation PADSKFSNSQLIFAGPKQNGNTATVP----
5. AAV5 translation LQGSNTYALENTMIFNSQPANPGTTATYLE
6. AAV6 translation DDKDKFFPMSGVMIFGKESAGASNTAL---
7. AAV7 translation DDEDRFFPSSGVLIFGKTGATNKTTL----
8. AAV8 translation DDEERFFPSNGILIFGKQNAARDNADY---
9. AAV9 translation EGEDRFFPLSGSLIFGKQGTGRDNVDA---
10. Shuffle 100-3 Translation DDKDKFFPMSGVMIFGKESAGASNTAL---
AAV6
580 590 600
Consensus DNVMITDEEEIKXTNPVATERYGTVAXNLQ
Identity
1. AAV1 translation DNVMITDEEEIKATNPVATERFGTVAVNFQ
2. AAV2 translation EKVMITDEEEIRTTNPVATEQYGSVSTNLQ
3. AAV3 translation DNVMITDEEEIRTTNPVATEQYGTVANNLQ
4. AAV4 translation GTLIFTSEEELAATNATDTDMWGNLPGGDQ
5. AAV5 translation GNMLITSESETQPVNRVAYNVGGQMATNNQ
6. AAV6 translation DNVMITDEEEIKATNPVATERFGTVAVNLQ
7. AAV7 translation ENVLMTNEEEIRPTNPVATEEYGIVSSNLQ
8. AAV8 translation SDVMLTSEEEIKTTNPVATEEYGIVADNLQ
9. AAV9 translation DKVMITNEEEIKTTNPVATESYGQVATNHQ
10. Shuffle 100-3 Translation DNVMITDEEEIKATNPVATERFGTVAVNLQ
AAV6 AAV1/6 AAV6
610 620 630
Consensus SSXTAPATGDVNAQGALPGMVWQDRDVYLQ
Identity
1. AAV1 translation SSSTDPATGDVHAMGALPGMVWQDRDVYLQ
2. AAV2 translation RGNRQAATADVNTQGVLPGMVWQDRDVYLQ
3. AAV3 translation SSNTAPTTGTVNHQGALPGMVWQDRDVYLQ
4. AAV4 translation SNSNLPTVDRLTALGAVPGMVWQNRDIYYQ
5. AAV5 translation SSTTAPATGTYNLQEIVPGSVWMERDVYLQ
6. AAV6 translation SSSTDPATGDVHVMGALPGMVWQDRDVYLQ
7. AAV7 translation AANTAAQTQVVNNQGALPGMVWQNRDVYLQ
8. AAV8 translation QQNTAPQIGTVNSQGALPGMVWQNRDVYLQ
9. AAV9 translation SAQAQAQTGWVQNQGILPGMVWQDRDVYLQ
10. Shuffle 100-3 Translation SSSTDPATGDVHAMGALPGMVWQDRDVYLQ
AAV6 AAV1 AAV6

FIG. 9G

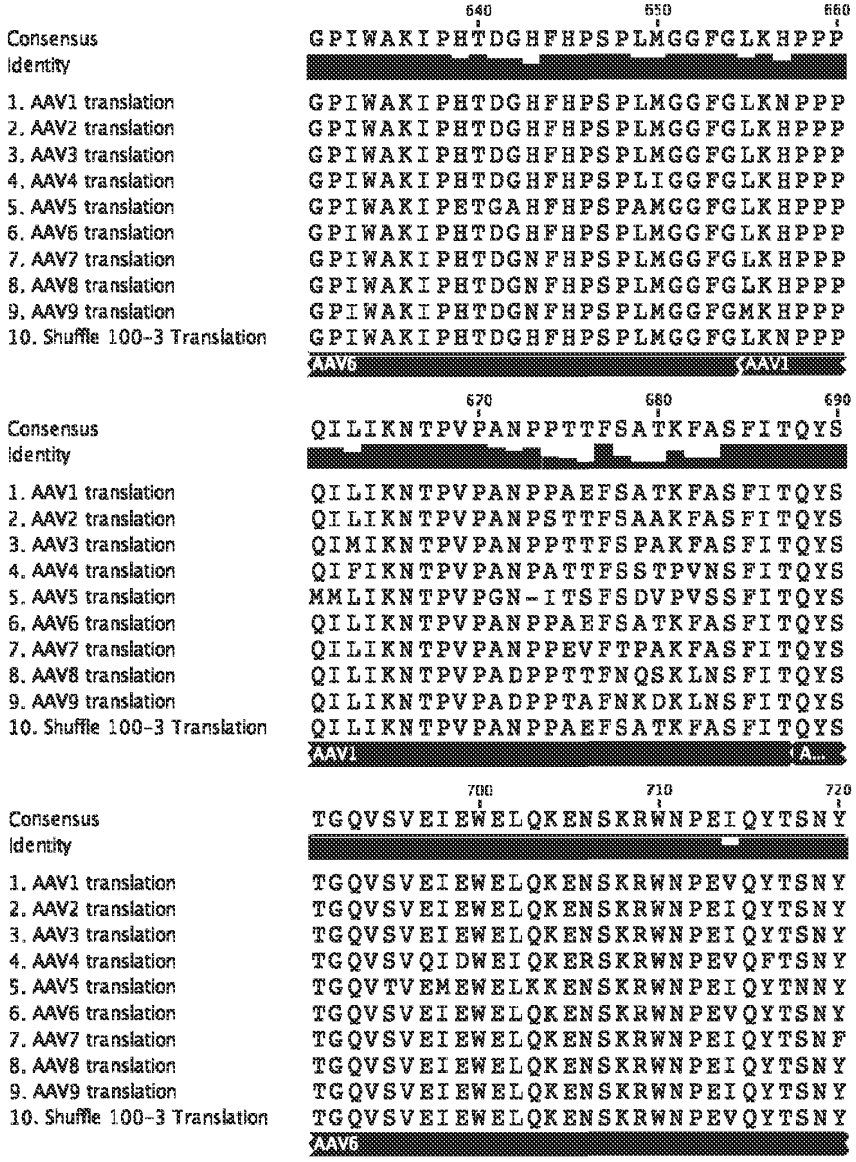

640 650 660
Consensus GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
Identity
1. AAV1 translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
2. AAV2 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
3. AAV3 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
4. AAV4 translation GPIWAKIPHTDGHFHPSPLIGGFGLKHPPP
5. AAV5 translation GPIWAKIPETGAHFHPSPAMGGFGLKHPPP
6. AAV6 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
7. AAV7 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
8. AAV8 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
9. AAV9 translation GPIWAKIPHTDGNFHPSPLMGGFGMKHPPP
10. Shuffle 100-3 Translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
AAV6 AAV1
670 680 690
Consensus QILIKNTPVPANPPTTFSATKFASFITQYS
Identity
1. AAV1 translation QILIKNTPVPANPPAEFSATKFASFITQYS
2. AAV2 translation QILIKNTPVPANPSTTFSAAKFASFITQYS
3. AAV3 translation QIMIKNTPVPANPPTTFSPAKFASFITQYS
4. AAV4 translation QIFIKNTPVPANPATTFSSTPVNSFITQYS
5. AAV5 translation MMLIKNTPVPGN-ITSFSDVPVSSFITQYS
6. AAV6 translation QILIKNTPVPANPPAEFSATKFASFITQYS
7. AAV7 translation QILIKNTPVPANPPEVFTPAKFASFITQYS
8. AAV8 translation QILIKNTPVPADPPTTFNQSKLNSFITQYS
9. AAV9 translation QILIKNTPVPADPPTAFNKDKLNSFITQYS
10. Shuffle 100-3 Translation QILIKNTPVPANPPAEFSATKFASFITQYS
AAV1 A
700 710 720
Consensus TGQVSVEIEWELQKENSKRWNPEIQYTSNY
Identity
1. AAV1 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
2. AAV2 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
3. AAV3 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
4. AAV4 translation TGQVSVQIDWEIQKERSKRWNPEVQFTSNY
5. AAV5 translation TGQVTVEMEWELKKENSKRWNPEIQYTNNY
6. AAV6 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
7. AAV7 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNF
8. AAV8 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
9. AAV9 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
10. Shuffle 100-3 Translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
AAV6

FIG. 9H

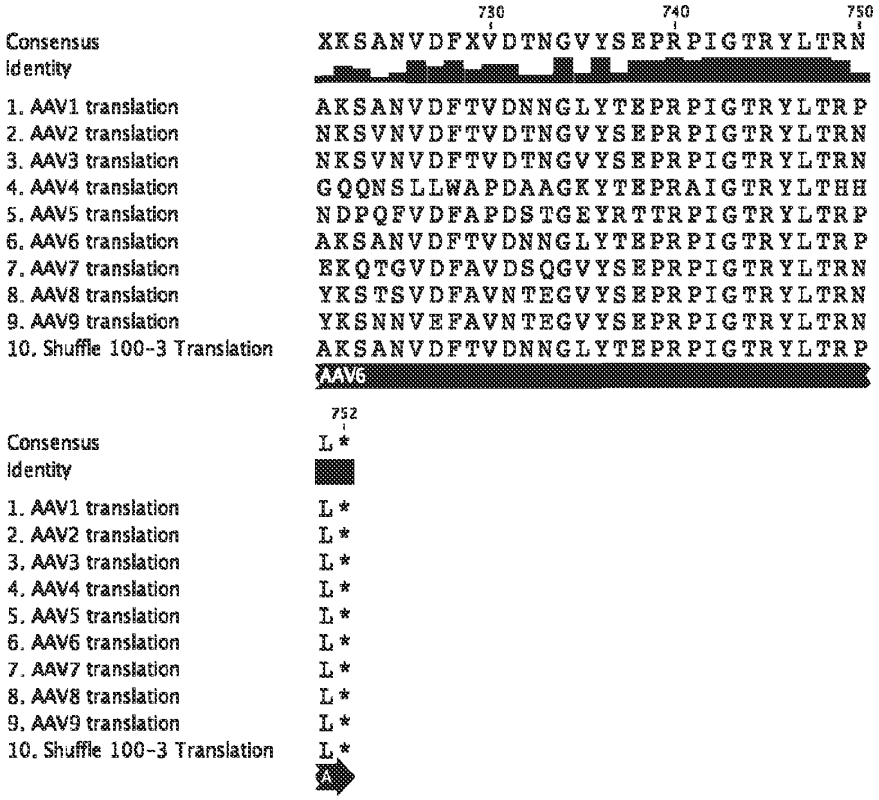

730
740
750
Consensus XKSANVDFXVDTNGVYSEPRPIGTRYLTRN
Identity
1. AAV1 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
2. AAV2 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
3. AAV3 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
4. AAV4 translation GQQNSLLWAPDAAGKYTEPRAIGTRYLTHH
5. AAV5 translation NDPQFVDFAPDSTGEYRTTRPIGTRYLTRP
6. AAV6 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
7. AAV7 translation EKQTGVDFAVDSQGVYSEPRPIGTRYLTRN
8. AAV8 translation YKSTSVDFAVNTEGVYSEPRPIGTRYLTRN
9. AAV9 translation YKSNNVEFAVNTEGVYSEPRPIGTRYLTRN
10. Shuffle 100-3 Translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
VP1
752
Consensus L*
Identity
1. AAV1 translation L*
2. AAV2 translation L*
3. AAV3 translation L*
4. AAV4 translation L*
5. AAV5 translation L*
6. AAV6 translation L*
7. AAV7 translation L*
8. AAV8 translation L*
9. AAV9 translation L*
10. Shuffle 100-3 Translation L*
A

