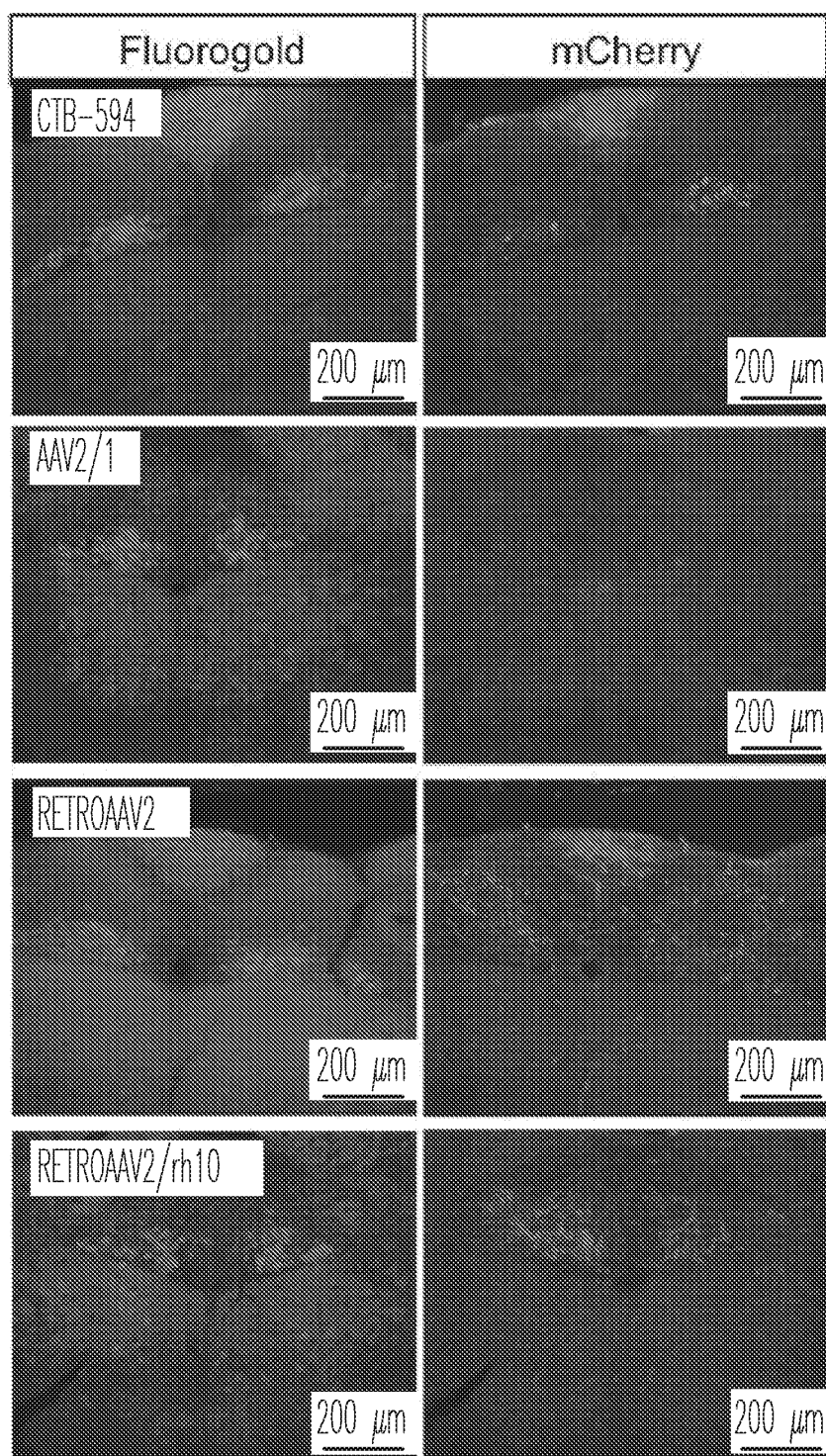
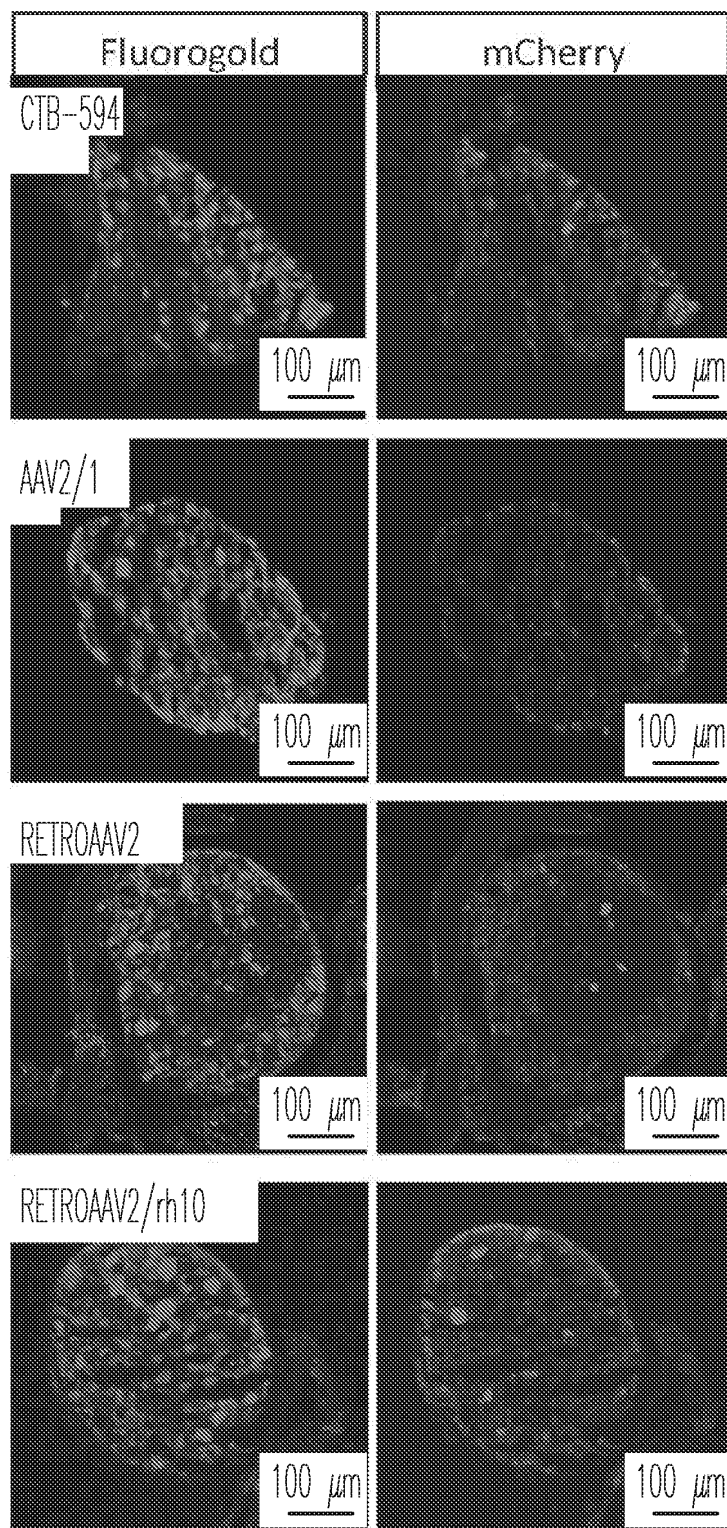


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*Fig. 1*

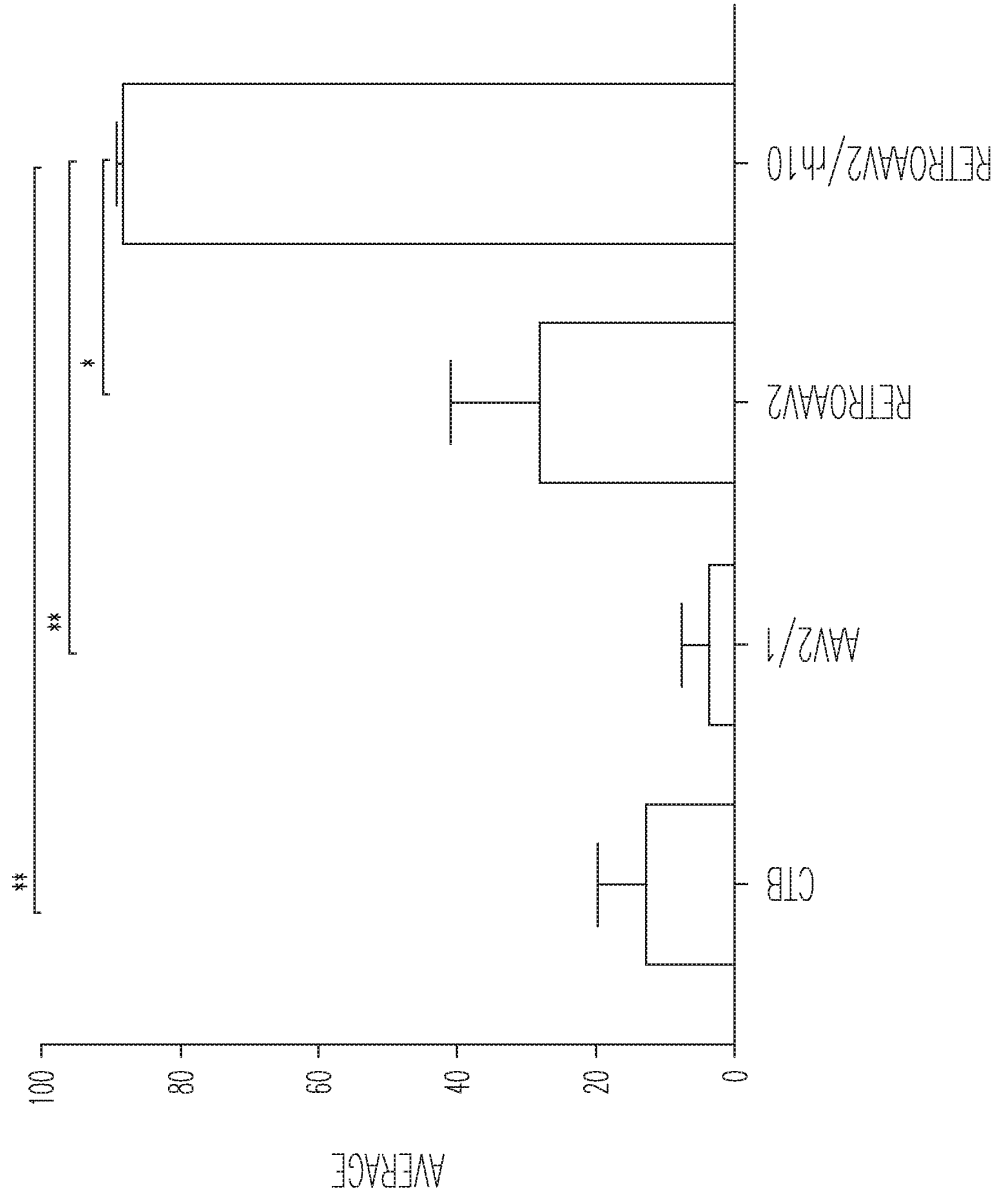
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*Fig. 2A*