FIG. 9I

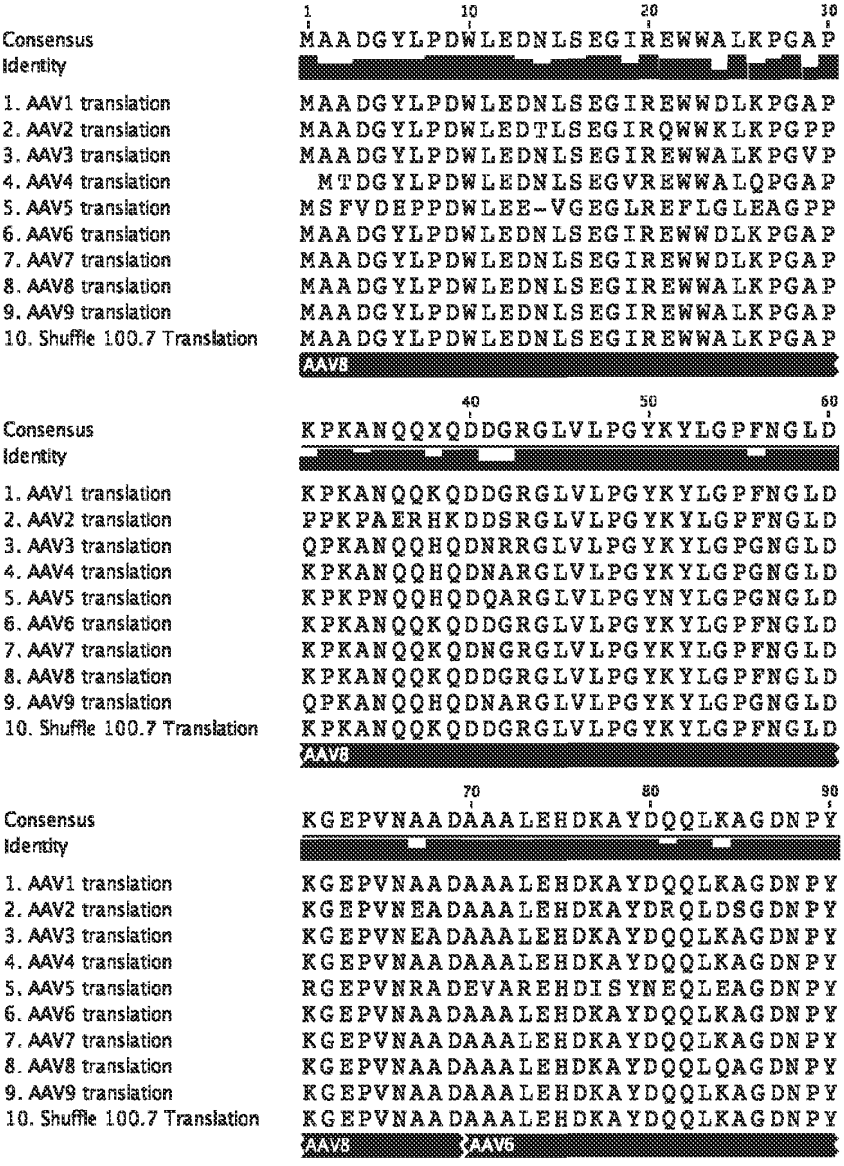

1 10 20 30
Consensus MAADGYLPDWLEDNLSEGIREWWALKPGAP
Identity
1. AAV1 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
2. AAV2 translation MAADGYLPDWLEDTLSEGIRQWWKLKPGPP
3. AAV3 translation MAADGYLPDWLEDNLSEGIREWWALKPGVP
4. AAV4 translation MTDGYLPDWLEDNLSEGVREWWALQPGAP
5. AAV5 translation MSFVDEPPDWLEE-VGEGLREFLGLEAGPP
6. AAV6 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
7. AAV7 translation MAADGYLPDWLEDNLSEGIREWWDLKPGAP
8. AAV8 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
9. AAV9 translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
10. Shuffle 100.7 Translation MAADGYLPDWLEDNLSEGIREWWALKPGAP
AAV8
40 50 60
Consensus KPKANQQXQDDGRGLVLPGYKYLGPFNGLD
Identity
1. AAV1 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
2. AAV2 translation PPKPAERHKDDSRGLVLPGYKYLGPFNGLD
3. AAV3 translation QPKANQQHQDNRRGLVLPGYKYLGPGNGLD
4. AAV4 translation KPKANQQHQDNARGLVLPGYKYLGPGNGLD
5. AAV5 translation KPKPNQQHQDQARGLVLPGYNYLGPGNGLD
6. AAV6 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
7. AAV7 translation KPKANQQKQDNGRGLVLPGYKYLGPFNGLD
8. AAV8 translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
9. AAV9 translation QPKANQQHQDNARGLVLPGYKYLGPGNGLD
10. Shuffle 100.7 Translation KPKANQQKQDDGRGLVLPGYKYLGPFNGLD
AAV8
70 80 90
Consensus KGEPVNAADAAALEHDKAYDQQLKAGDNPY
Identity
1. AAV1 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
2. AAV2 translation KGEPVNEADAAALEHDKAYDRQLDSGDNPY
3. AAV3 translation KGEPVNEADAAALEHDKAYDQQLKAGDNPY
4. AAV4 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
5. AAV5 translation RGEPVNRADEVAREHDISYNEQLEAGDNPY
6. AAV6 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
7. AAV7 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
8. AAV8 translation KGEPVNAADAAALEHDKAYDQQLQAGDNPY
9. AAV9 translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
10. Shuffle 100.7 Translation KGEPVNAADAAALEHDKAYDQQLKAGDNPY
AAV8
AAV6

FIG. 10A

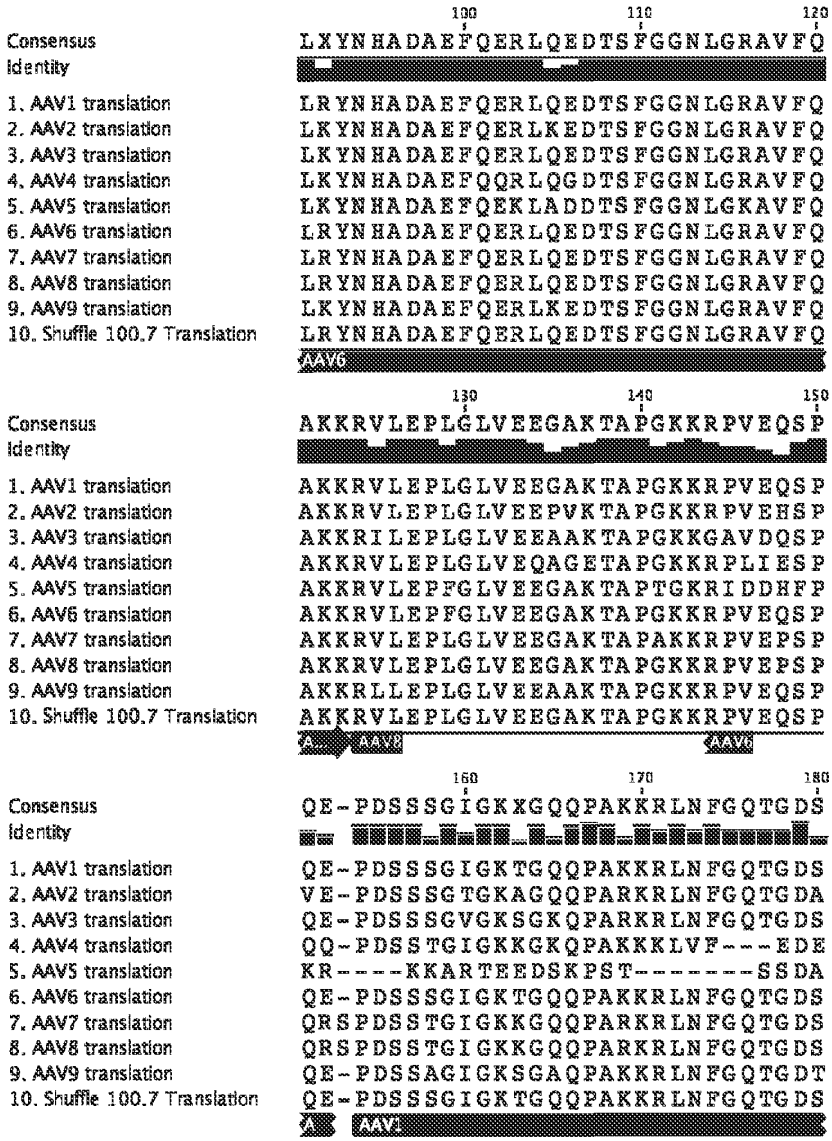

100 110 120
Consensus LXYNHADAEFQERLQEDTSFGGNLGRAVFQ
Identity
1. AAV1 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
2. AAV2 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
3. AAV3 translation LKYNHADAEFQERLQEDTSFGGNLGRAVFQ
4. AAV4 translation LKYNHADAEFQQRLQGDTSFGGNLGRAVFQ
5. AAV5 translation LKYNHADAEFQEKLADDTSFGGNLGKAVFQ
6. AAV6 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
7. AAV7 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
8. AAV8 translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
9. AAV9 translation LKYNHADAEFQERLKEDTSFGGNLGRAVFQ
10. Shuffle 100.7 Translation LRYNHADAEFQERLQEDTSFGGNLGRAVFQ
AAV6
130 140 150
Consensus AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
Identity
1. AAV1 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
2. AAV2 translation AKKRVLEPLGLVEEPVKTAPGKKRPVEHSP
3. AAV3 translation AKKRILEPLGLVEEAAKTAPGKKGAVDQSP
4. AAV4 translation AKKRVLEPLGLVEQAGETAPGKKRPLIESP
5. AAV5 translation AKKRVLEPFGLVEEGAKTAPTGKRIDDHFP
6. AAV6 translation AKKRVLEPFGLVEEGAKTAPGKKRPVEQSP
7. AAV7 translation AKKRVLEPLGLVEEGAKTAPAKKRPVEPSP
8. AAV8 translation AKKRVLEPLGLVEEGAKTAPGKKRPVEPSP
9. AAV9 translation AKKRLLEPLGLVEEAAKTAPGKKRPVEQSP
10. Shuffle 100.7 Translation AKKRVLEPLGLVEEGAKTAPGKKRPVEQSP
A AAV8 AAV6
160 170 180
Consensus QE-PDSSSGIGKXGQQPAKKRLNFGQTGDS
Identity
1. AAV1 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
2. AAV2 translation VE-PDSSSGTGKAGQQPARKRLNFGQTGDA
3. AAV3 translation QE-PDSSSGVGKSGKQPARKRLNFGQTGDS
4. AAV4 translation QQ-PDSSTGIGKKGKQPAKKKLVF---EDE
5. AAV5 translation KR----KKARTEEDSKPST-------SSDA
6. AAV6 translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
7. AAV7 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
8. AAV8 translation QRSPDSSTGIGKKGQQPARKRLNFGQTGDS
9. AAV9 translation QE-PDSSAGIGKSGAQPAKKRLNFGQTGDT
10. Shuffle 100.7 Translation QE-PDSSSGIGKTGQQPAKKRLNFGQTGDS
A AAV1

FIG. 10B

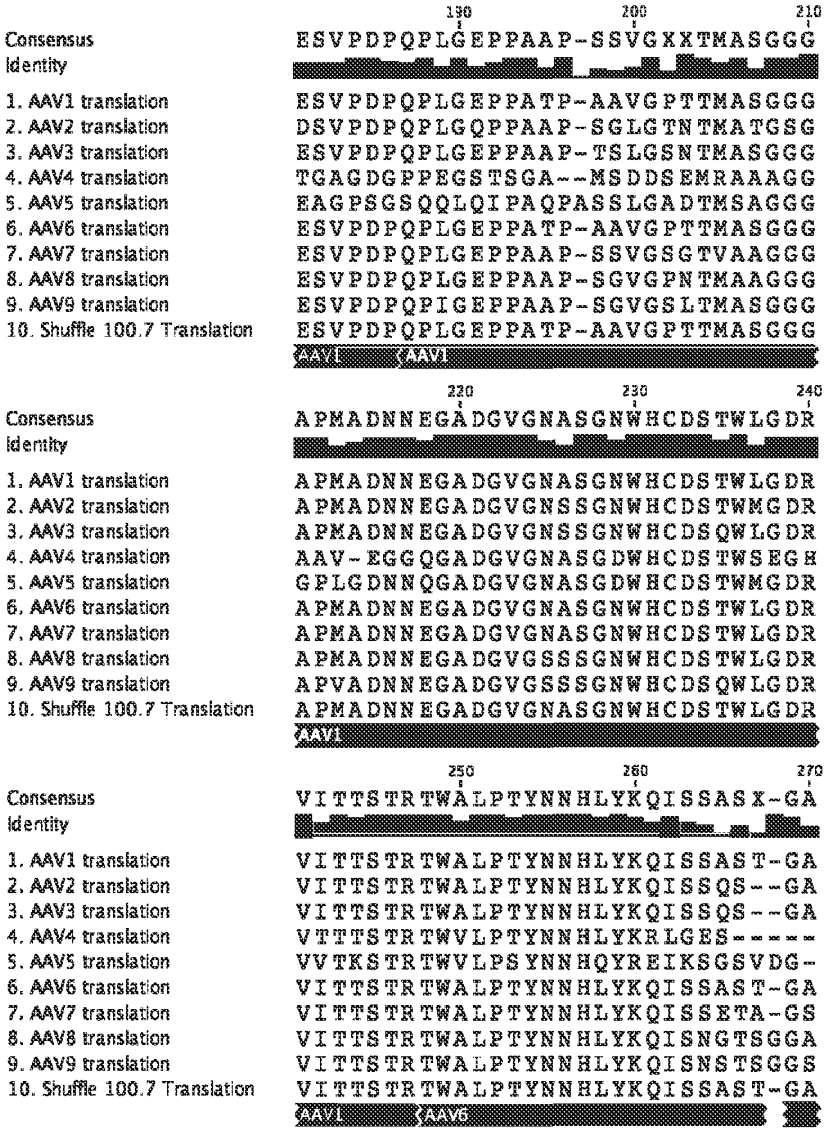

190 200 210
Consensus ESVPDPQPLGEPPAAP-SSVGXXTMASGGG
Identity
1. AAV1 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
2. AAV2 translation DSVPDPQPLGQPPAAP-SGLGTNTMATGSG
3. AAV3 translation ESVPDPQPLGEPPAAP-TSLGSNTMASGGG
4. AAV4 translation TGAGDGPPEGSTSGA--MSDDSEMRAAAGG
5. AAV5 translation EAGPSGSQQLQIPAQPASSLGADTMSAGGG
6. AAV6 translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
7. AAV7 translation ESVPDPQPLGEPPAAP-SSVGSGTVAAGGG
8. AAV8 translation ESVPDPQPLGEPPAAP-SGVGPNTMAAGGG
9. AAV9 translation ESVPDPQPIGEPPAAP-SGVGSLTMASGGG
10. Shuffle 100.7 Translation ESVPDPQPLGEPPATP-AAVGPTTMASGGG
AAV1 AAV1
220 230 240
Consensus APMADNNEGADGVGNASGNWHCDSTWLGDR
Identity
1. AAV1 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
2. AAV2 translation APMADNNEGADGVGNSSGNWHCDSTWMGDR
3. AAV3 translation APMADNNEGADGVGNSSGNWHCDSQWLGDR
4. AAV4 translation AAV-EGGQGADGVGNASGDWHCDSTWSEGH
5. AAV5 translation GPLGDNNQGADGVGNASGDWHCDSTWMGDR
6. AAV6 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
7. AAV7 translation APMADNNEGADGVGNASGNWHCDSTWLGDR
8. AAV8 translation APMADNNEGADGVGSSSGNWHCDSTWLGDR
9. AAV9 translation APVADNNEGADGVGSSSGNWHCDSQWLGDR
10. Shuffle 100.7 Translation APMADNNEGADGVGNASGNWHCDSTWLGDR
AAV1
250 260 270
Consensus VITTSTRTWALPTYNNHLYKQISSASX-GA
Identity
1. AAV1 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
2. AAV2 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
3. AAV3 translation VITTSTRTWALPTYNNHLYKQISSQS--GA
4. AAV4 translation VTTTSTRTWVLPTYNNHLYKRLGES-----
5. AAV5 translation VVTKSTRTWVLPSYNNHQYREIKSGSVDG-
6. AAV6 translation VITTSTRTWALPTYNNHLYKQISSAST-GA
7. AAV7 translation VITTSTRTWALPTYNNHLYKQISSETA-GS
8. AAV8 translation VITTSTRTWALPTYNNHLYKQISNGTSGGA
9. AAV9 translation VITTSTRTWALPTYNNHLYKQISNSTSGGS
10. Shuffle 100.7 Translation VITTSTRTWALPTYNNHLYKQISSAST-GA
AAV1 AAV6

FIG. 10C

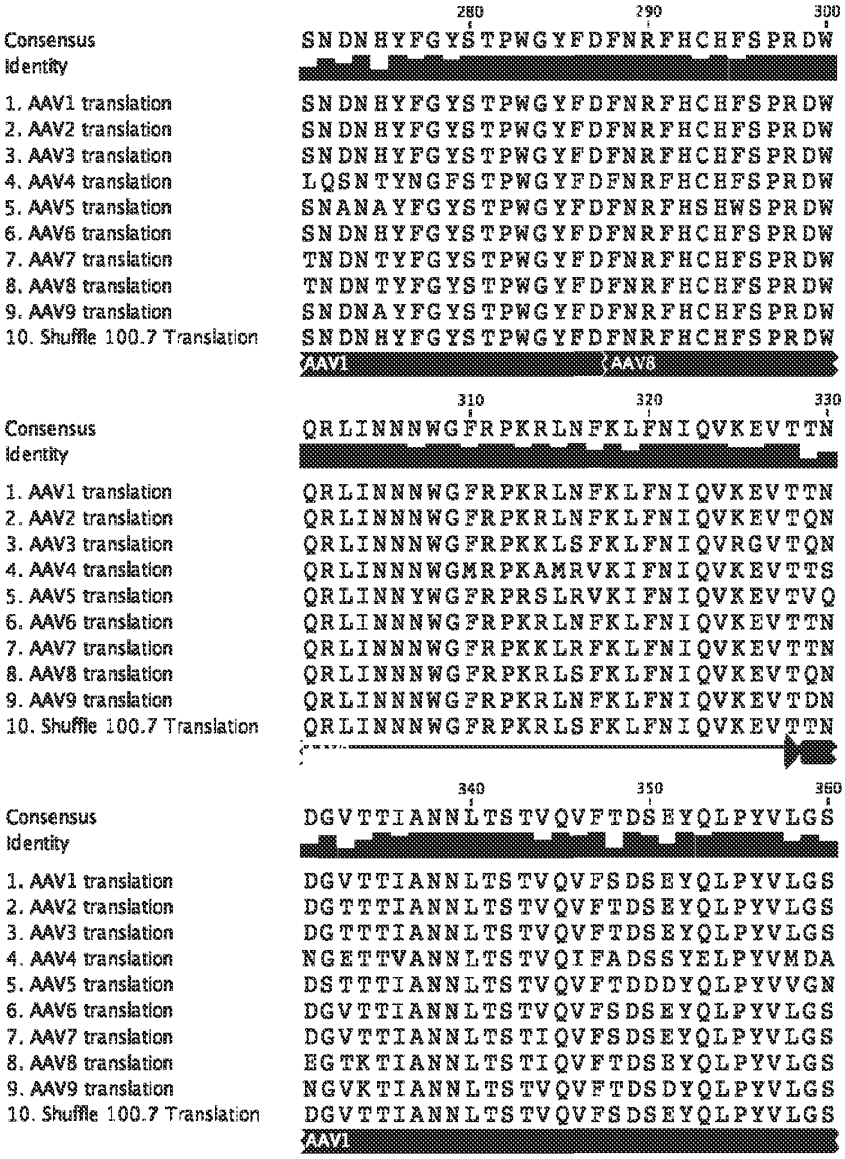

280 290 300
Consensus SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
Identity
1. AAV1 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
2. AAV2 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
3. AAV3 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
4. AAV4 translation LQSNTYNGFSTPWGYFDFNRFHCHFSPRDW
5. AAV5 translation SNANAYFGYSTPWGYFDFNRFHSHWSPRDW
6. AAV6 translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
7. AAV7 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
8. AAV8 translation TNDNTYFGYSTPWGYFDFNRFHCHFSPRDW
9. AAV9 translation SNDNAYFGYSTPWGYFDFNRFHCHFSPRDW
10. Shuffle 100.7 Translation SNDNHYFGYSTPWGYFDFNRFHCHFSPRDW
AAV1 AAV8
310 320 330
Consensus QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
Identity
1. AAV1 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
2. AAV2 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTQN
3. AAV3 translation QRLINNNWGFRPKKLSFKLFNIQVRGVTQN
4. AAV4 translation QRLINNNWGMRPKAMRVKIFNIQVKEVTTS
5. AAV5 translation QRLINNYWGFRPRSLRVKIFNIQVKEVTVQ
6. AAV6 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTTN
7. AAV7 translation QRLINNNWGFRPKKLRFKLFNIQVKEVTTN
8. AAV8 translation QRLINNNWGFRPKRLSFKLFNIQVKEVTQN
9. AAV9 translation QRLINNNWGFRPKRLNFKLFNIQVKEVTDN
10. Shuffle 100.7 Translation QRLINNNWGFRPKRLSFKLFNIQVKEVTTN
340 350 360
Consensus DGVTTIANNLTSTVQVFTDSEYQLPYVLGS
Identity
1. AAV1 translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
2. AAV2 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
3. AAV3 translation DGTTTIANNLTSTVQVFTDSEYQLPYVLGS
4. AAV4 translation NGETTVANNLTSTVQIFADSSYELPYVMDA
5. AAV5 translation DSTTTIANNLTSTVQVFTDDDYQLPYVVGN
6. AAV6 translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
7. AAV7 translation DGVTTIANNLTSTIQVFSDSEYQLPYVLGS
8. AAV8 translation EGTKTIANNLTSTIQVFTDSEYQLPYVLGS
9. AAV9 translation NGVKTIANNLTSTVQVFTDSDYQLPYVLGS
10. Shuffle 100.7 Translation DGVTTIANNLTSTVQVFSDSEYQLPYVLGS
AAV1

FIG. 10D

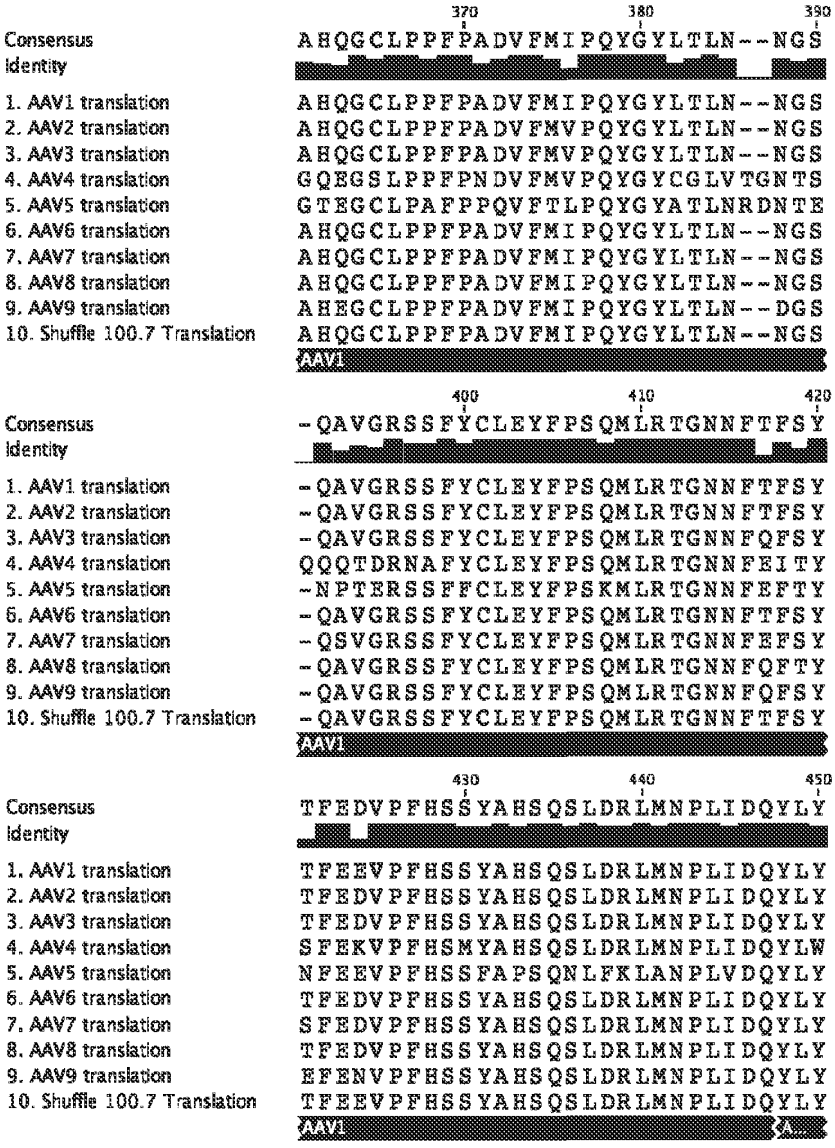

370 380 390
Consensus AHQGCLPPFPADVFMIPQYGYLTLN--NGS
Identity
1. AAV1 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
2. AAV2 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
3. AAV3 translation AHQGCLPPFPADVFMVPQYGYLTLN--NGS
4. AAV4 translation GQEGSLPPFPNDVFMVPQYGYCGLVTGNTS
5. AAV5 translation GTEGCLPAFPPQVFTLPQYGYATLNRDNTE
6. AAV6 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
7. AAV7 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
8. AAV8 translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
9. AAV9 translation AHEGCLPPFPADVFMIPQYGYLTLN--DGS
10. Shuffle 100.7 Translation AHQGCLPPFPADVFMIPQYGYLTLN--NGS
AAV1
400 410 420
Consensus -QAVGRSSFYCLEYFPSQMLRTGNNFTFSY
Identity
1. AAV1 translation -QAVGRSSFYCLEYFPSQMLRTGNNFTFSY
2. AAV2 translation -QAVGRSSFYCLEYFPSQMLRTGNNFTFSY
3. AAV3 translation -QAVGRSSFYCLEYFPSQMLRTGNNFQFSY
4. AAV4 translation QQQTDRNAFYCLEYFPSQMLRTGNNFEITY
5. AAV5 translation -NPTERSSFFCLEYFPSKMLRTGNNFEFTY
6. AAV6 translation -QAVGRSSFYCLEYFPSQMLRTGNNFTFSY
7. AAV7 translation -QSVGRSSFYCLEYFPSQMLRTGNNFEFSY
8. AAV8 translation -QAVGRSSFYCLEYFPSQMLRTGNNFQFTY
9. AAV9 translation -QAVGRSSFYCLEYFPSQMLRTGNNFQFSY
10. Shuffle 100.7 Translation -QAVGRSSFYCLEYFPSQMLRTGNNFTFSY
AAV1
430 440 450
Consensus TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
Identity
1. AAV1 translation TFEEVPFHSSYAHSQSLDRLMNPLIDQYLY
2. AAV2 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
3. AAV3 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
4. AAV4 translation SFEKVPFHSMYAHSQSLDRLMNPLIDQYLW
5. AAV5 translation NFEEVPFHSSFAPSQNLFKLANPLVDQYLY
6. AAV6 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
7. AAV7 translation SFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
8. AAV8 translation TFEDVPFHSSYAHSQSLDRLMNPLIDQYLY
9. AAV9 translation EFENVPFHSSYAHSQSLDRLMNPLIDQYLY
10. Shuffle 100.7 Translation TFEEVPFHSSYAHSQSLDRLMNPLIDQYLY
AAV1 A