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Fig. 2B



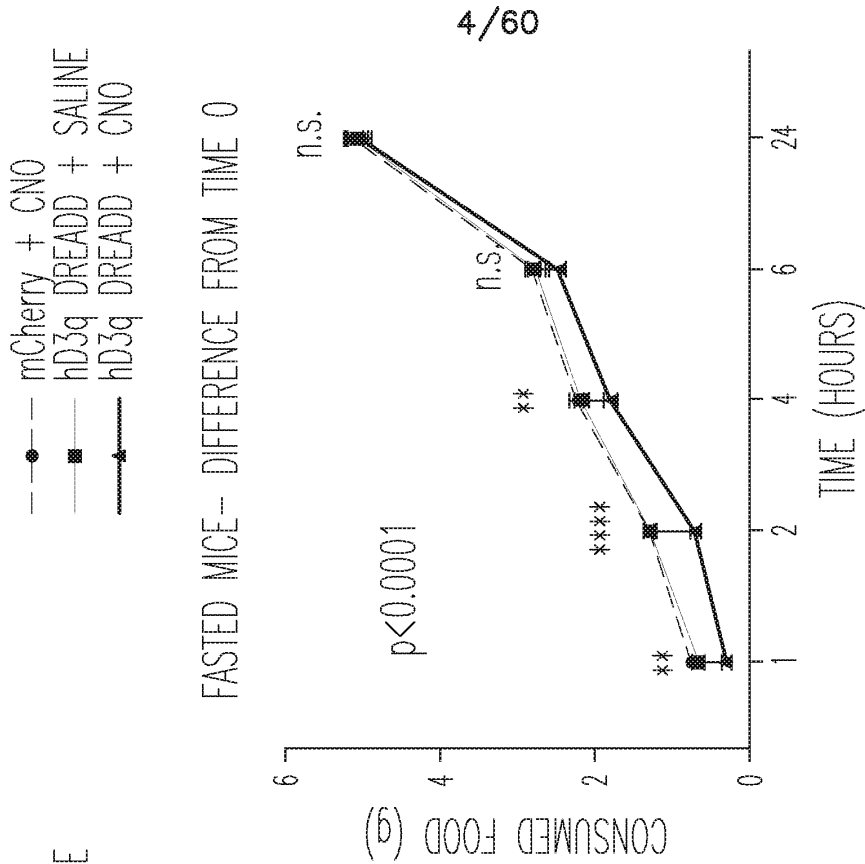
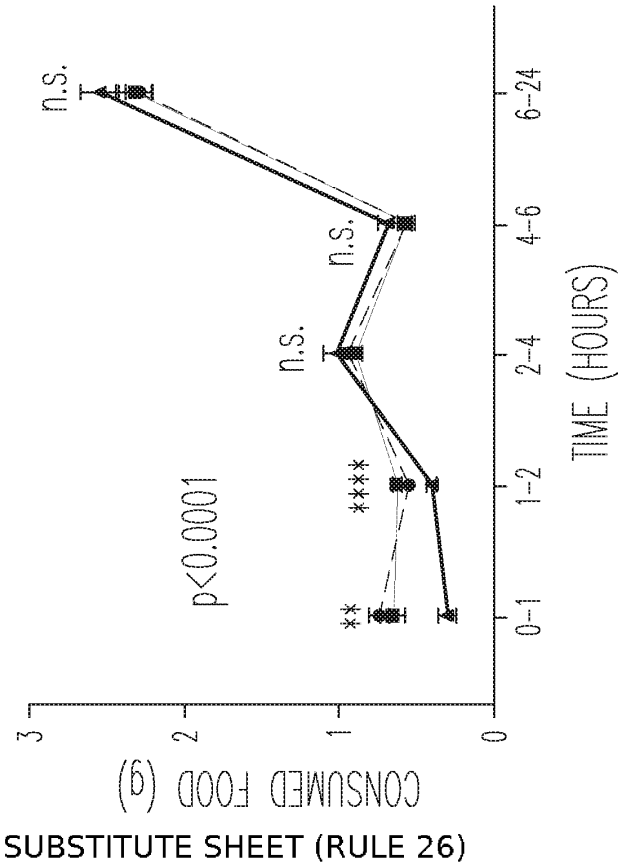
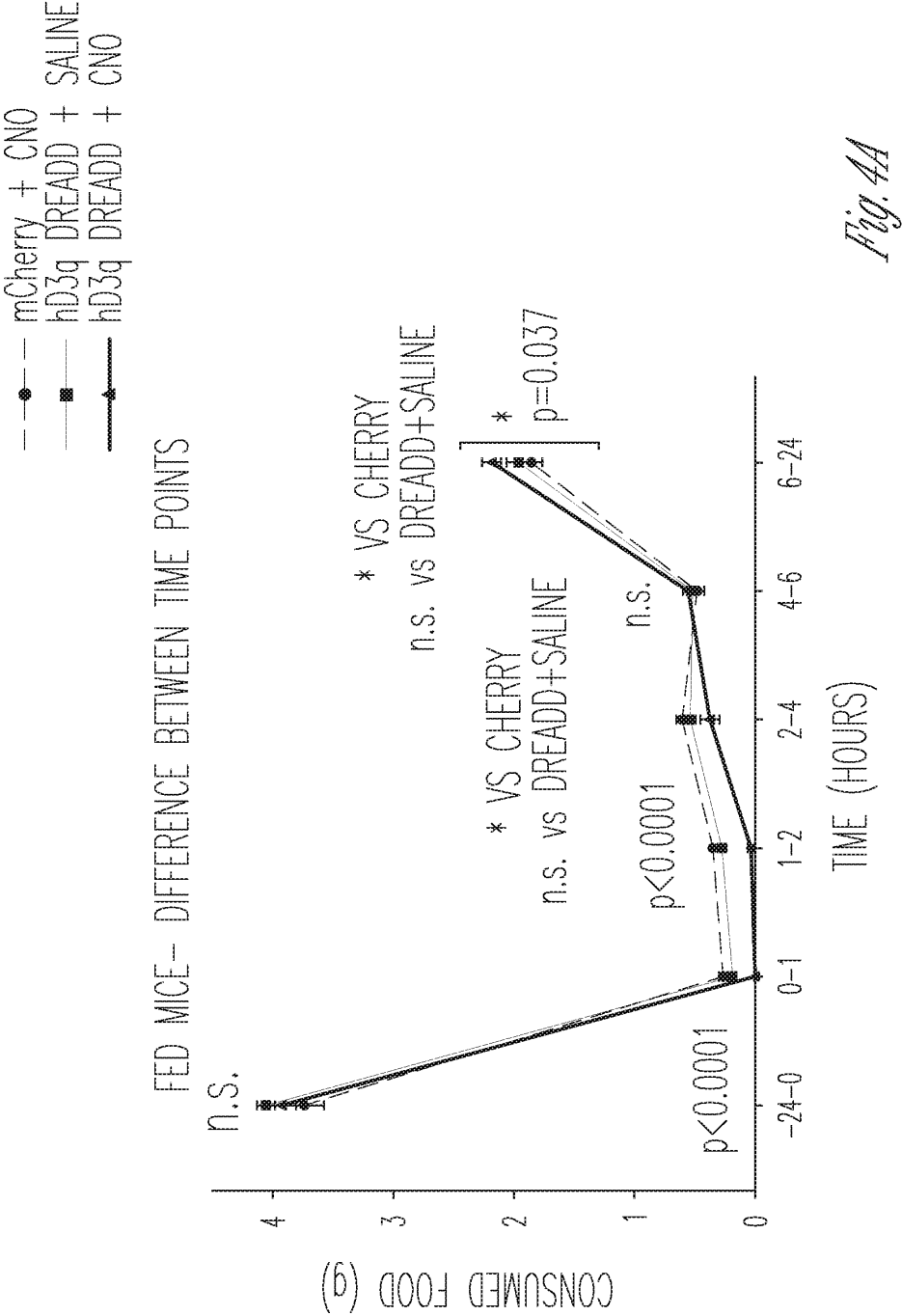