FIG. 10E

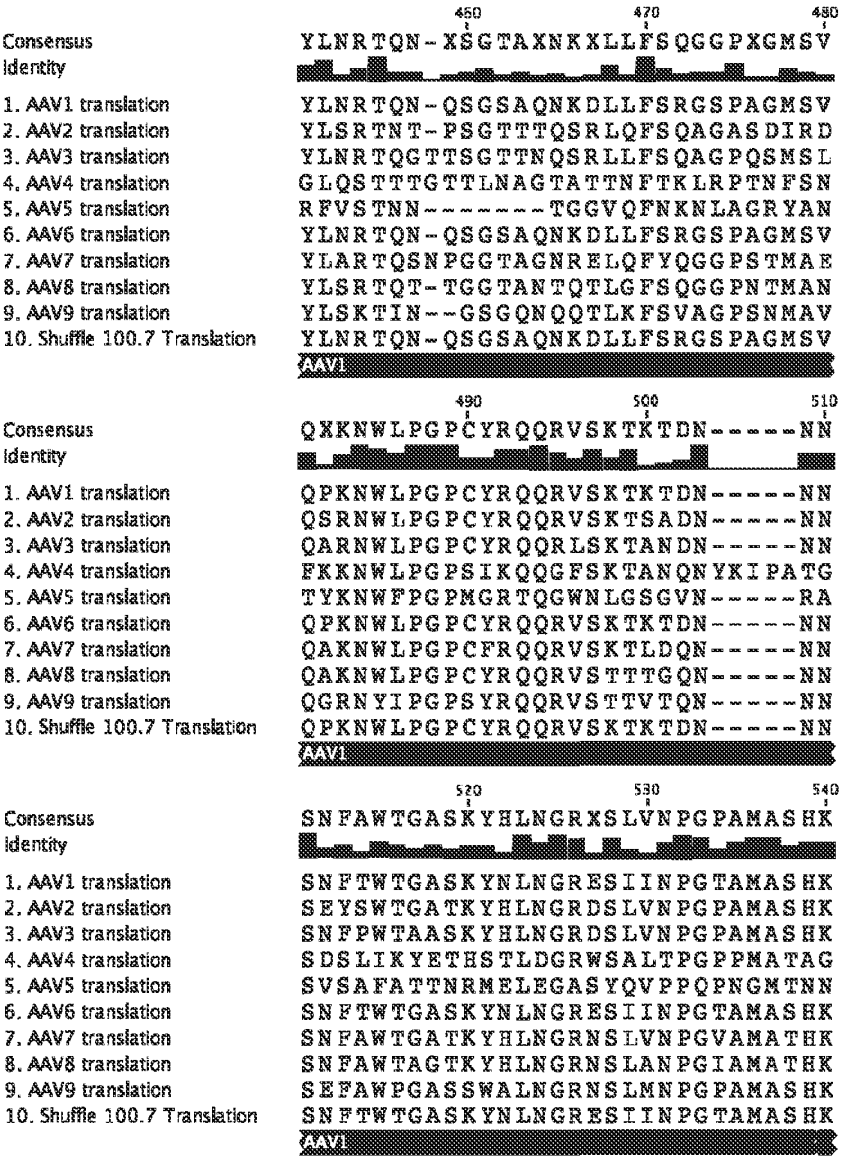

460
470
480
Consensus
Identity
1. AAV1 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
2. AAV2 translation YLSRTNT-PSGTTTQSRLQFSQAGASDIRD
3. AAV3 translation YLNRTQGTTSGTTNQSRLLFSQAGPQSMSL
4. AAV4 translation GLQSTTTGTTLNAGTATTNFTKLRPTNFSN
5. AAV5 translation RFVSTNN--------TGGVQFNKNLAGRYAN
6. AAV6 translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
7. AAV7 translation YLARTQSNPGGTAGNRELQFYQGGPSTMAE
8. AAV8 translation YLSRTQT-TGGTANTQTLGFSQGGPNTMAN
9. AAV9 translation YLSKTIN--GSGQNQQTLKFSVAGPSNMAV
10. Shuffle 100.7 Translation YLNRTQN-QSGSAQNKDLLFSRGSPAGMSV
AAV1
490
500
510
Consensus
Identity
1. AAV1 translation QPKNWLPGPCYRQQRVSKTKTDN------NN
2. AAV2 translation QSRNWLPGPCYRQQRVSKTSADN------NN
3. AAV3 translation QARNWLPGPCYRQQRLSKTANDN------NN
4. AAV4 translation FKKNWLPGPSIKQQGFSKTANQNYKIPATG
5. AAV5 translation TYKNWFPGPMGRTQGWNLGSGVN------RA
6. AAV6 translation QPKNWLPGPCYRQQRVSKTKTDN------NN
7. AAV7 translation QAKNWLPGPCFRQQRVSKTLDQN------NN
8. AAV8 translation QAKNWLPGPCYRQQRVSTTTGQN------NN
9. AAV9 translation QGRNYIPGPSYRQQRVSTTVTQN------NN
10. Shuffle 100.7 Translation QPKNWLPGPCYRQQRVSKTKTDN------NN
AAV1
520
530
540
Consensus
Identity
1. AAV1 translation SNFTWTGASKYNLNGRESIINPGTAMASHK
2. AAV2 translation SEYSWTGATKYHLNGRDSLVNPGPAMASHK
3. AAV3 translation SNFPWTAASKYHLNGRDSLVNPGPAMASHK
4. AAV4 translation SDSLIKYETHSTLDGRWSALTPGPPMATAG
5. AAV5 translation SVSAFATTNRMELEGASYQVPPQPNGMTNN
6. AAV6 translation SNFTWTGASKYNLNGRESIINPGTAMASHK
7. AAV7 translation SNFAWTGATKYHLNGRNSLVNPGVAMATHK
8. AAV8 translation SNFAWTAGTKYHLNGRNSLANPGIAMATHK
9. AAV9 translation SEFAWPGASSWALNGRNSLMNPGPAMASHK
10. Shuffle 100.7 Translation SNFTWTGASKYNLNGRESIINPGTAMASHK
AAV1

FIG. 10F

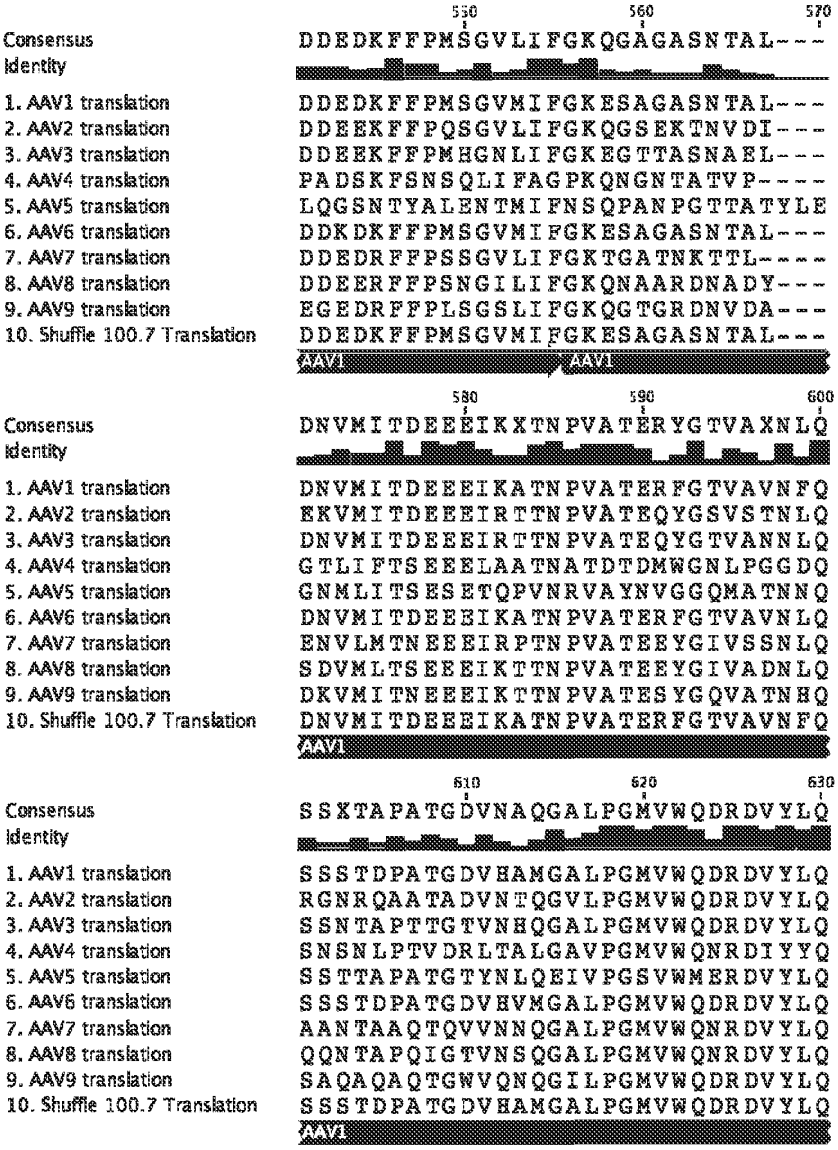

550 560 570
Consensus DDEDKFFPMSGVLIFGKQGAGASNTAL---
Identity
1. AAV1 translation DDEDKFFPMSGVMIFGKESAGASNTAL---
2. AAV2 translation DDEEKFFPQSGVLIFGKQGSEKTNVDI---
3. AAV3 translation DDEEKFFPMHGNLIFGKEGTTASNAEL---
4. AAV4 translation PADSKFSNSQLIFAGPKQNGNTATVP----
5. AAV5 translation LQGSNTYALENTMIFNSQPANPGTTATYLE
6. AAV6 translation DDKDKFFPMSGVMIFGKESAGASNTAL---
7. AAV7 translation DDEDRFFPSSGVLIFGKTGATNKTTL----
8. AAV8 translation DDEERFFPSNGILIFGKQNAARDNADY---
9. AAV9 translation EGEDRFFPLSGSLIFGKQGTGRDNVDA---
10. Shuffle 100.7 Translation DDEDKFFPMSGVMIFGKESAGASNTAL---
AAV1 AAV1
580 590 600
Consensus DNVMITDEEEIKXTNPVATERYGTVAXNLQ
Identity
1. AAV1 translation DNVMITDEEEIKATNPVATERFGTVAVNFQ
2. AAV2 translation EKVMITDEEEIRTTNPVATEQYGSVSTNLQ
3. AAV3 translation DNVMITDEEEIRTTNPVATEQYGTVANNLQ
4. AAV4 translation GTLIFTSEEELAATNATDTDMWGNLPGGDQ
5. AAV5 translation GNMLITSESETQPVNRVAYNVGGQMATNNQ
6. AAV6 translation DNVMITDEEEIKATNPVATERFGTVAVNLQ
7. AAV7 translation ENVLMTNEEEIRPTNPVATEEYGIVSSNLQ
8. AAV8 translation SDVMLTSEEEIKTTNPVATEEYGIVADNLQ
9. AAV9 translation DKVMITNEEEIKTTNPVATESYGQVATNHQ
10. Shuffle 100.7 Translation DNVMITDEEEIKATNPVATERFGTVAVNFQ
AAV1
610 620 630
Consensus SSKTAPATGDVNAQGALPGMVWQDRDVYLQ
Identity
1. AAV1 translation SSSTDPATGDVHAMGALPGMVWQDRDVYLQ
2. AAV2 translation RGNRQAATADVNTQGVLPGMVWQDRDVYLQ
3. AAV3 translation SSNTAPTTGTVNHQGALPGMVWQDRDVYLQ
4. AAV4 translation SNSNLPTVDRLTALGAVPGMVWQNRDIYYQ
5. AAV5 translation SSTTAPATGTYNLQEIVPGSVWMERDVYLQ
6. AAV6 translation SSSTDPATGDVHVMGALPGMVWQDRDVYLQ
7. AAV7 translation AANTAAQTQVVNNQGALPGMVWQNRDVYLQ
8. AAV8 translation QQNTAPQIGTVNSQGALPGMVWQNRDVYLQ
9. AAV9 translation SAQAQAQTGWVQNQGILPGMVWQDRDVYLQ
10. Shuffle 100.7 Translation SSSTDPATGDVHAMGALPGMVWQDRDVYLQ
AAV1

FIG. 10G

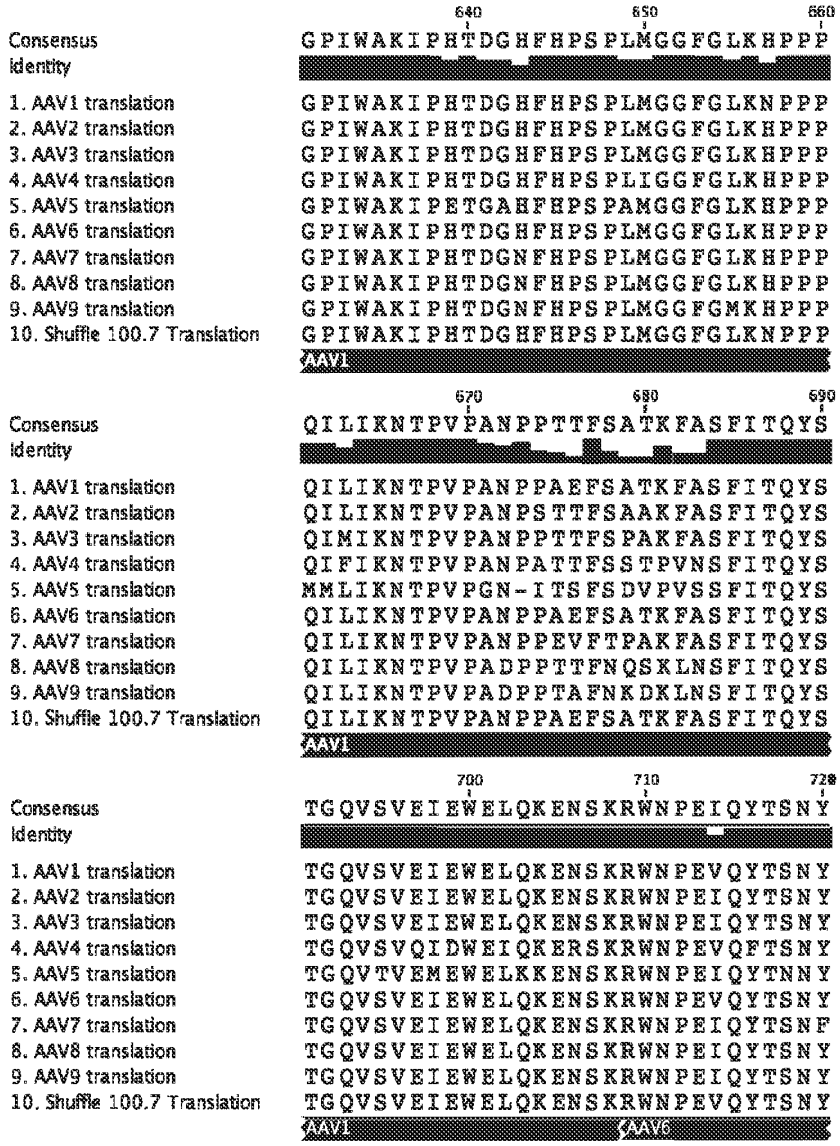

640 650 660
Consensus GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
Identity
1. AAV1 translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
2. AAV2 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
3. AAV3 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
4. AAV4 translation GPIWAKIPHTDGHFHPSPLIGGFGLKHPPP
5. AAV5 translation GPIWAKIPETGAHFHPSPAMGGFGLKHPPP
6. AAV6 translation GPIWAKIPHTDGHFHPSPLMGGFGLKHPPP
7. AAV7 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
8. AAV8 translation GPIWAKIPHTDGNFHPSPLMGGFGLKHPPP
9. AAV9 translation GPIWAKIPHTDGNFHPSPLMGGFGMKHPPP
10. Shuffle 100.7 Translation GPIWAKIPHTDGHFHPSPLMGGFGLKNPPP
AAV1
670 680 690
Consensus QILIKNTPVPANPPTTFSATKFASFITQYS
Identity
1. AAV1 translation QILIKNTPVPANPPAEFSATKFASFITQYS
2. AAV2 translation QILIKNTPVPANPSTTFSAAKFASFITQYS
3. AAV3 translation QIMIKNTPVPANPPTTFSPAKFASFITQYS
4. AAV4 translation QIFIKNTPVPANPATTFSSTPVNSFITQYS
5. AAV5 translation MMLIKNTPVPGN-ITSFSDVPVSSFITQYS
6. AAV6 translation QILIKNTPVPANPPAEFSATKFASFITQYS
7. AAV7 translation QILIKNTPVPANPPEVFTPAKFASFITQYS
8. AAV8 translation QILIKNTPVPADPPTTFNQSKLNSFITQYS
9. AAV9 translation QILIKNTPVPADPPTAFNKDKLNSFITQYS
10. Shuffle 100.7 Translation QILIKNTPVPANPPAEFSATKFASFITQYS
AAV1
700 710 720
Consensus TGQVSVEIEWELQKENSKRWNPEIQYTSNY
Identity
1. AAV1 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
2. AAV2 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
3. AAV3 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
4. AAV4 translation TGQVSVQIDWEIQKERSKRWNPEVQFTSNY
5. AAV5 translation TGQVTVEMEWELKKENSKRWNPEIQYTNNY
6. AAV6 translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
7. AAV7 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNF
8. AAV8 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
9. AAV9 translation TGQVSVEIEWELQKENSKRWNPEIQYTSNY
10. Shuffle 100.7 Translation TGQVSVEIEWELQKENSKRWNPEVQYTSNY
AAV1
AAV6