Fig. 3





---●--- mCherry + CNO
---■--- hD3q DREADD + SALINE
---▲--- hD3q DREADD + CNO

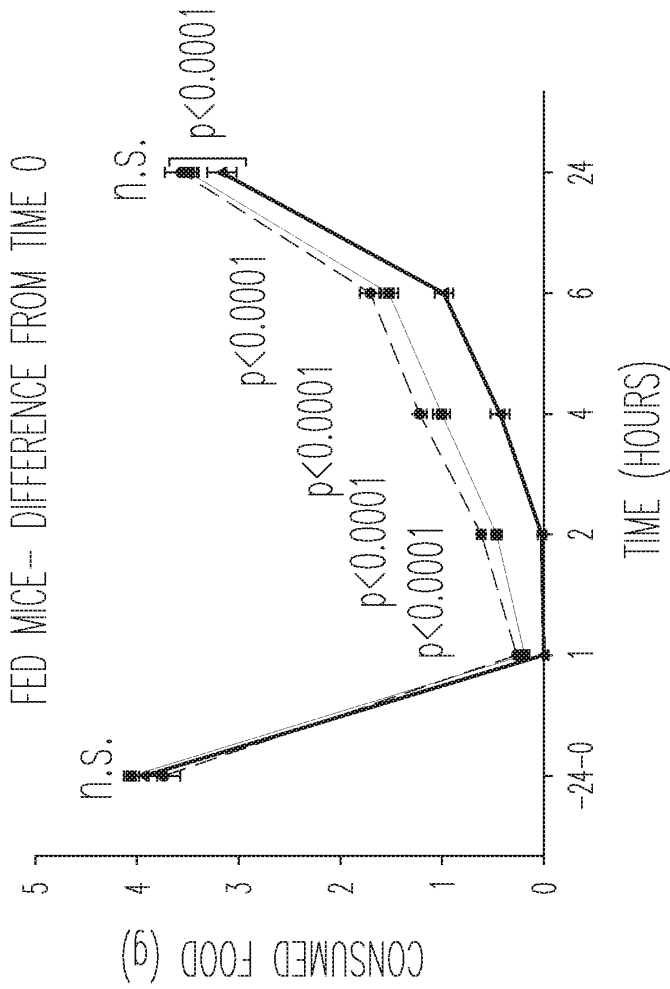


Fig. 4B

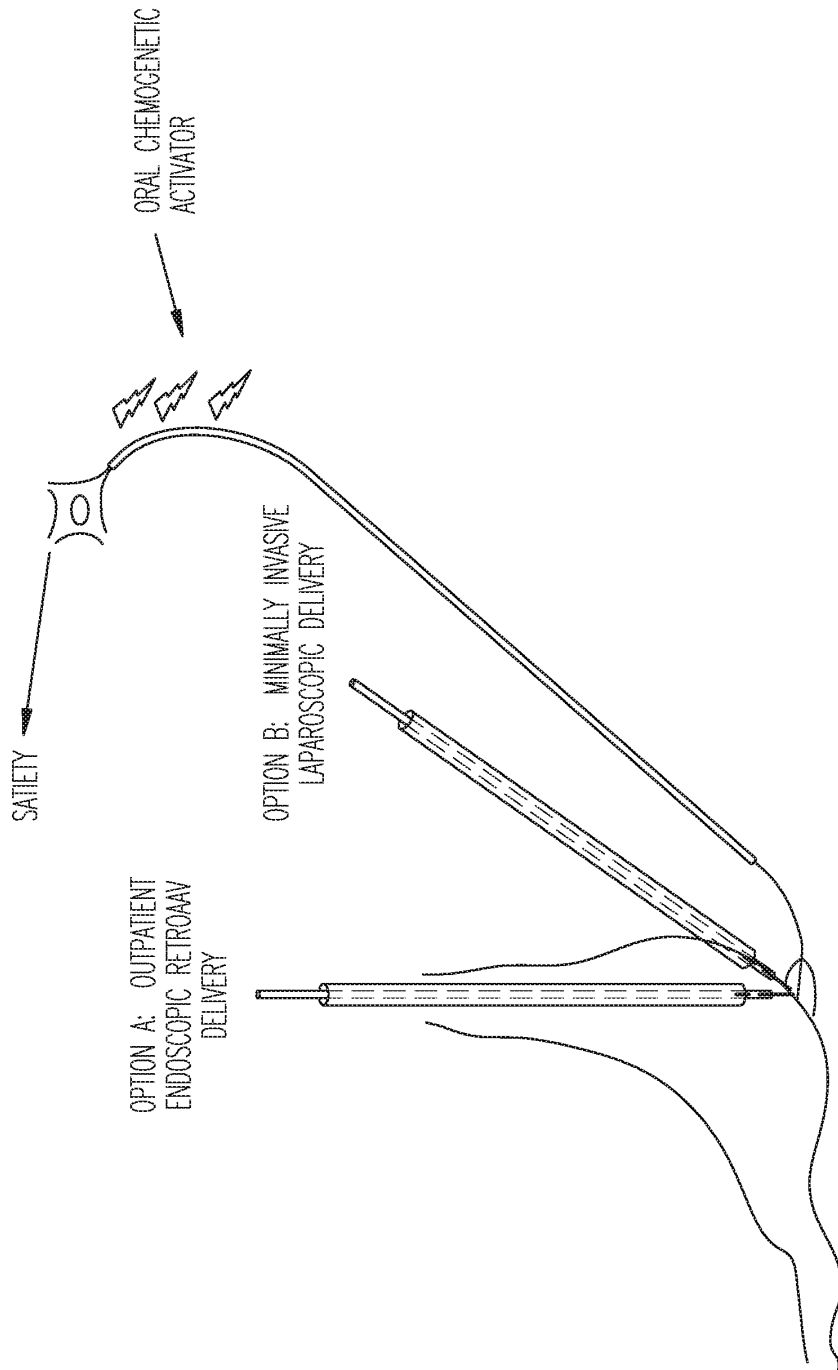


Fig. 5

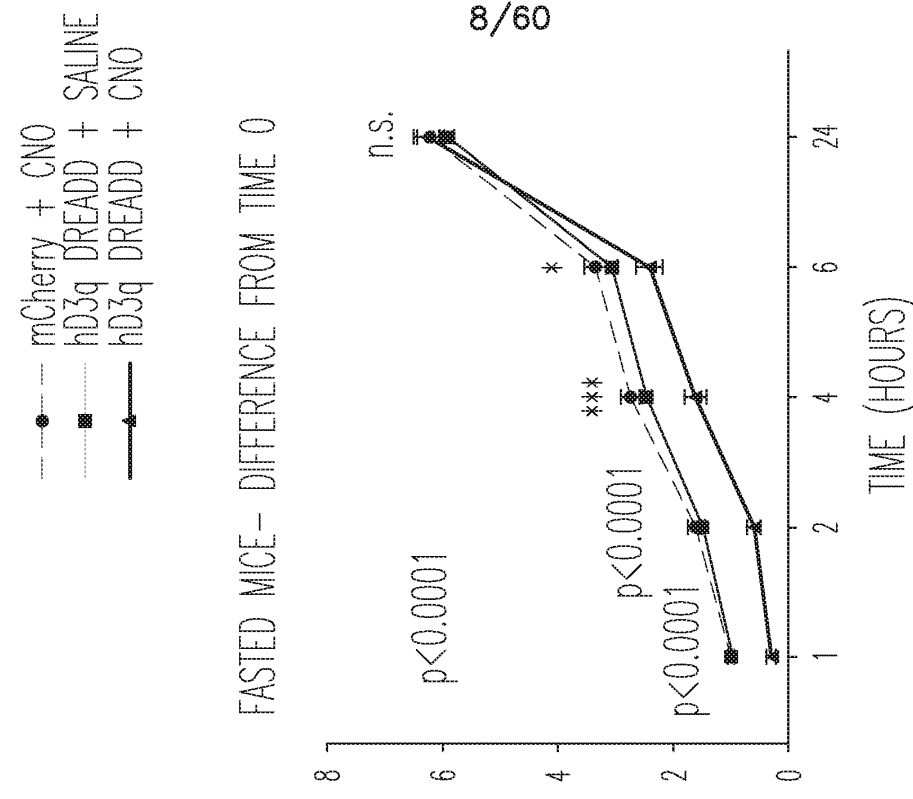


Fig. 6

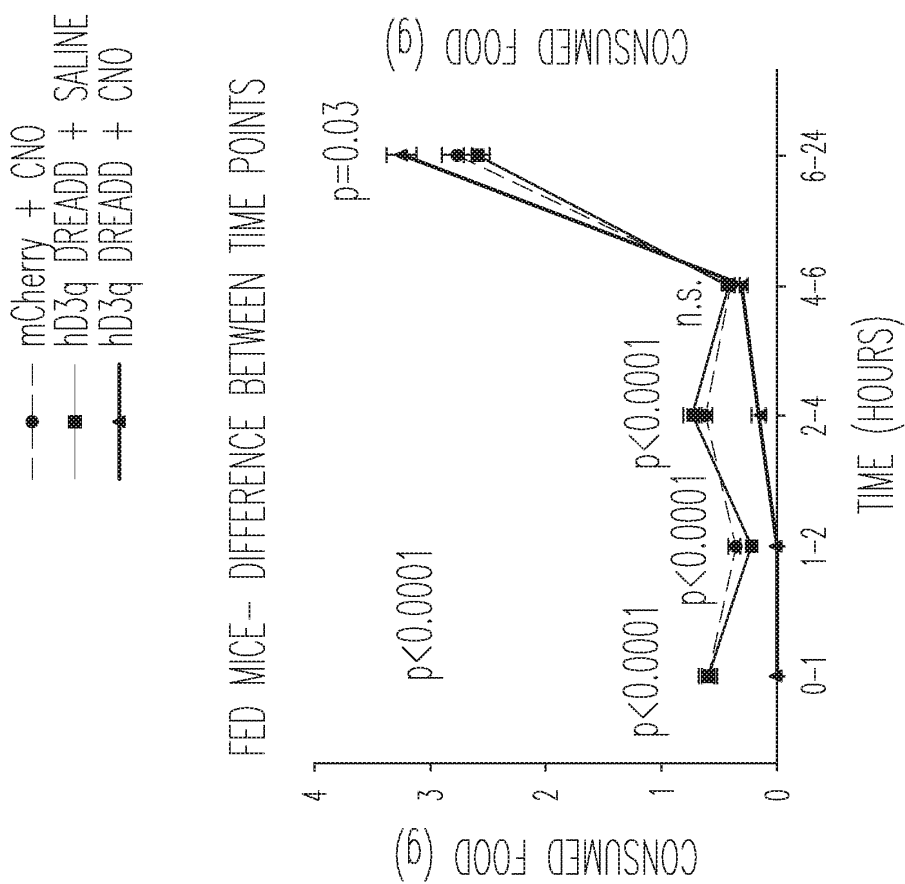
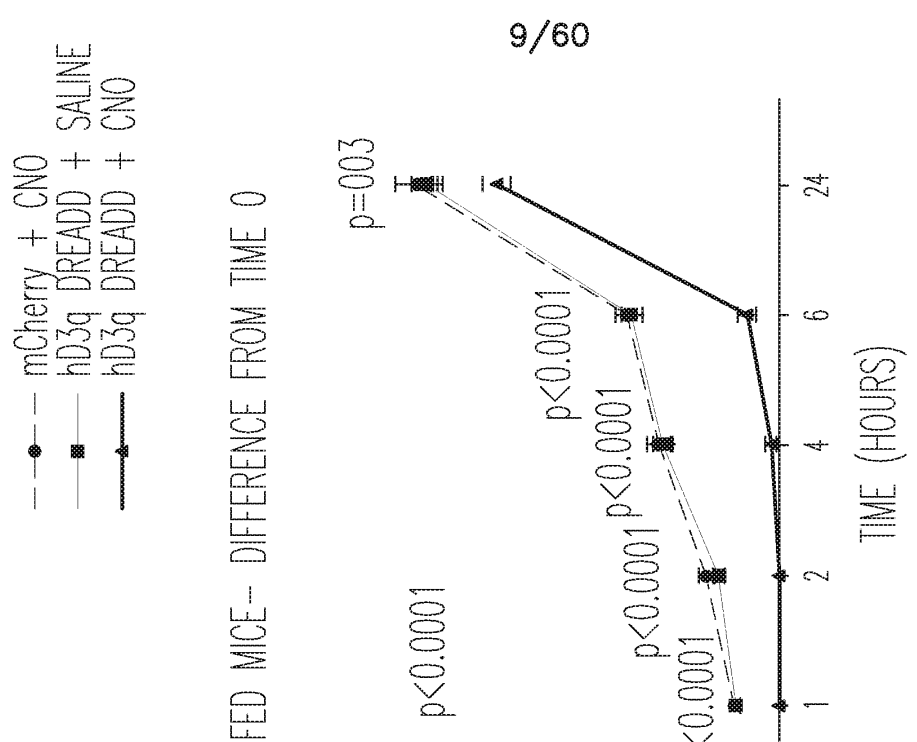


Fig. 7

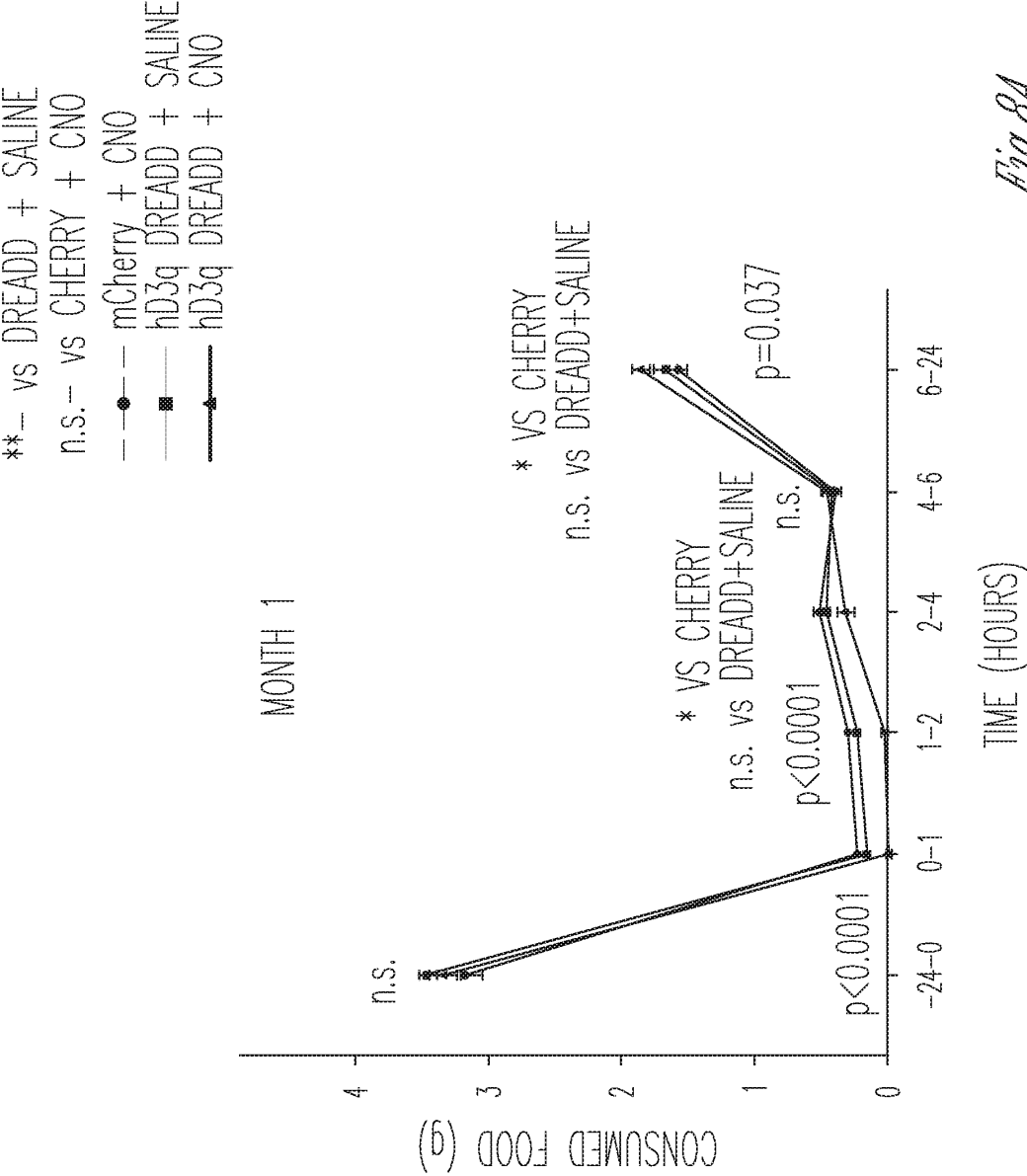


Fig. 8A

**_ vs DREADD + SALINE
n.s._ vs CHERRY + CNO

--- mCherry + CNO
- - - hD3q DREADD + SALINE
— hD3q DREADD + CNO

**_ vs DREADD + SALINE
n.s._ vs CHERRY + CNO

--- mCherry + CNO
- - - hD3q DREADD + SALINE
— hD3q DREADD + CNO

TWO WEEKS AFTER B

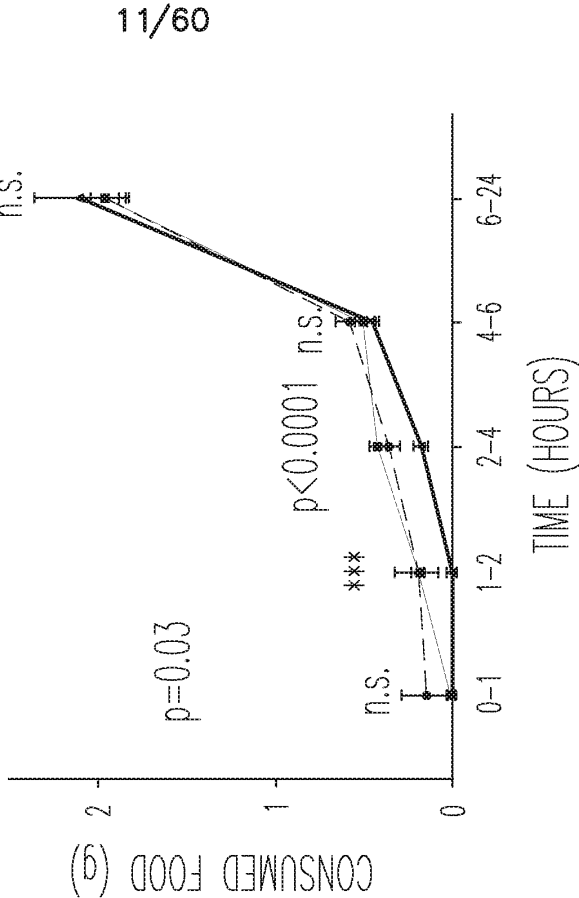


Fig. 8C

THREE MONTHS AFTER A

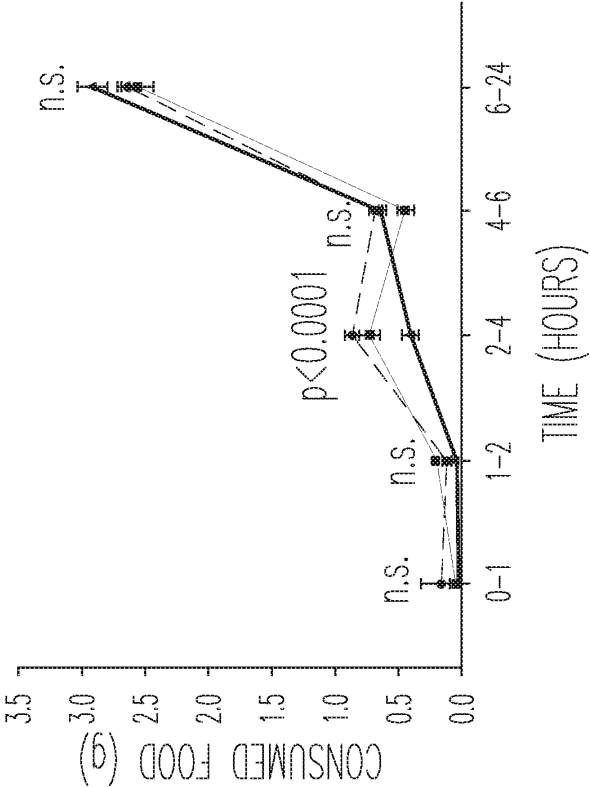


Fig. 8B

**_ vs DREADD + SALINE
 n.s. - vs CHERRY + CNO
 -●- mCherry + CNO
 -■- hD3q DREADD + SALINE
 -▲- hD3q DREADD + CNO

THREE DAYS AFTER C

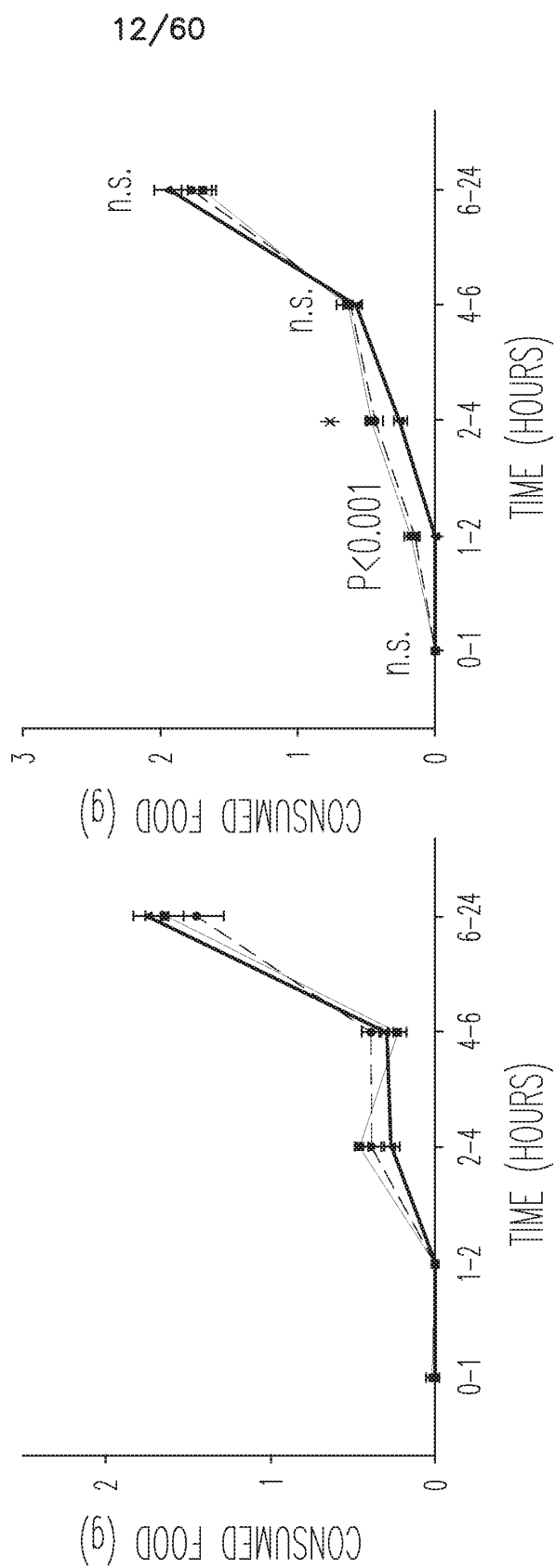


Fig. 8D

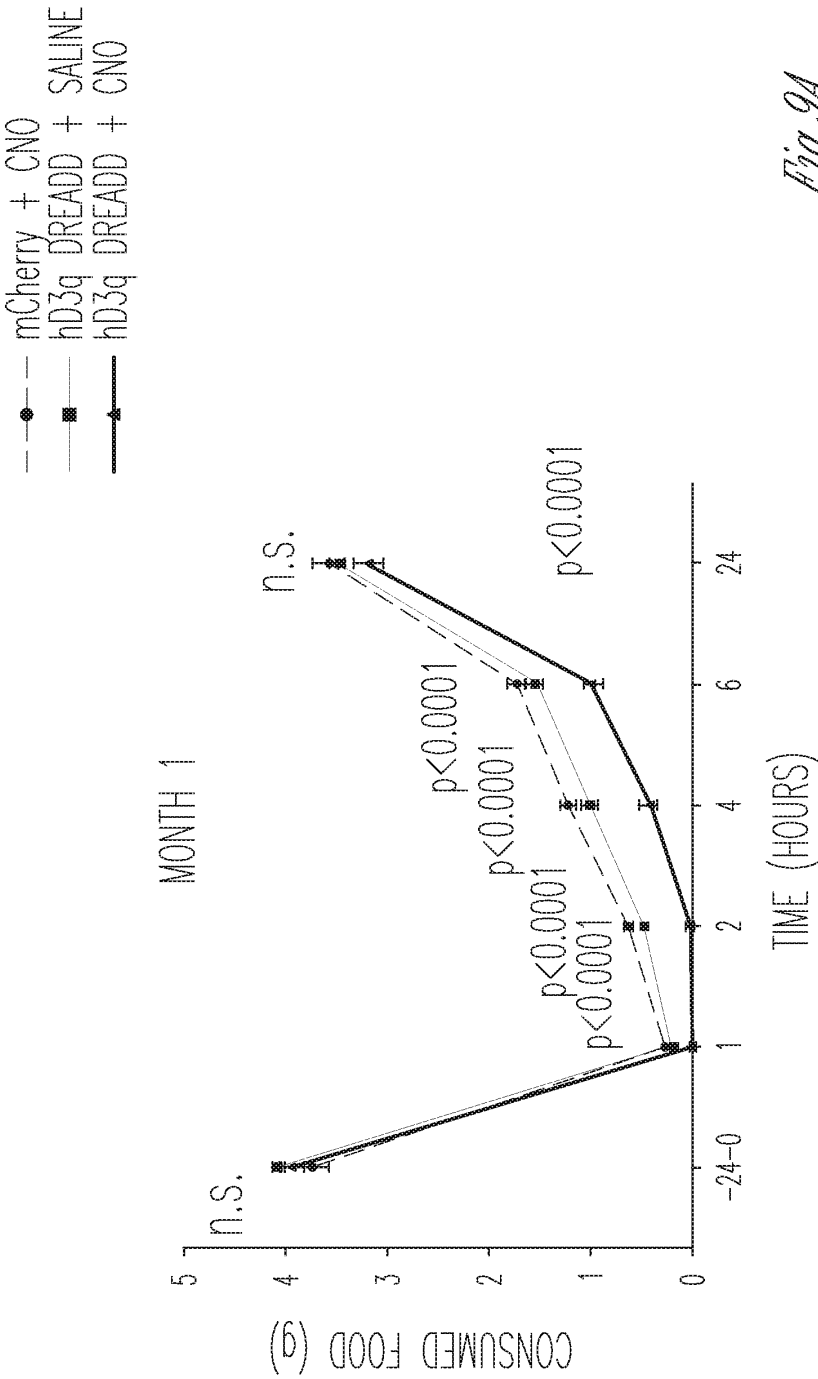


Fig. 9A



THREE MONTHS AFTER A

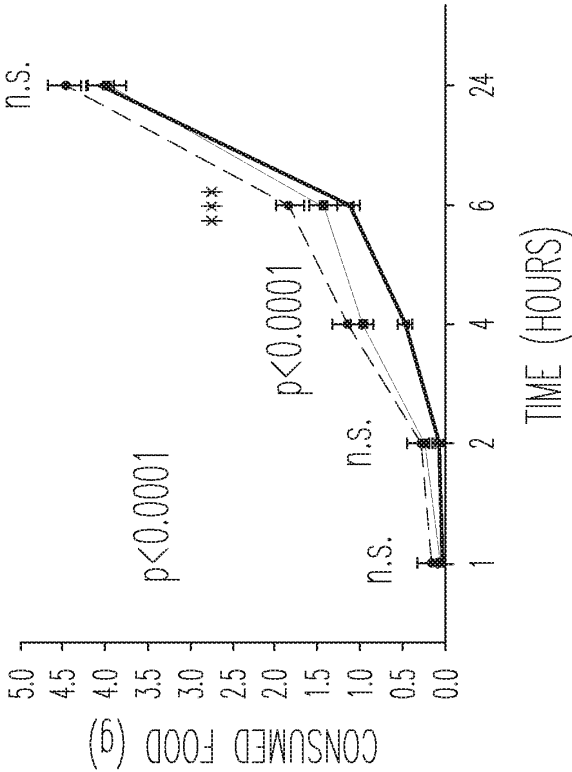


Fig. 9B

TWO WEEKS AFTER B

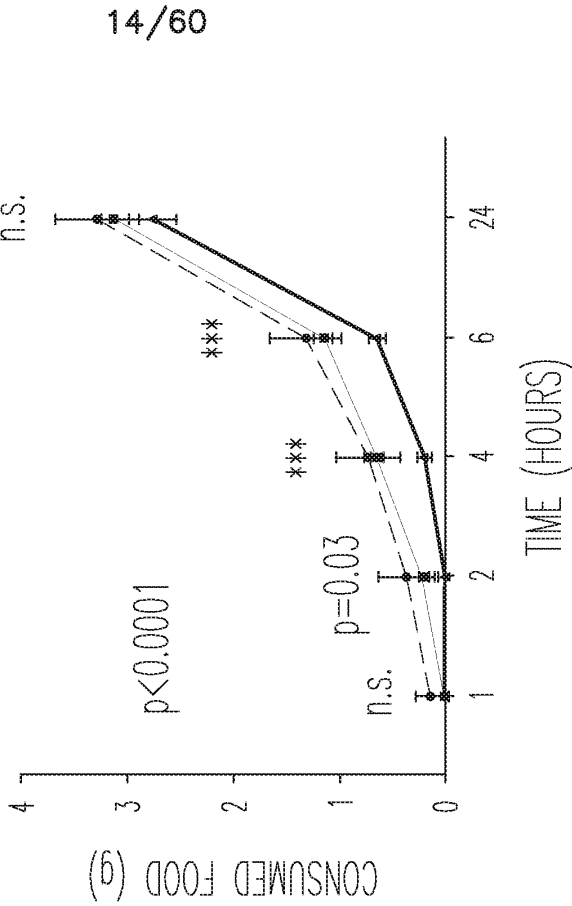


Fig. 9C



THREE DAYS AFTER C

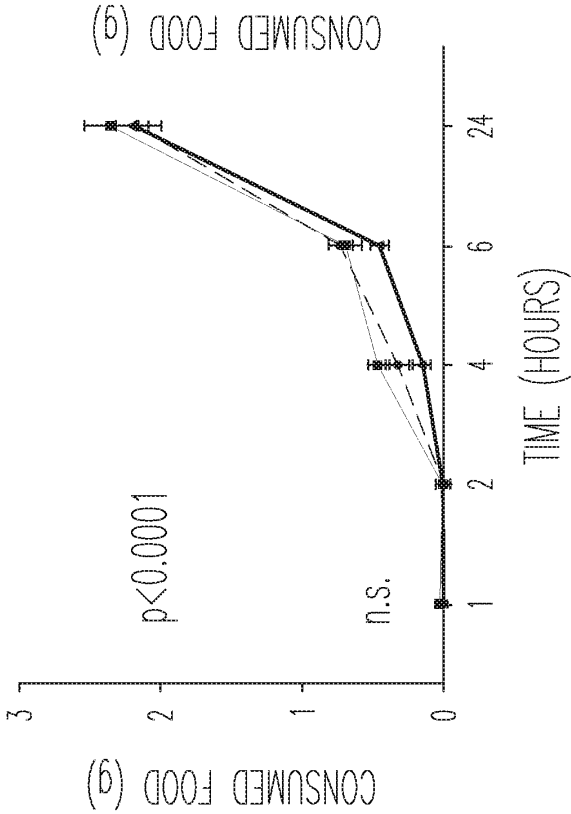


Fig. 9D

FOUR DAYS AFTER D

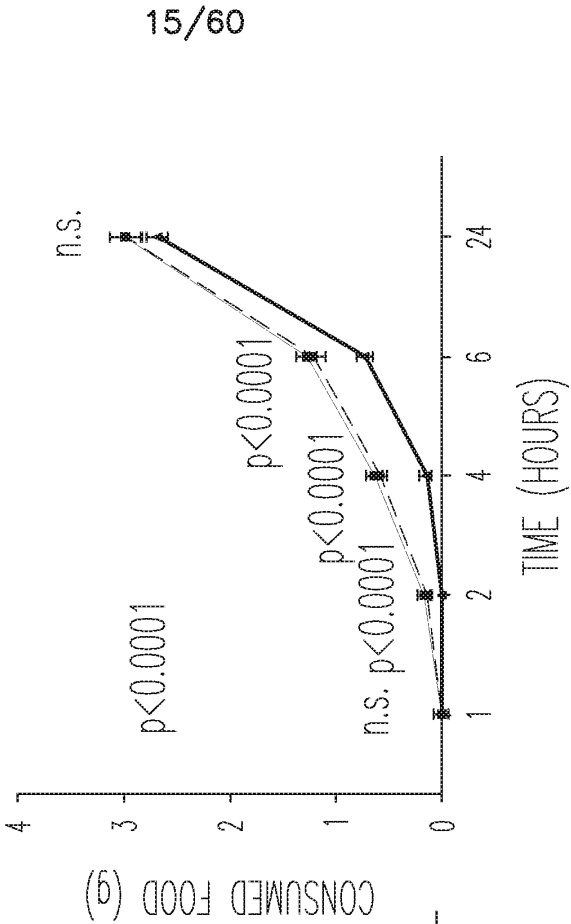


Fig. 9E

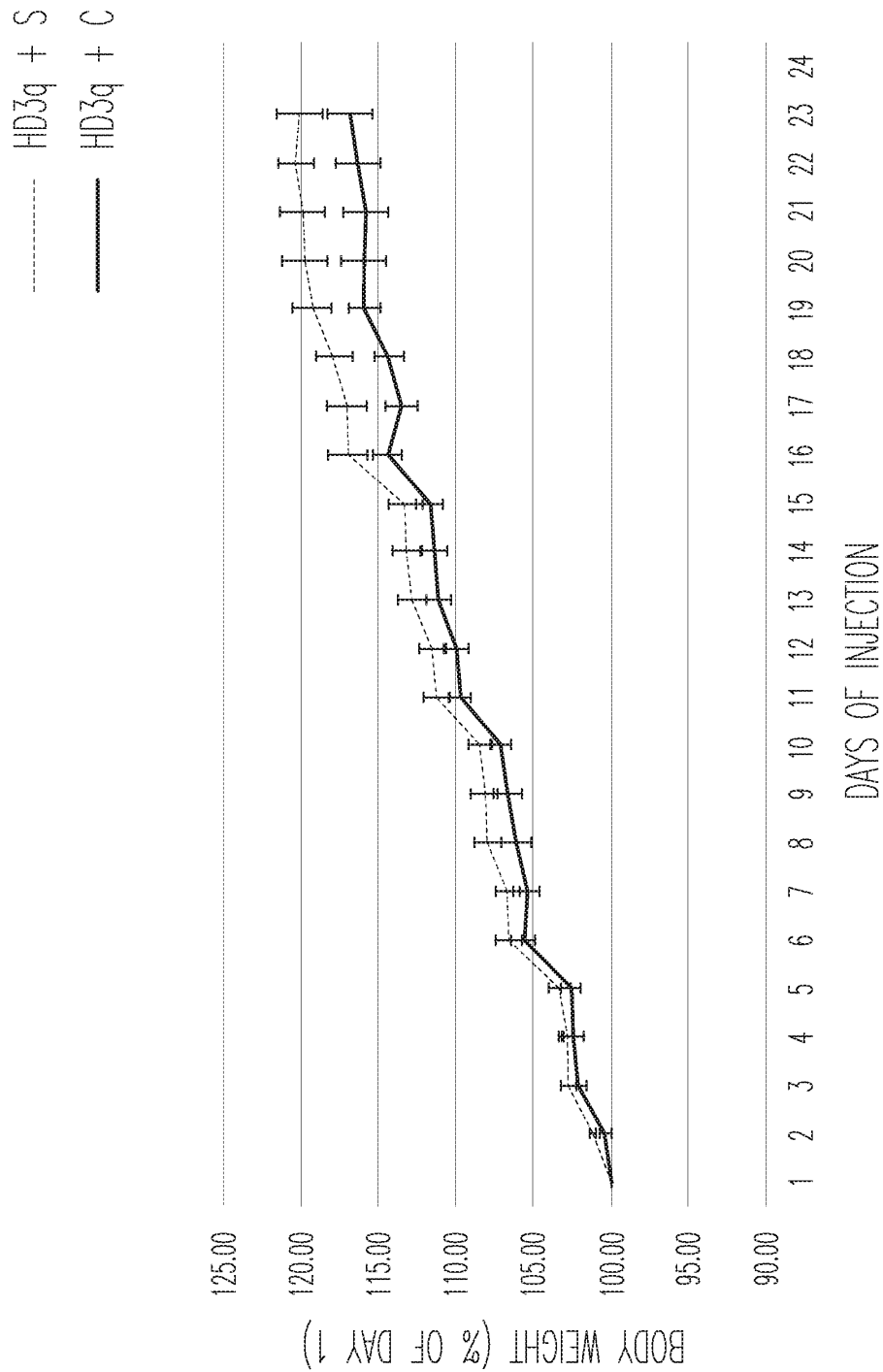


Fig. 10

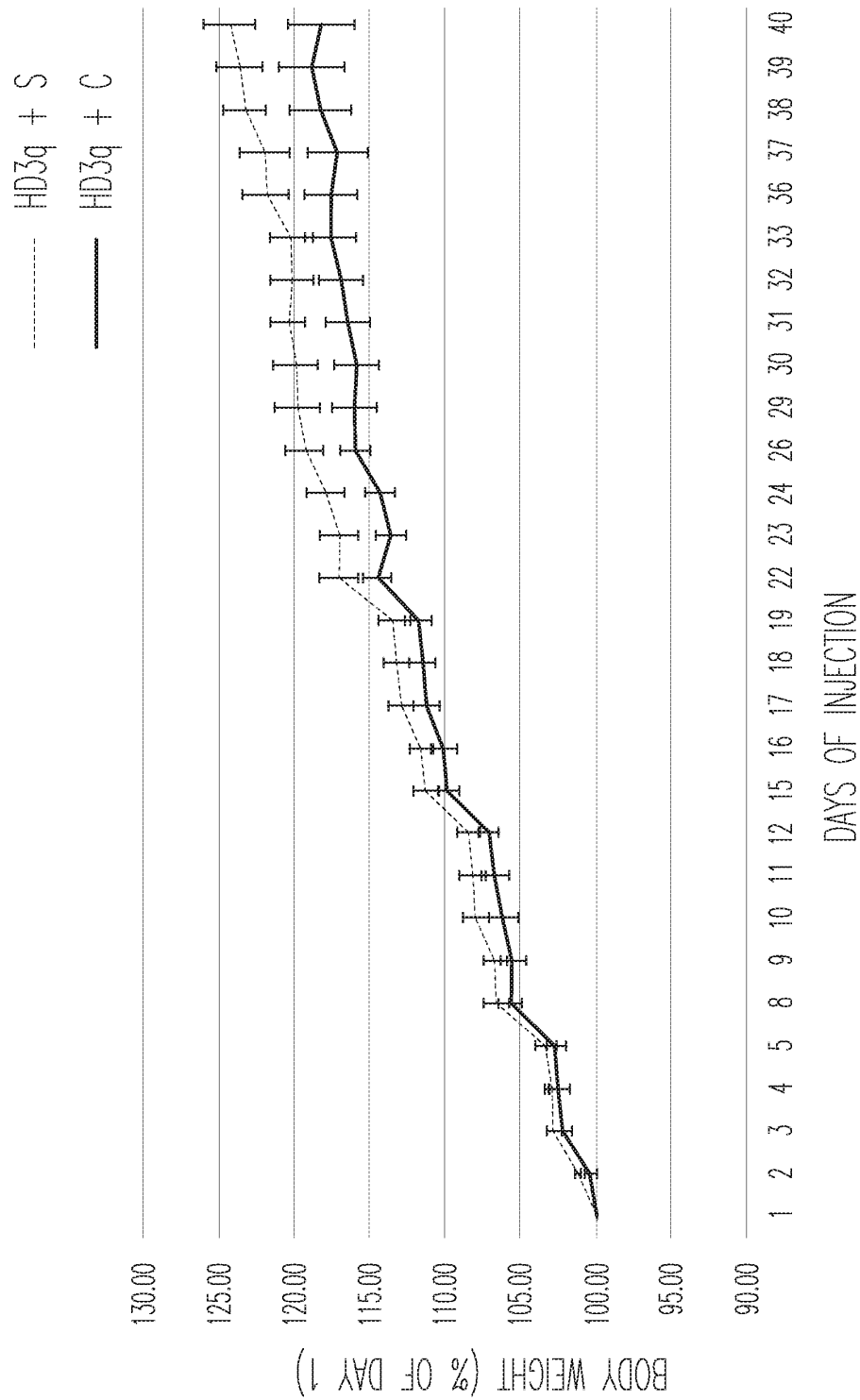


Fig. 11

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1 gctctagaggctcctgtattagaggtcacgtgagtggttttgcgacatttttgcgacaccatgtgg
 64 tcacgctgggtatttaagcccgagtgagcacgcagggtctccattttgaagcgggaggtttga
 127 acgcgcagccacacggcggggttttacgagattgtgattaagggtcccacagcacttgacga
 190 gcatctgccggcatttctgacagctttgtgaactgggtggcgcgagaagggaatgggagttgcc
 253 gccagattctgacatggatctgaaatctgattgagcaggcacccctgaccgtggccgagaagct
 316 gcatcgtggcgtaatagcgaagaggccgcacgcgacgccccttcccaacagttgcgcagcct
 379 gaatggcgaaatggcgattccgttgcaatggctggcggtaataattgttctggatatataccagca
 442 aggcgatagtttgagttcttctactcagcgaagtgatgttattactaatcaagaagtattg
 505 cgacaacggtttaatttgctgatggacagacctttttactcggtggcctcaactgattataaaa
 568 acaattctcaggattctggcgtaaccgttctgtctaaaaatccctttaaatacggcctcctgttta
 631 gctcccgtctgtattctaacgaggaaagcacgttatacgtgctcgtcaaaagcaaccatagtac
 694 gcgccctgtagcggcgcaattaaagcggcggtgtggtggttacgcgcagcgtgacccgtaca
 757 ctgcccagcgcctagcggcgcctccttctcgcttcttccctccttctcgcacgctcgcc
 820 ggctttcccgtcaagctctaaatcggggctcccttttagggtccgatttagtgccttacgg
 883 cacctcgaccccaaaaaacttgattagggtgatggttcacgtagtgggccatcgccctgatag
 946 acggtttttcgccctttgacgttgaggtccacgttcttttaataagtggaactctgttccaaact
 1009 ggaaacaacactcaaccctatatctcggtctattcttttgattataaagggaattttgcccatttcg
 1072 gcataattggttaaaaaatgagctgatttaacaaaaaatttaacgcgaatttttaacaaaaatatta
 1135 acgcttaacaatttaaatattttgcttatacaatcttctgttttttggggccttttctgtattatca