FIG. 10H

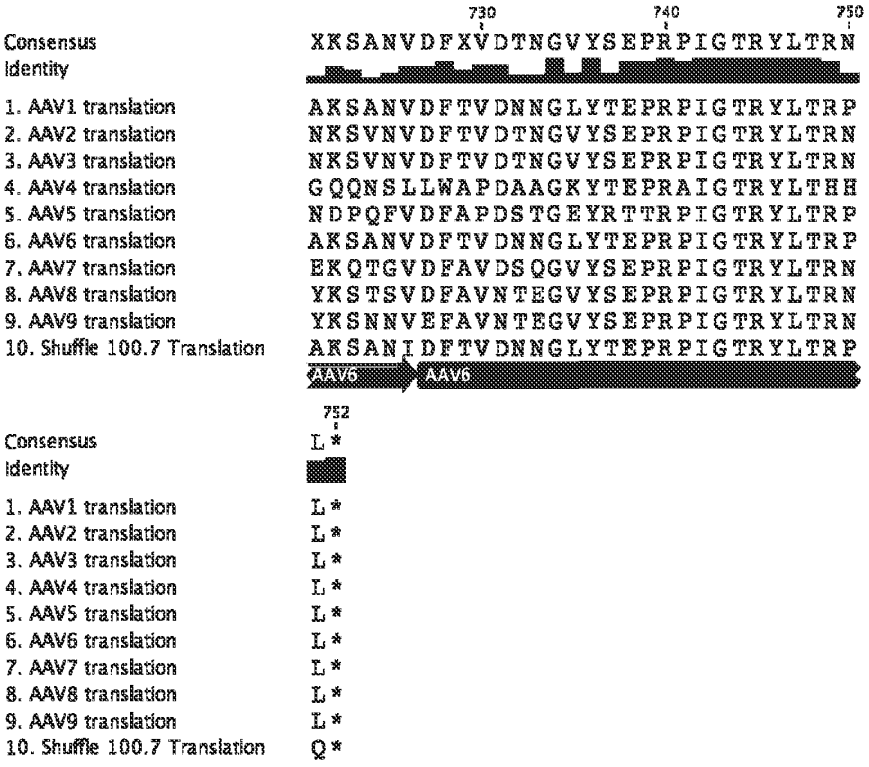

730
740
750
Consensus XKSANVDFXVDTNGVYSEPRPIGTRYLTRN
Identity
1. AAV1 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
2. AAV2 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
3. AAV3 translation NKSVNVDFTVDTNGVYSEPRPIGTRYLTRN
4. AAV4 translation GQQNSLLWAPDAAGKYTEPRAIGTRYLTHH
5. AAV5 translation NDPQFVDFAPDSTGEYRTTRPIGTRYLTRP
6. AAV6 translation AKSANVDFTVDNNGLYTEPRPIGTRYLTRP
7. AAV7 translation EKQTGVDFAVDSQGVYSEPRPIGTRYLTRN
8. AAV8 translation YKSTSVDFAVNTEGVYSEPRPIGTRYLTRN
9. AAV9 translation YKSNNVEFAVNTEGVYSEPRPIGTRYLTRN
10. Shuffle 100.7 Translation AKSANIDFTVDNNGLYTEPRPIGTRYLTRP
AAV6
AAV6
752
Consensus L*
Identity
1. AAV1 translation L*
2. AAV2 translation L*
3. AAV3 translation L*
4. AAV4 translation L*
5. AAV5 translation L*
6. AAV6 translation L*
7. AAV7 translation L*
8. AAV8 translation L*
9. AAV9 translation L*
10. Shuffle 100.7 Translation Q*

FIG. 10I

		Neutralizing Serum Dilution					
		AAV1	AAV2	AAV8	Shuffle 100-3	Shuffle 100-7	SM 10-2
Serotype	Animal						
AAV1	1	1:1000	none	1:250	1:250	1:1000	none
	2	1:1000	1:25	1:250	1:250	1:1000	none
	3	1:1000	none	1:250	1:250	1:1000	none
AAV2	1	1:50	1:500	1:100	none	none	1:250
	2	1:50	1:500	1:100	none	1:25	1:500
	3	1:1000	1:1000	1:100	none	1:100	1:500
AAV8	1	1:100	none	1:250	none	1:100	none
	2	1:250	none	1:100	none	1:100	none
	3	1:250	none	1:250	none	1:250	none
Shuffle 100-3	1	1:1000	none	1:500	1:100	1:1000	none
	2	1:1000	none	1:500	1:100	1:1000	none
	3	1:1000	none	1:100	1:250	1:1000	none
Shuffle 100-7	1	1:1000	none	1:100	1:100	1:500	none
	2	1:1000	none	1:100	1:250	1:1000	none
	3	1:1000	none	1:50	1:100	1:1000	none

FIG. 11

FIG. 12

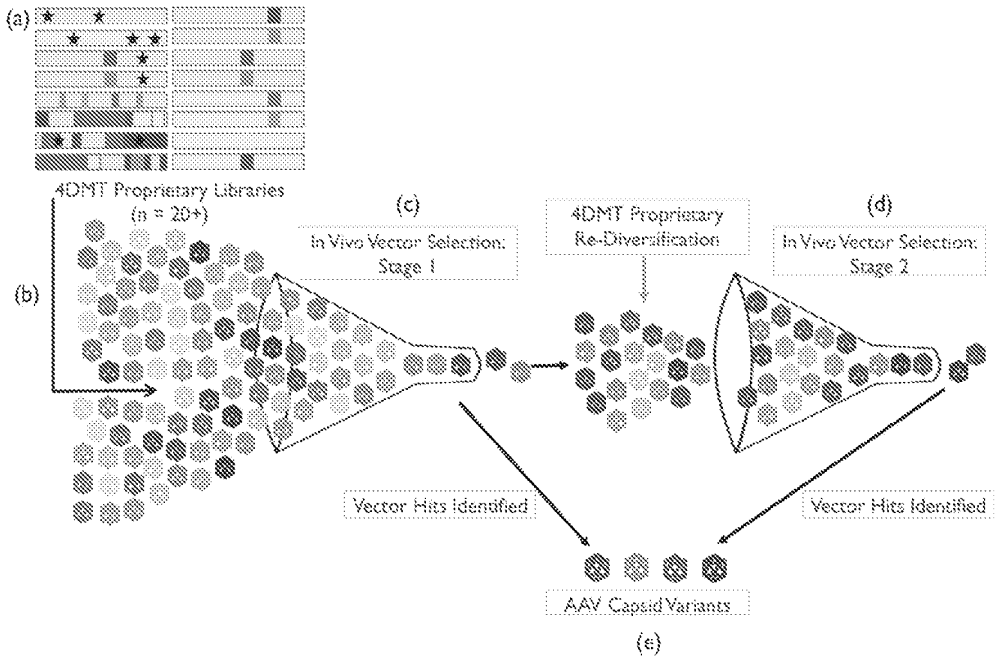

(a)
4DMT Proprietary Libraries
(n = 20+)
(b)
(c)
In Vivo Vector Selection:
Stage 1
4DMT Proprietary
Re-Diversification
(d)
In Vivo Vector Selection:
Stage 2
Vector Hits Identified
Vector Hits Identified
AAV Capsid Variants
(e)