 C1a1

Fig. 12A

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1198 accggggtacatatgattgacatgctagttttacgattaccggttcacgattctcttgttgc
 1261 tcagactctcaggcaatgacctgatagcctttgttagagacctctcaaaatagctaccctct
 1324 ccggcatgaatttatcagctagaaagggttgaaatatacatattgatggtgatttgactgtctccg
 1387 gcctttctcaccggtttgaaatctttacctacacattactcaggcatgtgcatttaaaatatatg
 1450 agggttctaaaaatttttatccttgcgttgaaataaaggcttctccgcaaaagtattacagg
 1513 gtcataatgttttggtaacaaccgatttagctttatgctctgaggctttattgcttaattttg
 1576 ctaattctttgcttgctgtatgatttatggatgttggaatcgctgatgcggtattttct
 1639 ccttacgcatactgtgcggtattttcacaccgcataatggtgcactctcagtacaatctgctctga
 1702 tgccgcatagttaagccagccccgcacacccgcaacacccgctgacgcgccctgacgggcttg
 1765 tctgtccggcatccgcttacagacaagctgtgacggtctccgggagctgcatgtgtcagag
 1828 gttttcaccgtcatcaccgaaacgcgcgagacgaaaggcctcgatgatacgccctatttttata
 1891 ggttaatgtcatgataataatgggtttcttagacgtcagggtggcacttttcggggaatgtgcg

 1954 cggaacccctatttggtttatttttctaatacattcaaatatgtatatccgctcatgagacaata

 2017 accctgataaatgcttcaantaatatattgaaaaagggaagatagtagtatttcaacatttccgtgt
 2080 cgcccttattcccttttttgcggcattttgccttccgtgtttttgtctacccagaaacgctggt
 8▶ A L I P F A A F C L P V F A H P E T L V
 1▶ M S I Q H F R V

promoter P_1

Ampicillin

Fig. 12B

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AAV2_Rep

1 ATGCCGGGGTTTACGAGATTGTGATTAAAGTCCCGAGGACCTTGACGAGCATCTGCCCGGCATT
 1► M P G F Y E I V I K V P S D L D E H L P G I
 67 TCTGACAGCTTTGTGAACCTGGTGGCCGAGAGGAATGGGAGTTGCCGCCAGATTCTGACATGGAT
 23► S D S F V N W V A E K E W E L P P D S D M D
 PstI
 133 CTGAATCTGATTGAGCAGGCACCCCTGACCGTGGCCGAGAGCTGCAGCGCGACTTTCTGACGGAA
 45► L N L I E Q A P L T V A E K L Q R D F L T E
 — BglI
 199 TGGCGCGGTGTGAGTAAGGCCCGGAGGCTCTTTCTTTGTGCAATTTGAGAAGGAGAGAGCTAC
 67► W R V S K A P E A L F F V Q F E K G E S Y
 NcoI
 265 TTCCACATGCACGTGCTCGTGGAACCCACCGGGTGAAATCCATGGTTTTGGGACGTTTCCTGAGT
 89► F H M H V L V E T T G V K S M V L G R F L S
 SacII
 331 CAGATTCCGGAATACTGATTCAGAGAAATTTACCGCGGGATCGAGCCGACTTTCCTAACTGGTTC
 111► Q I R E K L I Q R I Y R G I E P T L P N W F
 397 GCGGTCACAAAGACCAGAAATGGCGCCGGAGGCGGGAACAAGTGGTGGATGAGTGCTACATCCCC
 133► A V T K T R N G A G G G N K V V D E C Y I P
 463 AATTACTTGTCTCCCAAAACCCAGCCTGAGCTCCAGTGGCGGTGGACTAATATGGAACAGTATTAA
 155► N Y L L P K T Q P E L Q W A W T N M E Q Y L
 AflIII
 529 AGCGCCTGTTGAATCTCAGGAGCGTAAACGGTTGGTGGCGCAGCATCTGACGCACGCTGTCGCGAG
 177► S A C L N L T E R K R L V A Q H L T H V S Q

Fig. 13A

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595 ACGCAGGAGCAAAAGAGAAATCAGAAATCCAATTCTGATGCGCGGTGATCAGATCAAAACT
 199▶ T Q E Q N K E N Q N P N S D A P V I R S K T BamHI
 661 TCAGCCAGGTACATGGAGCTGGTGGGTGGCTCGTGGACAAGGGGATTACCTCGGAGAACGAGTGG
 221▶ S A R Y M E L V G W L V D K G I T S E K Q W StuI
 727 ATCCAGGAGCACCGCCTCATACATCTCCTTCAATGCGGCCTCCAACCTCGCGTCCCAATCAAG
 243▶ I Q E D Q A S Y I S F N A A S N S R S Q I K
 793 GCTGCCTTGGACAAATGCGGGAAGATTATGAGCCTGACTAAACCGCCCCGACTACCTGGTGGGC
 265▶ A A L D N A G K I M S L T K T A P D Y L V G
 859 CAGCAGCCCGTGGAGGACATTTCCAGCAATCGGATTTATAAAATTTTGGAACTAAACGGGTACGAT
 287▶ Q Q P V E D I S S N R I Y K I L E L N G Y D
 925 CCCCAATATGCGGCTTCGGTCTTTCTGGGATGGGCCACGAAAAGTTTCGGCAAGAGGAACACCATC
 309▶ P Q Y A A S V F L G W A T K K F G K R N T I
 991 TGGCTGTTTGGGCTGCAACTACCGGGAAGACCAACATCGCGGAGGCCATAGCCCACACTGTGCCC
 331▶ W L F G P A T T G K T N I A E A I A H T V P Sall
 1057 TTCTACGGTGCGTAAACTGGACCAATGAGAACTTTCCCTTCAACGACTGTGTCGACAAGATGGTG
 353▶ F Y G C V N W T N E N F P F N D C V D K M V
 1123 ATCTGTGGAGGAGGGGAAGATGACCGCCAAGTCTGGAGTCGGCCAAAGCCATTCTCGGAGGA
 375▶ I W W E E G K M T A K V V E S A K A I L G G
 1189 AGCAAGGTGCGGTGGACCAGAAATGCAAGTCTTCGGCCAGATAGACCCGACTCCCGTGATCGTC
 397▶ S K V R V D Q K C K S S A Q I D P T P V I V

Fig. 13B

SUBSTITUTE SHEET (RULE 26)

1255 ACCTCCAACACCAACATGTGCGCCGTGATTGACGGGAACTCAACGACCTTCGAACACCAGCAGCCG
 419▶ T S N T N M C A V I D G N S T T F E H Q Q P
 1321 TTGCAAGACCGGATGTTCAAAATTIGAACCTACCCGCCGCTCTGGATCATGACTTTTGGGAAGGTCACC
 441▶ L Q D R M F K F E L T R R L D H D F G K V T
 EcoRI
 1387 AAGCAGGAAGTCAAAGACTTTTCCGGTGGGCAAGGATCACGTGGTTGAGGTGGAGCATGAATTTC
 463▶ K Q E V K D F F R W A K D H V V E V E H E F
 1453 TACGTCAAAAAGGGTGGAGCCAAAGAAAGACCCGCCCCAGTGACGCAGATATAAGTGAGCCCAAA
 485▶ Y V K K G G A K K R P A P S D A D I S E P K
 HindIII
 1519 CGGGTGGCGAGTCAGTTGGCGAGCCATCGACGTCAGACGGGAAGCTTCGATCAACTACGCAGAC
 507▶ R V R E S V A Q P S T S D A E A S I N Y A D
 KpnI
 1585 AGGTACCAAAACAAATGTTCTCGTCACGTGGGCATGAATCTGATGCTGTTTCCCTGCAGACAATGC
 529▶ R Y Q N K C S R H V G M N L M L F P C R Q C
 EcoRI
 1651 GAGAGAATGAATCAGAAATTCAAATATCTGCTTCACTCACGGACAGAAAGACTGTTIAGAGTGCTTT
 551▶ E R M N Q N S N I C F T H G Q K D C L E C F
 1717 CCCGTGTCAGAAATCTCAACCCGTTTCTGCTCAAAAAGGCGTATCAGAAACTGTGCTACATTCA
 573▶ P V S E S Q P V S V V K K A Y Q K L C Y I H
 1783 CATATCATGGGAAAGGTGCCAGACGCTTGCACTGCCCTGGATCTGGTCAATGTGGATTGGATGAC
 595▶ H I M G K V P D A C T A C D L V N V D L D D