FIG. 13A

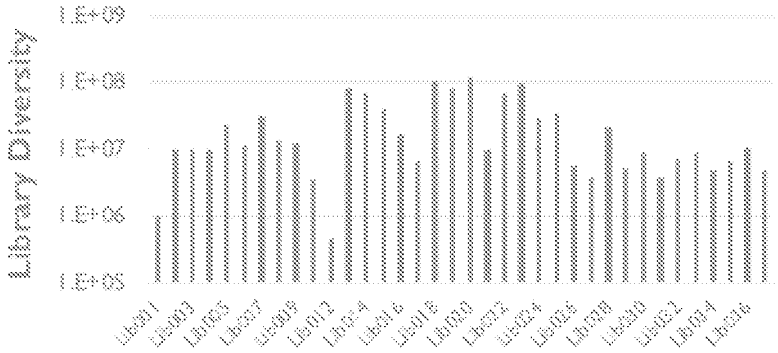


FIG. 13B

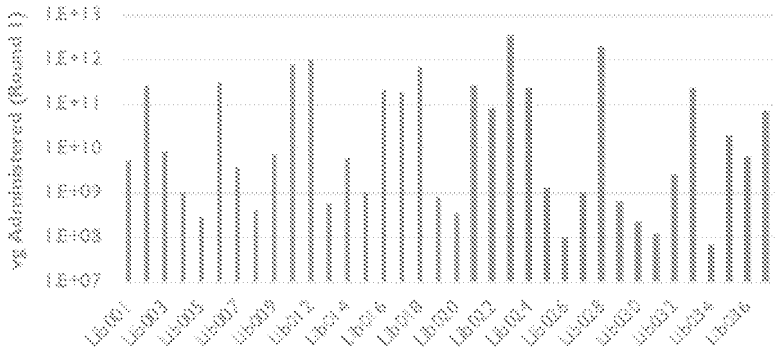


FIG. 14A

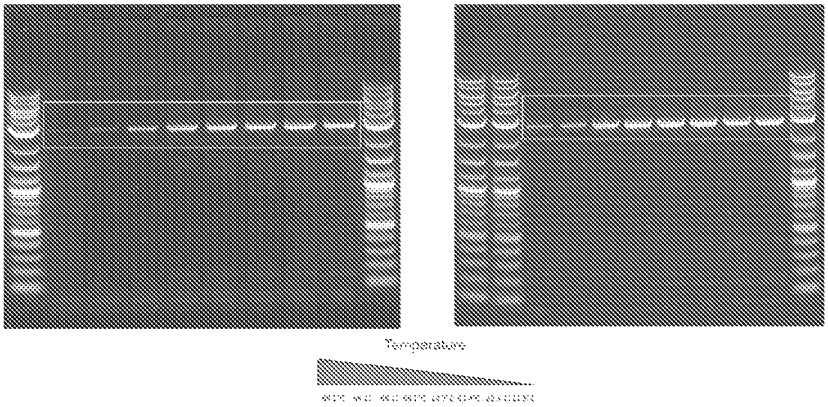


FIG. 14B

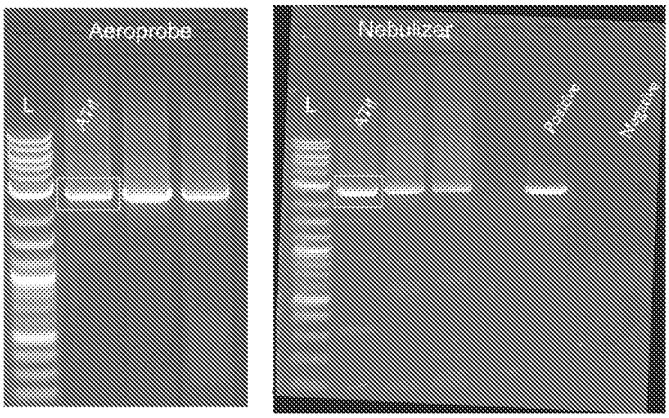


FIG. 15A

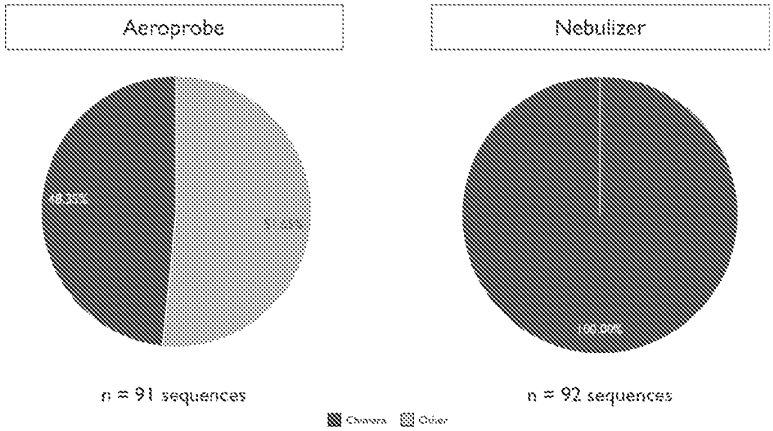


FIG. 15B

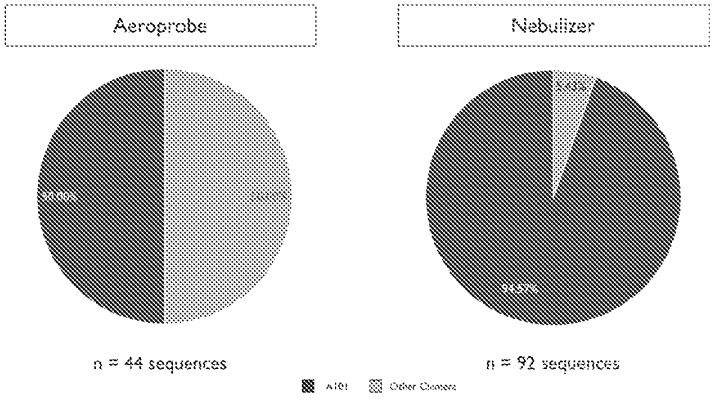


FIG. 16

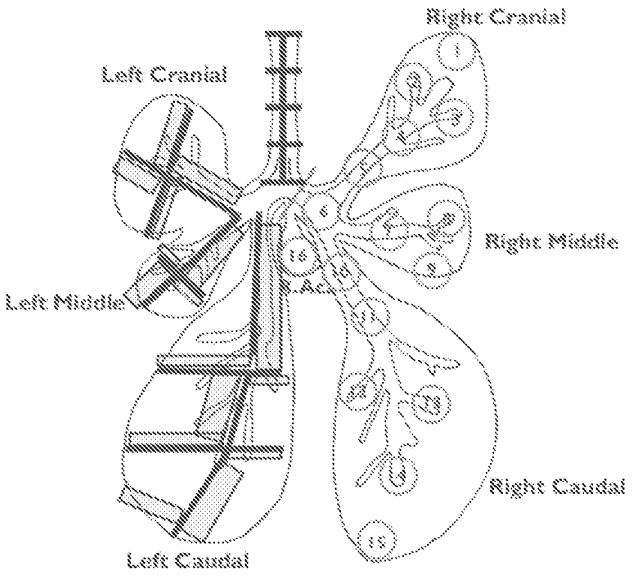

Right Cranial
Left Cranial
Right Middle
Left Middle
Right Caudal
Left Caudal

FIG. 17

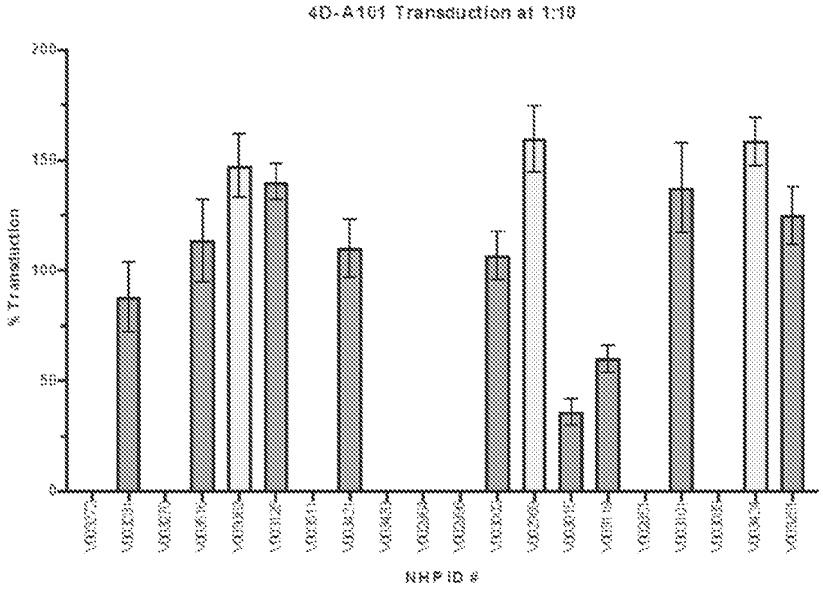


FIG. 18

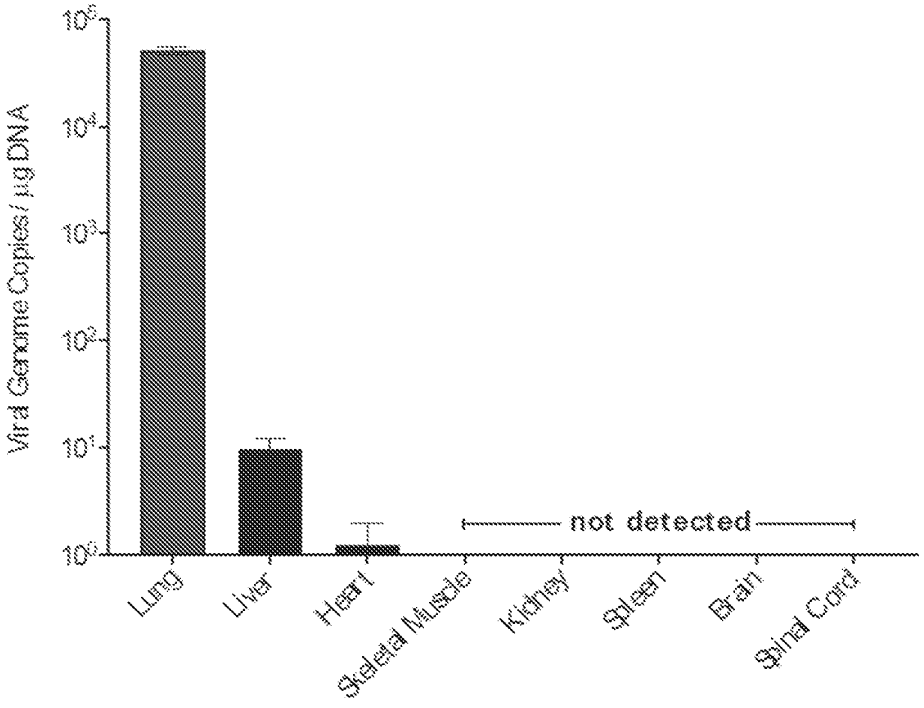

Viral Genome Copies / µg DNA
10^6
10^4
10^3
10^2
10^1
10^0
not detected
Lung
Liver
Heart
Skeletal Muscle
Kidney
Spleen
Brain
Spinal Cord

FIG. 19

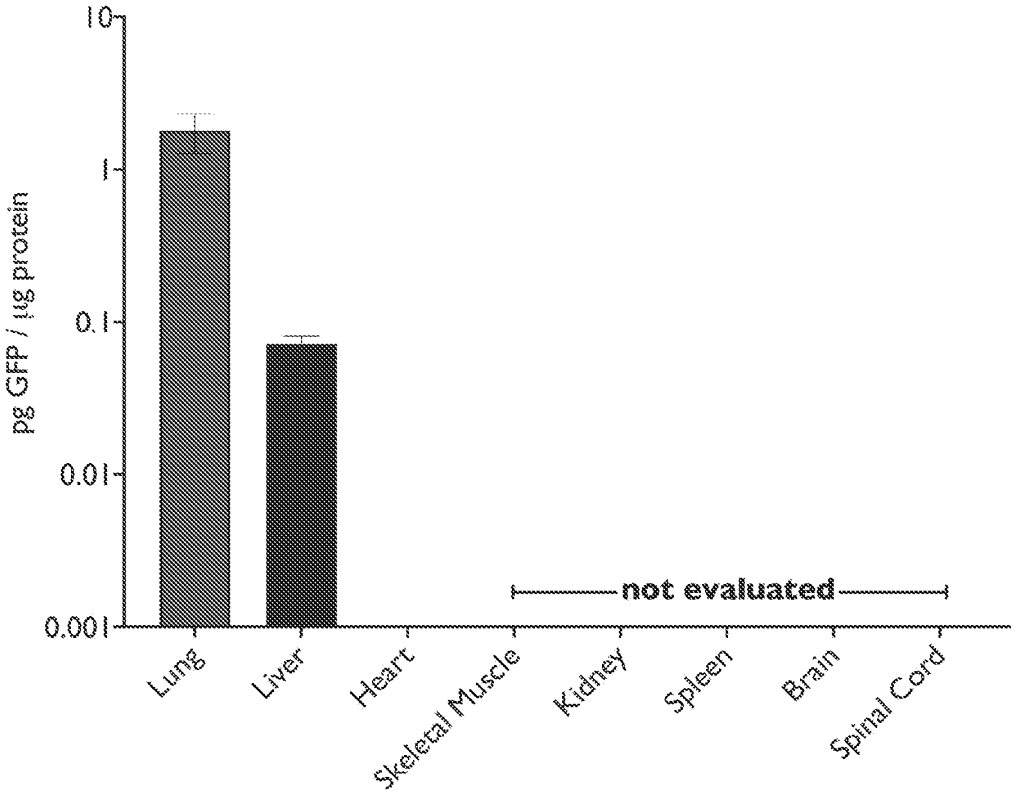

10
1
0.1
0.01
0.001
pg GFP / ug protein
not evaluated
Lung
Liver
Heart
Skeletal Muscle
Kidney
Spleen
Brain
Spinal Cord