AAVrh10_Cap

XhoI

Fig. 13C

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1849 TGCATCTTTGAACAAtaatgatttaaatcaggtATGGCTGCCGATGGTTATCTTCCAGATTGGCT
617▶ C I F E Q           1▶ M A A D G Y L P D W L
1915 CGAGGACAACTCTCTGAGGGCATTCCGAGTGGTGGACTTGAAACCTGGAGCCCCGAAACCCAA
11▶ E D N L S E G I R E W W D L K P G A P K P K
1981 AGCCAACCAGCAAAAGCAGGACGACGGCCGGGTCTGGTGCTTCTCTGGCTACAAGTACCTCGGACC
33▶ A N Q Q K Q D D G R G L V L P G Y K Y L G P
                                     XhoI      StuI
2047 CTTCAACGGACTCGACAAGGGGAGCCCGTCAACGCGGGGACGCGAGCGGCCCTCGAGCACGACAA
55▶ F N G L D K G E P V N A A D A A L E H D K
2113 GGCCTACGACCAGCAGCTCAAAGCGGGTGACAATCCGTACCTGCGGTATAACCAACGCCGACGCCGA
77▶ A Y D Q Q L K A G D N P Y L R Y N H A D A E
2179 GTTTCAGGAGCGTCTGCAAGAAGATACGTCTTTTGGGGCAACCTCGGGCGAGCAGTCTTCCAGGC
99▶ F Q E R L Q E D T S F G G N L G R A V F Q A
2245 CAAGAAGCGGGTTCTCGAACCTCTCGGTCTGGTTGAGGAAGGCGCTAAGACGGCTCCTGGAAAAGAA
121▶ K K R V L E P L G L V E E G A K T A P G K K
                                     AgeI
2311 GAGACCGGTAGAGCCATCACCCAGCGTTCTCCAGACTCCTCTACGGGCATCGGCAAGAAAGGCCA
143▶ R P V E P S P Q R S P D S S T G I G K K G Q
2377 GCAGCCCGCGAAAAGAGACTCAACTTTGGGCAGACTGGCGACTCAGAGTCAGTGCCCCGACCCCTCA
165▶ Q P A K K R L N F G Q T G D S E S V P D P Q
                                     PstI
2443 ACCAATCGGAGAACCCCGCAGGCCCTCTGGTCTGGGATCTGTGTACAAATGGCTGCAGGCGGTGG
187▶ P I G E P P A G P S G L G S G T M A A G G G

```

Fig. 13D

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2509 CGCTCCAAATGGCAGACAAATAACGAAGGCCCGACGGAGTGGGTAGTTCTCAGGAAAATTGGCATTG
209▶ A P M A D N N E G A D G V G S S S G N W H C
2575 CGATTCCACATGGCTGGGCGACAGAGTCATCACCAACAGCACCCGAACCTGGGCCCTCCCCACCTA
231▶ D S T W L G D R V I T T S T R T W A L P T Y
2641 CAACAACACCTCTACAAGCAAACTCCAACGGGACTTCGGGAGGAAGCACCAACGACAACACCTA
253▶ N N H L Y K Q I S N G T S G G S T N D N T Y
2707 CTTCGGCTACAGCACCCCTGGGGTATTTTGACTTTAAACAGATTCCACTGCCACTTCTCACCCAG
275▶ F G Y S T P W G Y F D F N R F H C H F S P R
2773 TGACTGGCAGCGACTCATCAACAACAACCTGGGGATTCGGGCCCAAGAGACTCAACTTCAAGCTCTT
297▶ D W Q R L I N N N W G F R P K R L N F K L F
2839 CAACATCCAGGTCAAGGAGGTACCGCAGAAATGAAGGCACCAAGACCATCGCCAAATAACCTTACCAG
319▶ N I Q V K E V T Q N E G T K T I A N N L T S
2905 CAGATTACGGTCTTTACGGACTCGGAATACCAGCTCCCGTACGTCTCGGCTCTGGCACCAGGG
341▶ T I Q V F T D S E Y Q L P Y V L G S A H Q G
KpnI
2971 CTGCCCTGCCCTCCGTTCCCGGGACGTCTTCATGATTCCTCAGTACGGGTACCTGACTCTGAACAA
363▶ C L P P F P A D V F M I P Q Y G Y L T L N N
ScaI
3037 TGGCAGTCAGGCCGTGGGCCGTTCTCCTCTACTGCCTGGAGTACTTTCCTTCTCAAATGCTGAG
385▶ G S Q A V G R S S F Y C L E Y F P S Q M L R
3103 AACGGGCAACAACCTTTGAGTTCAGCTACCAGTTTGAGGACGTGCCITTTACAGCAGCTACGGCA
407▶ T G N N F E F S Y Q F E D V P F H S S Y A H
3169 CAGCCAAAGCCTGGACCGGTGATGAACCCCTCATCGACCAGTACCTGTACTACCTGTCTCGGAC
429▶ S Q S L D R L M N P L I D Q Y L Y L S R T
KpnI AflIII

Fig. 13E

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Fig. 13F

3235 TCAGTCCACGGAGGTACCGCAGGAACTCAGCAGTTGCTATTTTCTCAGCGCGGCCTAATAACAT
 451▶ Q S T G G T A G T Q Q L L F S Q A G P N N M
 MluI
 3301 GTCGGCTCAGGCCAAAACTGGCTACCCGGGCCCTGCTACCGGCAGCAACGGTCTCCACGACACT
 473▶ S A Q A K N W L P G P C Y R Q Q R V S T T L
 SmaI
 3367 GTCGCAAAATAACAGCAACTTTGCTGGACCGGTGCCACCAAGTATCTGAAATGGCAGAGA
 495▶ S Q N N N S N F A W T G A T K Y H L N G R D
 3433 CTCTCTGTAAATCCCGGTGTCGCTATGGCAACCCACAAGGACGACGAGCGATTTCGTC
 517▶ S L V N P G V A M A T H K D D E E R F F P S
 AgeI
 3499 CAGCGGAGTCTTAATGTTTGGGAAACAGGGAGCTGGAAAAGACAACGTGGACTATAGCAGCGTTAT
 539▶ S G V L M F G K Q G A G K D N V D Y S S V M
 3565 GCTAACCAAGTGAAGGAAATTAACAACCAACCCAGTGGCCACAGAACAGTACGGCGTGGTGGC
 561▶ L T S E E I K T T N P V A T E Q Y G V V A
 3631 CGATAACCTGCAACAGCAAAACGCCGCTCCTATTGTAGGGCCGTCAACAGTCAAGGAGCCTTACC
 583▶ D N L Q Q Q N A A P I V G A V N S Q G A L P
 AflIII PstI
 3697 TGGCATGGTCTGGCAGAACCGGGACGTGTACCTGCAGGTCCTATCTGGGCCAAGATTCTCACAC
 605▶ G M V W Q N R D V Y L Q G P I W A K I P H T
 3763 GGACGGAAACTTTCATCCCTCGCCGCTGATGGGAGGCTTTGGACTGAAACACCCCGCTCTCAGAT
 627▶ D G N F H P S P L M G G F G L K H P P P Q I

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3829 CCTGATTAAGAATACACCTGTTCCCGGGATCCTCCAACCTACCTTCAGTCAAGCTAAGCTGGCGTC
 649▶ L I K N T P V P A D P P T T F S Q A K L A S
 3895 GTTCATCAGCGAGTACAGCACCGGACAGGTCAGCGTGGAAATTGAATGGGAGCTGCAGAAAGAAAA
 671▶ F I T Q Y S T G Q V S V E I E W E L Q K E N
 3961 CAGCAACGCTGGAACCCAGAGATTCAATACACTTCCAACCTACTACAAATCTACAAATGTGGACTT
 693▶ S K R W N P E I Q Y T S N Y Y K S T N V D F
 4027 TGCTGTTAACACAGATGGCAGCTTATTCTGAGCCTCGCCCCCATCGGCACCCGTTACCTACCCGTAA
 715▶ A V N T D G T Y S E P R P I G T R Y L T R N
 4093 TCTGtaattgcttggttaataataaacgggttgattcgtttcagttgaaactttggctctcggaag
 737▶ L
 4159 ggcgaaattcgtttaaacctgcaggactagaggctcctgtattagaggtcacgtgagtggttttgcgac
 4225 attttgcgaacacatgttggtcacgctgggtatttaagcccgagtgagcacgcagggtctccatttt
 4291 gaagcgggaggtttgaacgcgcagccgcgaagccgaattctgcagatatccatcacactggcggcc
 4357 gctcgactagagcgccgcacccgcgggtggagctccagctttgttcccttagtgagggttaatt
 4423 gcgcgcttggcgtaatcatggtcatagctgtttcctgtgtgaaattgttatccgctcacattcca
 4489 cacacatacagcgcgaagcataaagtgtaaagcctggggtgcctaagtgaagtgaactcaca
 4555 ttaattgcgttgcgctcactgcccgctttccagtcgggaaacctgtcgtgccagctgcattaatga

Fig. 13C

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4621 atcgccaaacgcggggagagcggtttgcgtattgggcgtcttcgcttctcgctcactgac
 4687 tcgctgcgtcggtcgttcggctgcggcagcggtatcagctcactcaaaaggcgtaatacggtta
 4753 tccacagaatcaggggataacgcaggaagaacatgtgagcaaaaggccagcaaaaggccaggaac
 4819 cgtaaaaggcgcgttgctggcgttttccataggctcgcgccctgaagcagcatcacaaaaat
 54885 cgacgtcaagtcagaggtggcgaaacccgacaggactataaagataccaggcgttccccctgga
 54951 agctccctcgtcgctctcctgttcgacctgcgcttacgggataacctgtcgcctttctccct
 55017 tcgggaagcgtggcgctttctcatagctcacgctgtaggtatctcagttcgggtgtaggtcgctgc
 55083 tccagctggcgtgtgtgcacgaaccccccggttcagcccgacgctgccttatccggtaactat
 55149 cgtcttgagtcacaacccggtaagacacgaacttatcgccactggcagcagccactggtaacaggatt
 55215 agcagagcgaggtatgtaggcgtgtctacagagttcttgaaagtggcgctaaactacggctacact
 55281 agaagaaacagtatttggtatctgcgctctgctgaagccagttaccttcggaaaaagagttggtagc
 55347 tcttgatccggcaaacacaacccgctggtagcgggtgtttttgtttgcaagcagcagattacg
 55413 cgcagaaaaaaggatctcaagaagatcctttgatcctttctacggggtctgacgctcagtggaac
 5479 gaaaactcacgttaagggtatttggtcatgagattatcaaaaaggatcttcacctagatccttta
 5545 aattaaaaatgaagtttttaaatcaatctaaagtatatatgagtaaaacttggtctgacagttaccac
 5611 tgcttaatcagtgaggcacctatctcagcgatctgtctatcttcgttcatactagttgcctgactc
 5677 cccgtcgttagataactacgatacggggggcttaccatctggtccccagtgctgcaatgataccg
 5743 cgagaccacgctcacccggtccagatttatcagcaataaaaccagccagccgggaaggccgagcgc

BgII

Fig. 13H

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5809 agaagtgtcctgcacactttatcgcctccatccagtcctatttaattgttgcgggaagctagagta
 5875 agtagttcgccagttantagtttgcgcaacgttgttgccattgctacaggcacgtgtgtgtcacgc
 5941 tcgtcgtttggtatggcttcattcagctcggttcccaacgatcaaggcgagttacatgatccccc
 6007 atgttgtcaaaaagcggttagctccttcggtcctccgatcgttgtcagaagtaagtggccgca
 6073 gtgttatcactcatggttatggcagcactgcataattctcttactgtcatcgcatccgtaagatgc
 6139 ttttctgtgactggtagtactcaaccacagtcattcttgagaatagtgtatgcggcgaccgagttgc
 6205 tcttgcccggtcaatacgggataatacgcgcacatagcagaactttaaangtgcctcatctt
 6271 ggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgaatgtaa
 6337 cccactcgtgcacccaaactgatcttcagcatcttttactttcacccagcgtttctgggtgagcaaaa
 6403 acaggaaaggcaaaatgccgcaaaaagggaataaggggcgacacggaaatgttgaatactactctc
 6469 ttcccttttcaatatatttgaaagcatttatcagggttatgtctcatgagcggtacatatattgaa
 6535 tgtaatttagaaaaataaacaataagggttcgcgcacatttcccgaaagtgccacctaaattg
 6601 taagcgttaataattttgttaaaattcgcgttaaaattttgttaaatcagctcattttttaaccaat
 6667 agccgaaatcggcaaaatcccttataaatcaaaagaatagacggagatagggttgagtgtgttc
 6733 cagtttggaacagagtcacctataaagaacgtggactccaacgtcaaaaggcgaaaaaccgtct
 6799 atcagggcgatggccactacgtgaaccatcacctaatcaagttttttgggtcgagggtccgta
 6865 aagcactaaatcggaaacccctaaaggagccccgattttagagcttgacggggaaagccggcgacg

Seal

Fig. 131

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6931  tggcagaaaggaaaggaaagcgaaggagcgggcgctaggcgctggcaagtgtagcggta
      BglI
6997  cgctgcgcgtaaccacacacccgccgcgttaatgcgccgctacagggcggtcccatctgccat
7063  tcaggctgcgcaactgtttgggaaggcgatcggtagggcctcttcgctattacgccagctggcga
7129  aagggggtgtgctgcaggcgattaaagtgggtacgccagggtttcccggtcacgcgctgtga
      KpnI
7195  aacgcagggccagtggcgcggttaatacgaactcactataggcggaattgggtaccggggccccc
      SalI
7261  tcgatacgaggtcgaaggatatcggggagctcgagggtctcattttgaagcggagggtttgaacg
7327  cgacgcccgc