FIG. 20

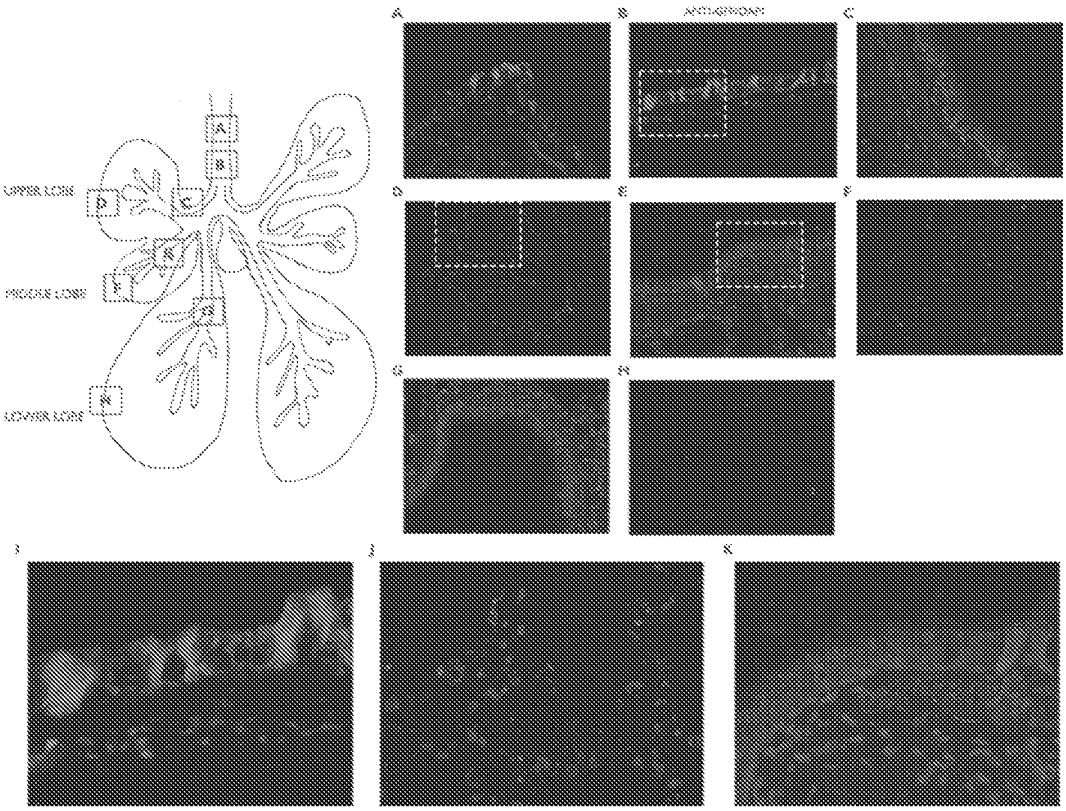


FIG. 21A

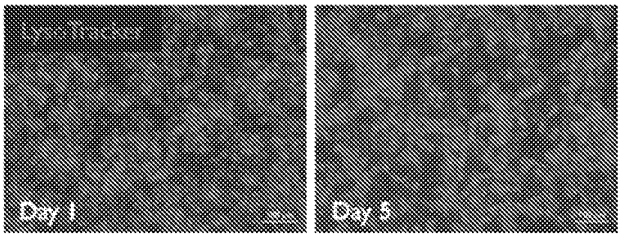


FIG. 21B

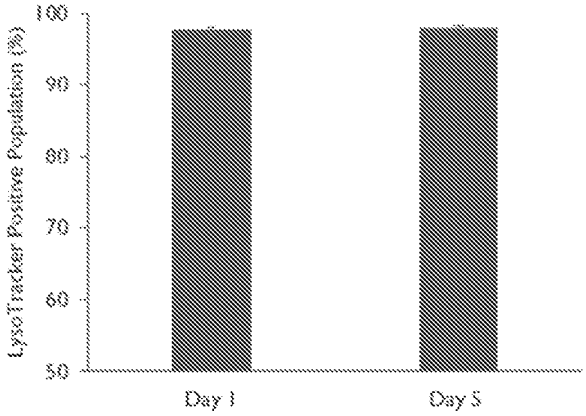


FIG. 21C

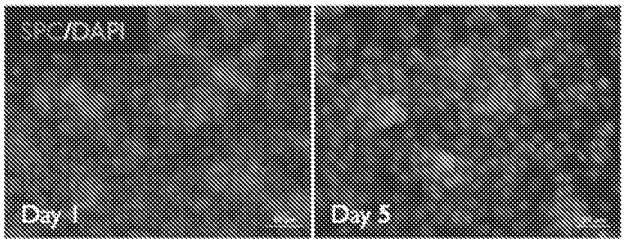


FIG. 21D

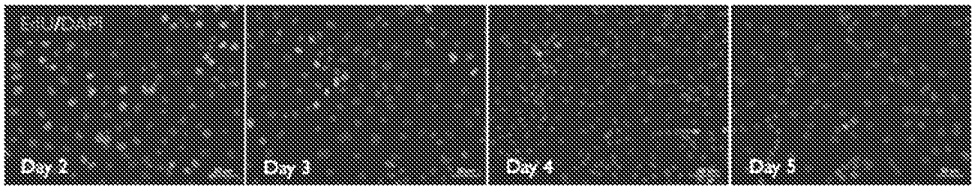


FIG. 22A

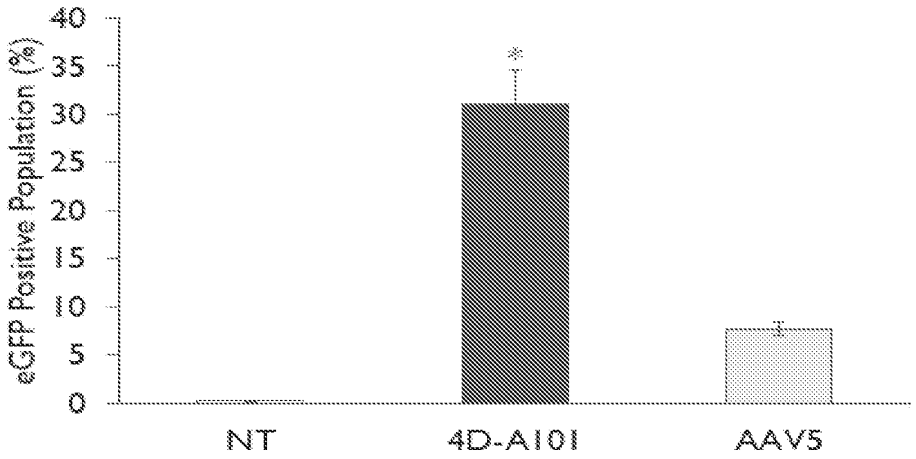


FIG. 22B

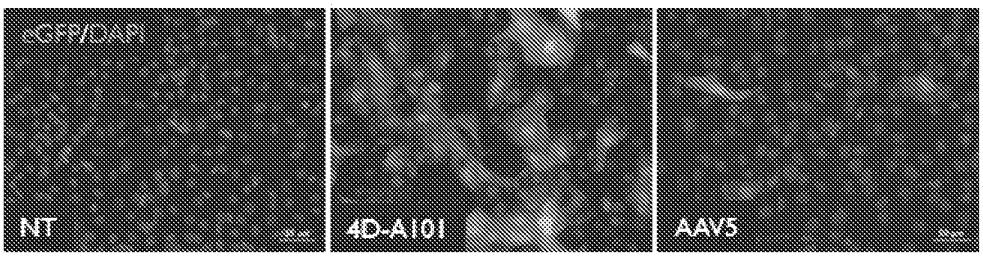


FIG. 23A

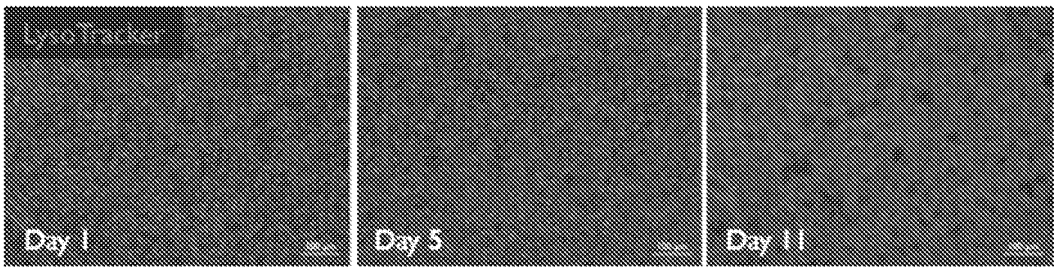


FIG. 23B

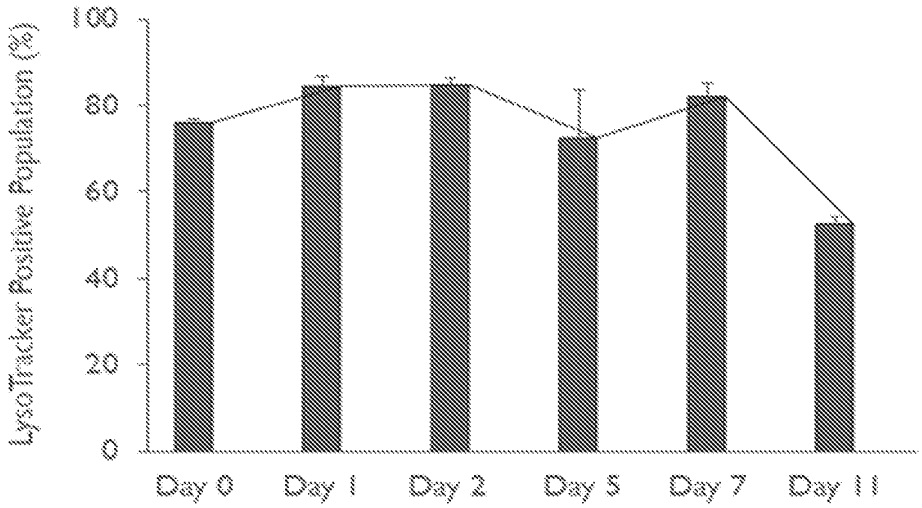


FIG. 23C

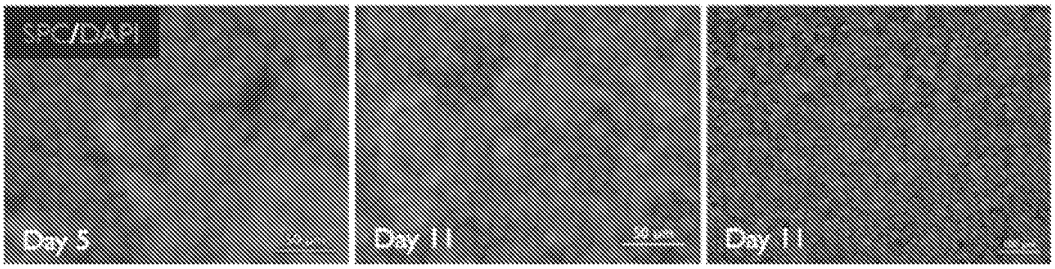


FIG. 23D

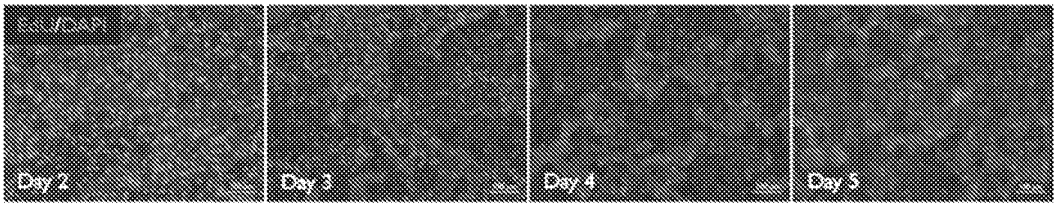


FIG. 24

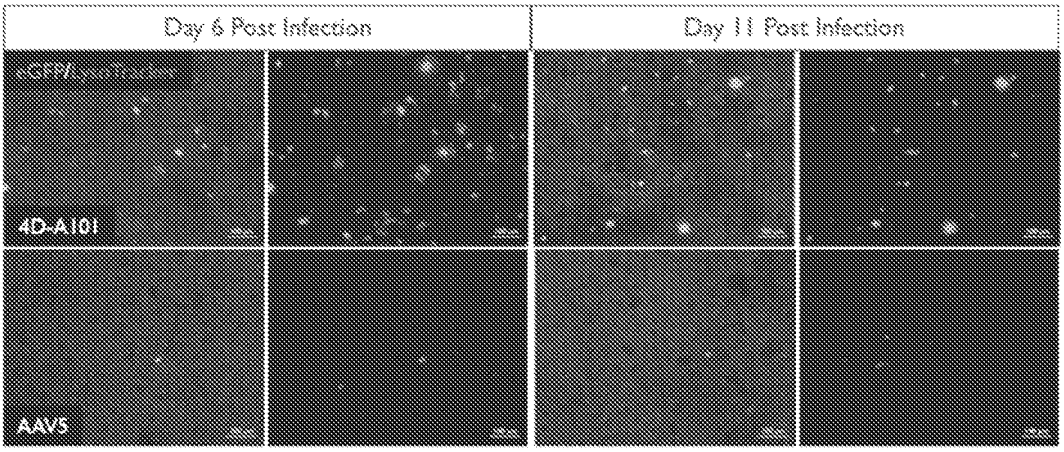


FIG. 25

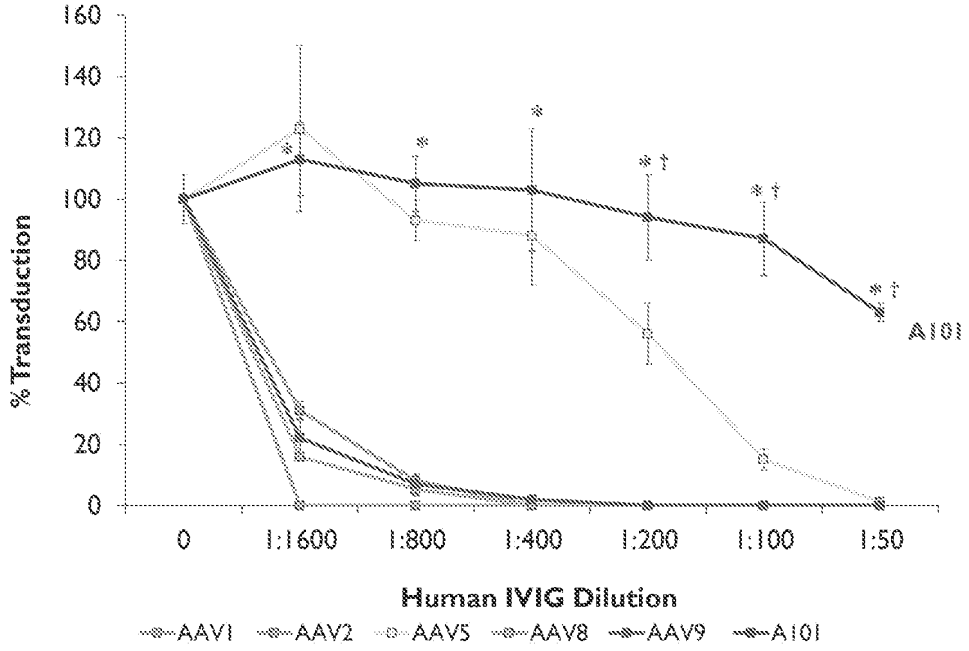

160
140
120
100
80
60
40
20
0
% Transduction
0
1:1600
1:800
1:400
1:200
1:100
1:50
Human IVIG Dilution
AAV1
AAV2
AAV5
AAV8
AAV9
A101
*
*
*
*†
*†
*†
A101

FIG. 26

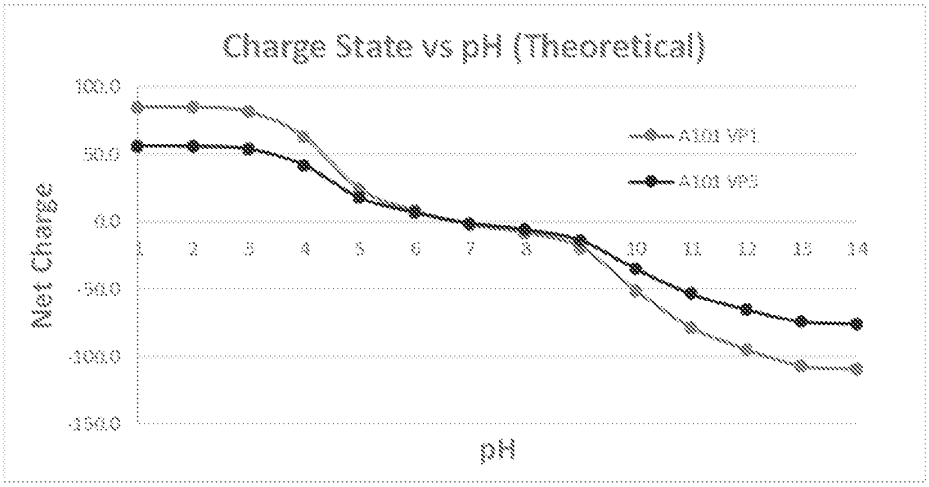

Charge State vs pH (Theoretical)
100.0
50.0
0.0
-50.0
-100.0
-150.0
Net Charge
1
2
3
4
5
6
7
8
9
10
11
12
13
14
pH
A101 VP1
A101 VP3

FIG. 27

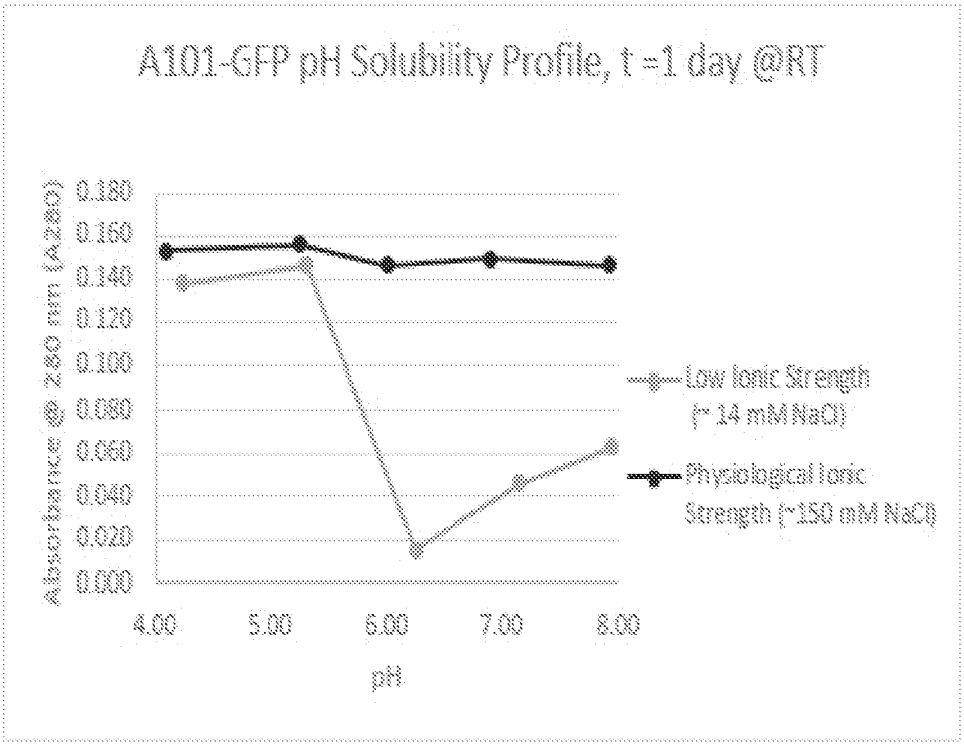

A101-GFP pH Solubility Profile, t =1 day @RT
Absorbance @ 280 nm (A280)
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
4.00
5.00
6.00
7.00
8.00
pH
Low Ionic Strength (~ 14 mM NaCl)
Physiological Ionic Strength (~150 mM NaCl)

FIG. 28A

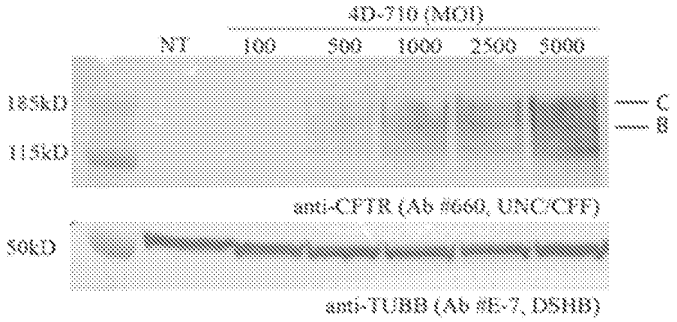


FIG. 28B

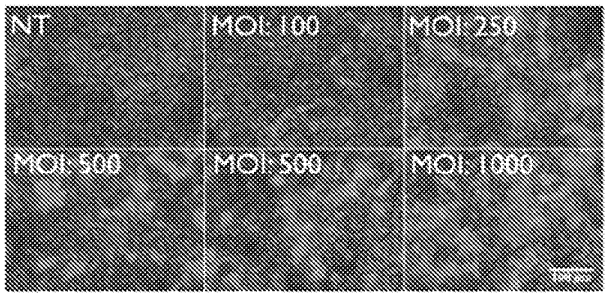


FIG. 28C

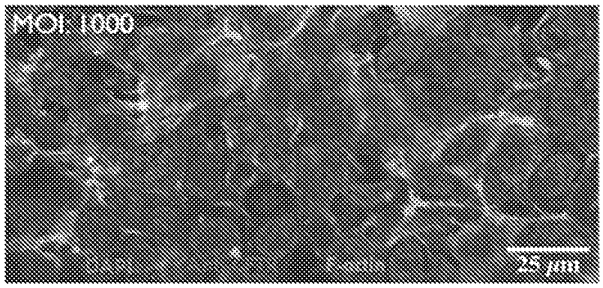


FIG. 29A

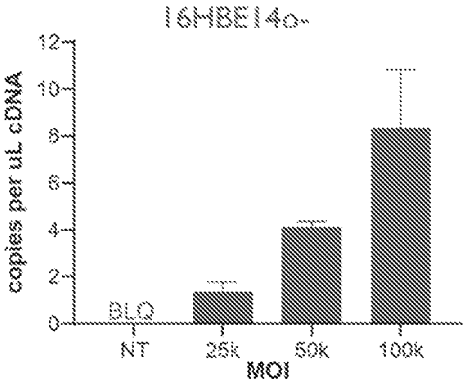


FIG. 29B

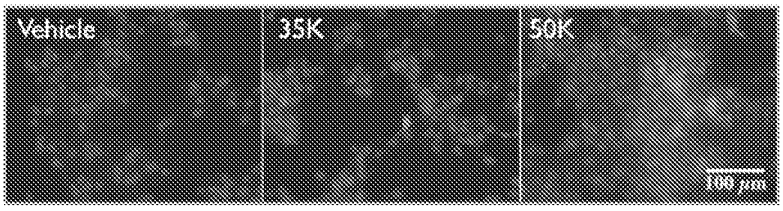


FIG. 30

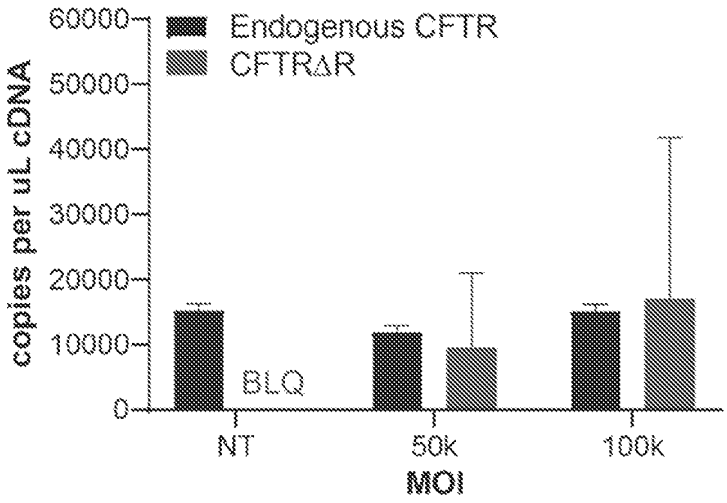

60000
50000
40000
30000
20000
10000
0
copies per uL cDNA
Endogenous CFTR
CFTRΔR
BLQ
NT
50k
100k
MOI

FIG. 31

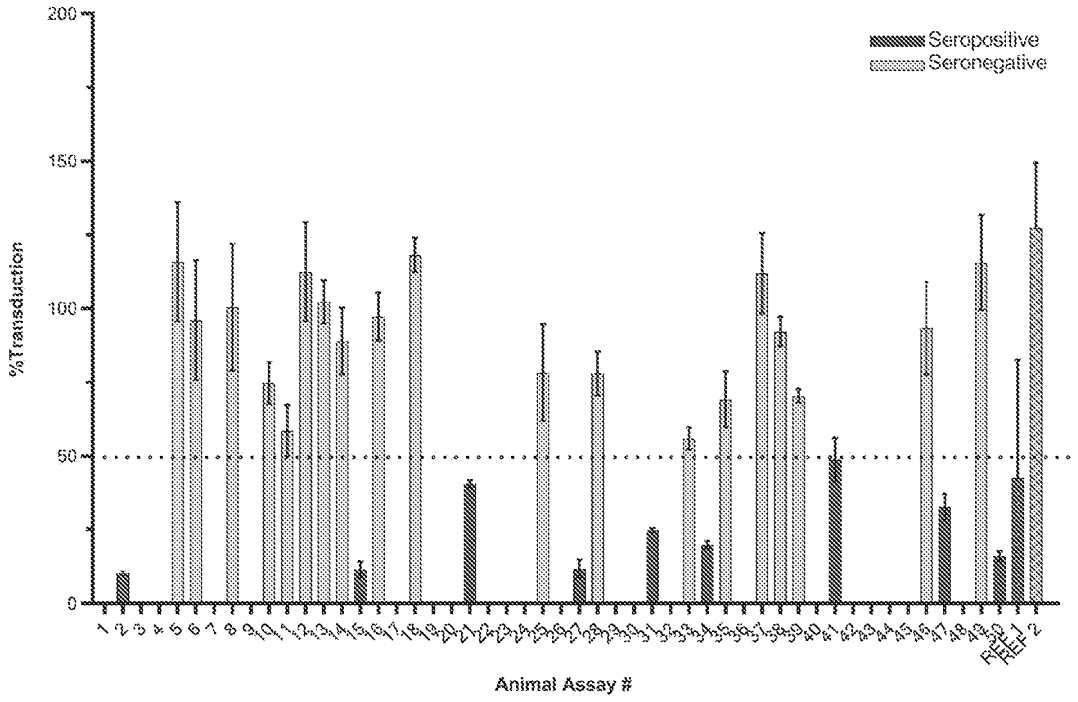

Seropositive
Seronegative
%Transduction
200
150
100
50
0
Animal Assay #
PRE 1
PRE 2

FIG. 32A

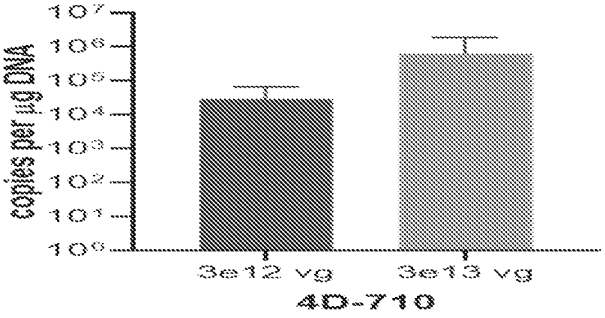


FIG. 32B

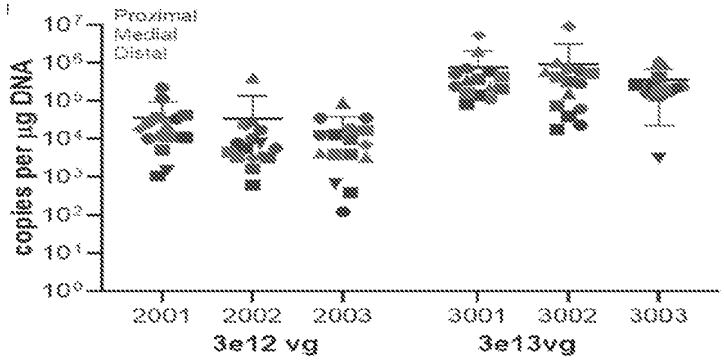


FIG. 32C

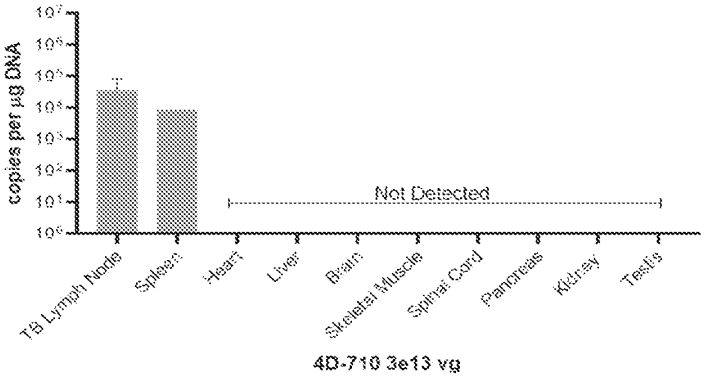


FIG. 33A

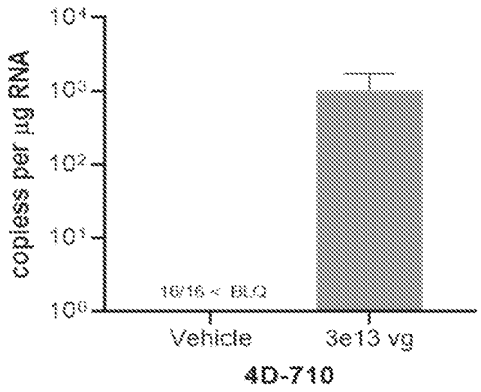


FIG. 33B

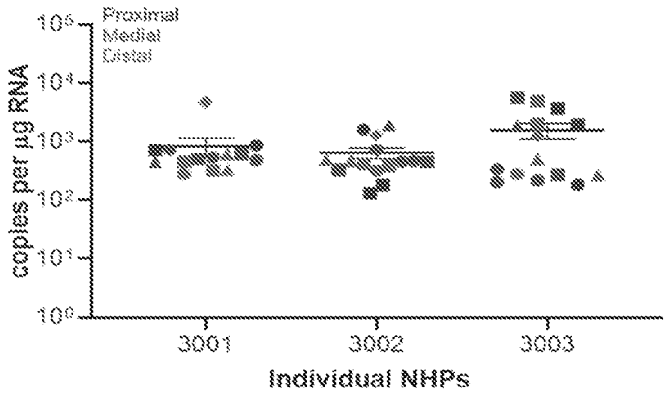


FIG. 34A

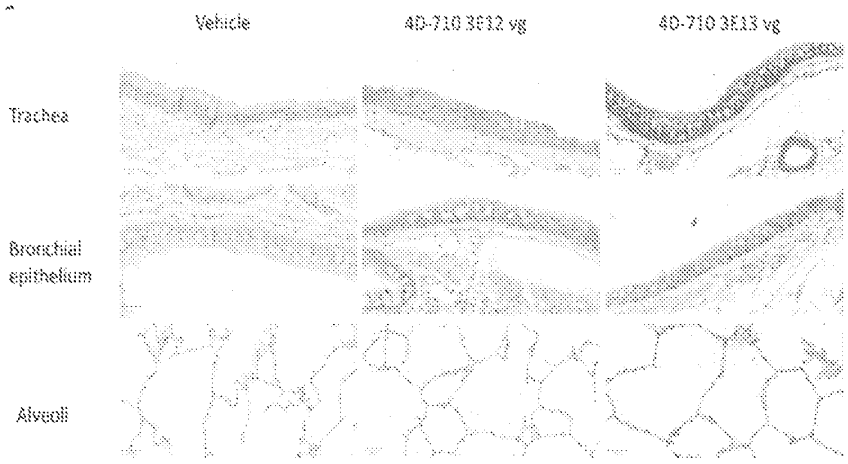


FIG. 34B

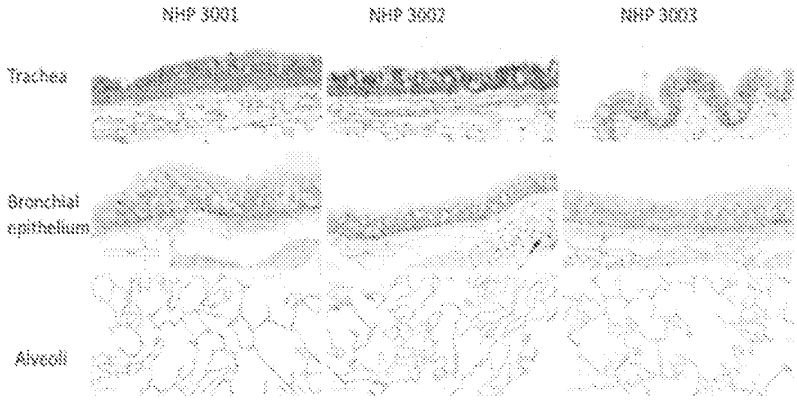
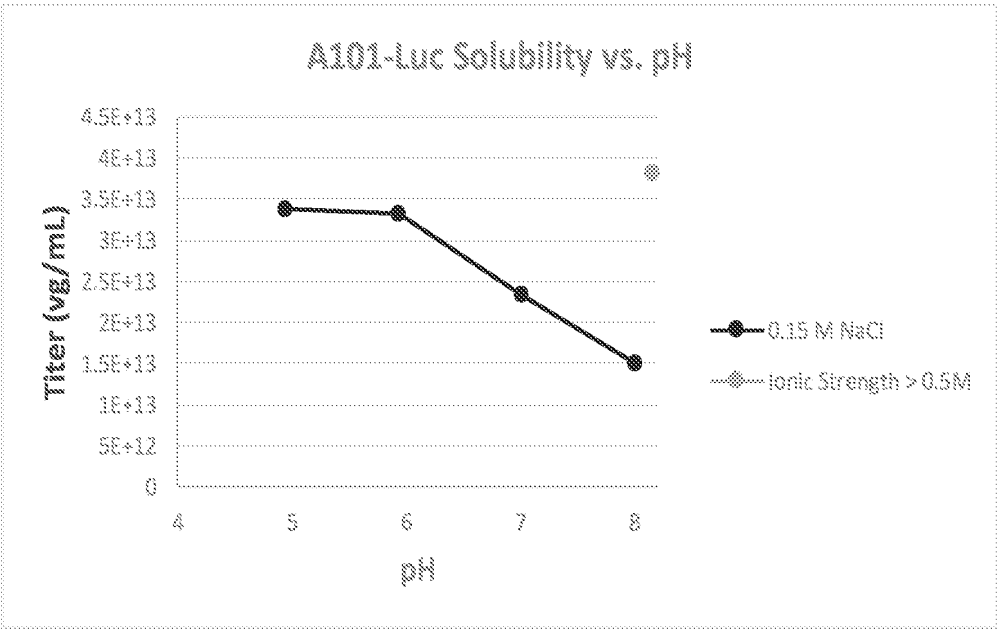


FIG. 35


A101-Luc Solubility vs. pH
Titer (vg/mL)
4.5E+13
4E+13
3.5E+13
3E+13
2.5E+13
2E+13
1.5E+13
1E+13
5E+12
0
4
5
6
7
8
pH
0.15 M NaCl
Ionic Strength > 0.5M