```

Fig. 13J

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Fig. 13K

2143 gaaagtaaagatgctgaagatcagttgggtgcacgagtggtgtacatcgaaactggatctcaa
 29▶ K V K D A E D Q L G A R V G Y I E L D L N
 2206 cagcggtaagatccttgagagtttctgccccgaagaacgttttccaatgatgagcacttttaa
 50▶ S G K I L E S F R P E E R F P M M S T F K
 2269 agttctgctatgtggcgcggtattatcccgatttgaagcggcggaagagcaactcggtcgcg
 71▶ V L L C G A V L S R I D A G Q E Q L G R R
 2332 catacactattctcagaatgacttgggtgagtactcaccagtcacagaaagcatcttacgga
 92▶ I H Y S Q N D L V E Y S P V T E K H L T D
 2395 tggcatgacagtaagagaattatgcagtgctgccataaccatgagtgataacactgcgggcaa
 113▶ G M T V R E L C S A A I T M S D N T A A N
 2458 cttaacttctgacaacgatcggaggaccgaaggagctaacgcctttttgcacaacatggggga
 134▶ L L L T T I G G P K E L T A F L H N M G D
 2521 tcattgaactgccttgatcgttgggaaccggagctgaatgaagccataccaacgacgagcg
 155▶ H V T R L D R W E P E L N E A I P N D E R
 2584 tgacaccacgatgcctgtagcaatggcaacaacgcttgcgcaactatttaactggcgaaactact
 176▶ D T T M P V A M A T T L R K L L T G E L L
 2647 tactctagcttccggcaacaattaatagactggatggaggcggaataaagttgcaggaccact
 197▶ T L A S R Q Q L I D W M E A D K V A G P L
 2710 tctgcgctcggcccttcggctggctggtttattgctgataaatctggagccggtgagcgtgg
 218▶ L R S A L P A G W F I A D K S G A G E R G
 2773 gtctcgcggtatcattgcagcactggggccagatggtaaagccctccgtagtattatcta
 239▶ S R G I I A A L G P D G K P S R I V V I Y
 2836 cacgaagggtcaggcaactatggatgaacgaatagacagatcgctgagataggtgcctc
 260▶ T T G S Q A T M D E R N R Q I A E I G A S

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2899 actgattangcattggtaactgtcagaccgaagttaactcatatatacttttagattgatttaaa
2900      L   I   K   H   W
2962 acttcatttttaatttaaaaggatctaggagaagatcccttttgataatctcatgaccacaaat
3025 ccccttaacgtgagtttctggtccactgagcgtcagaccccgtagaanaagatcaaaaggatcttc
3088 ttgagatccctttttctgcgcgtaactgtgcttgcaaacacacacacacacacacacacac
3151 ggtggtttgttgcggatcaagagctaccacactcttttccgaaggtaactggcttcagcag
3214 agcgagatacccaatactgttctctagtgtagcgttagtgagccacacacttcagaactc
3277 tgtagcaccgcctacatacacctcgctctgctaactcctgttaccagtggtgctgccagtggcga
3340 taagtcgtgtcttacccgggttggaactcaagacgatagttacccgataaggcgacgggtcggg
3403 ctgaacggggggttcgtgcacacagcccagcttggaagcgaacgacctacacgaactgagata
3466 cctacagcgtgagctatgagaanaagcgccacgcttccgaagggaaggaagcggaagggtatcc
3529 ggtaagcggcagggtcggaaacaggagagcgacgaggagcttccaggggggaacgcctggtg
3592 tctttatagtcctgtcgggtttcgccacctctgaccttgagcgtcgatttttgtgctcgtc
3655 aggggggcgagcctatggaaaaaacgcaacgagcgttcttttacgggtcctggccttttg
3718 ctggccttttgctcacatgttcttctcgttatccccctgattctgtggataacccgtattac
3781 cgccctttgagtgagctgataccgctcgccgacgcgaacgacccgagcgcagcgagtcagtga
3844 cgaggaaagcggaagagcgcccaataacgcaaacgcctctccccgcgcttgcccgattcatta
      EcoRI
3907 atgcagaattcccatcatcaataataataccttattttggattgaagccaatatgataatgagg
3970 gggtaggagtttgtgacgtggcgcgggcggtgggaacggggcggggtgacgtagtagctctagag

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Fig. 13L

4033 gtccctgtattagagggtcacgtgagtggttttgcgacattttgcgacacccatgtggtcacgctgg
 4096 gtatttaagcccgagtgagcacgcagggtctccattttgaagcgggaggtttgaacgcgcagc

AAV2 Rep

4159 caccacggcggggttttacgagattgtgattaaggtcccagcgaccttgacgagc
 4215 atctgcccggcatttctgacagctttgtgaactgggtggccgagaagggaatggga
 4270 gttgccgcagattctgacatggatctgaatctgattgagcaggcacccctgacc

1► M D L N L I E Q A P L T

4325 gtggccgagaagctgcagcgcgacttctgacgggaatggcgccgtgtgagtaagg
 13► V A E K L Q R D F L T E W R R V S K

4380 ccccgaggccctttctctttgtgcaatttgagaaggaggagagctacttccacat
 31► A P E A L F F V Q F E K G E S Y F H M

4435 gcacgtgctcgtggaaaccacccgggtgaaatcccatgggttttgggacgtttccctg
 49► H V L V E T T G V K S M V L G R F L

4490 agtcagatttcgcgaaaaactgattcagagaaatttacgcggggtcgagccgactt
 68► S Q I R E K L I Q R I Y R G I E P T

4545 tgccaaactggttcgcgggtcacaaagaccagaaatggcgccggaggcgggaacaa
 86► L P N W F A V T K T R N G A G G N K

SacI

4600 ggtgggtgagtgctacatccccaattacttctcccaaaaccagcctgag
 104► V V D E C Y I P N Y L L P K T Q P E

4655 ctccagtgggcgtggactaatatgggaacagtatttaagcgcctgtttgaaatctca

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Fig. 13N

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123▶ L Q W A W T N M E Q Y L S A C L N L
4710 cggagcgtaaacgggttggtggcgagcatctgacgcacgtgtcgacagcgcagga
141▶ T E R K R L V A Q H L T H V S Q T Q E
4765 gcagaacaaagagaatcagaatcccaattctgatgcgcgggtgatcagatcaaaa
159▶ Q N K E N Q N P N S D A P V I R S K
4820 acttcagccagggtacatggagctggcgggtggctcgtaggacaaggggattacct
178▶ T S A R Y M E L V G W L V D K G I T
                               BamHI          Stul
4875 cggagaagcagtggtatccaggaggaccaggcctcatacatctccttcaatgcggc
196▶ S E K Q W I Q E D Q A S Y I S F N A A
4930 ctccaactcgcgggtcccaaatcaaggctgccttggaacaatgcgggaaagattatg
214▶ S N S R S Q I K A A L D N A G K I M
4985 agcctgactaaaaccgcccccgactacctggtgggccagcagccggtggaggaca
233▶ S L T K T A P D Y L V G Q Q P V E D
5040 ttccagcaatcggattttataaaaattttggaactaaacgggtacgatccccaata
251▶ I S S N R I Y K I L E L N G Y D P Q Y
5095 tgcggcttcggtctttcttgggatgggccacgaaaaagttcggcaagagggaacacc
269▶ A A S V F L G W A T K K F G K R N T
5150 atctggctgtttgggcttgcaactaccgggaagaccacaacatcgcgaggccatag
288▶ I W L F G P A T T G K T N I A E A I
5205 cccacactgtgcccttctacgggtgcgtaaactggaccaatgagaaactttccctt
306▶ A H T V P F Y G C V N W T N E N F P F

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Fig. 130

Sall

5260 caacgactgtgtcgcacaagatggtgatctggtgggagggggaagatgaccgcc
 324▶ N D C V D K M V I W W E E G K M T A
 5315 aaggtcgtggagtcggccaaagccattctcggaggaagcaaggtgcgcgtggacc
 343▶ K V V E S A K A I L G G S K V R V D
 5370 agaatgcaagtcctcggccagatagaccgactcccgatgacgcacacccaa
 361▶ Q K C K S S A Q I D P T P V I V T S N
 5425 caccacatgtgcgcggtgattgacgggaactcaacgacacctcgaaacaccagcag
 379▶ T N M C A V I D G N S T T F E H Q Q
 5480 ccgttgcaagaccggatgtttcaaatgtgaactcaccgcgctctggatcatgact
 398▶ P L Q D R M F K F E L T R R L D H D
 5535 ttgggaaggtcaccaagcagggaagtcaaaagacttttccggtgggcaaaaggatca
 416▶ F G K V T K Q E V K D F F R W A K D H
 EcoRI
 5590 cgtggttgagggtggagcatggaattctacgtcaaaaagggtggagccaagaaaaga
 434▶ V V E V E H E F Y V K K G G A K K R
 5645 cccgccccagtgacgcagatatataagtgagcccccaaacgggtgcgcgagtcagttg
 453▶ P A P S D A D I S E P K R V R E S V
 HindIII
 5700 cgcagccatcgacgtcagacgcgggaagcttcgatcaactacgcagacaggtacca
 471▶ A Q P S T S D A E A S I N Y A D R Y Q
 5755 aaacaaatgttctcgtcacgtgggcatgaatctgatgctgttccctgcagacaa
 489▶ N K C S R H V G M N L M L F P C R Q

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EcoRI

5810 tgcgagagaatgaaccagaatttcaaatatatctgttcaactcacggacagaaagact
 508▶ C E R M N Q N S N I C F T H G Q K D
 5865 gtttagagtgctttccggtgtcagaatctcaaccggtttctgtcgtaaaaaggc
 526▶ C L E C F P V S E S Q P V S V V K K A
 5920 gtatcagaaactgtgtctacattcatcatatcatgggaagggtgccagacgttgc
 544▶ Y Q K L C Y I H H I M G K V P D A C
 5975 actgcctgcgatctgtgtcaatgtgggtttggatgactgcattctttgaaacaataat
 563▶ T A C D L V N V G L D D C I F E Q

retroAAV2 Cap

6031 gatttaaatcagggtatggctgccgatgggttatcttccagattggctcgaggacactc
 1▶ M A A D G Y L P D W L E D T
 6088 tctctgaaggataagacagtggtggaagctcaaacctggccaccaccacaaa
 15▶ L S E G I R Q W W K L K P G P P P K
 6143 gccgcagagcggcataaggacgacgacgaggggtcttgtgcttctgggtacaag
 33▶ P A E R H K D D S R G L V L P G Y K
 6198 tacctcgaccctcaacggactcgacaggagagcggtcaacgaggcagacg
 52▶ Y L G P F N G L D K G E P V N E A D

Fig. 13P

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6253 ccgcgccctcgagcacgacaaagcctacgaccggcagctcgacagcggagacaa
70▶ A A A L E H D K A Y D R Q L D S G D N
6308 cccgtacctcaagtacaaccacgcgacgaggagtttcaggagcgccttaagaa
88▶ P Y L K Y N H A D A E F Q E R L K E
6363 gatacgtcttttgggggcaacctcggaagcagcagcttccaggcgaaaaagagg
107▶ D T S F G G N L G R A V F Q A K K R
6418 ttcttgaacctctggcctggttgaggaaacctgttaagacggctccgggaaaaaa
125▶ V L E P L G L V E E P V K T A P G K K
6473 gaggcggtagagcactctctgtggagccagactcctcctcgggaaccggaaag
143▶ R P V E H S P V E P D S S S G T G K
6528 gcgggcagcagcctgcaagaaaaagattggaattttggtcagactggagacgcag
162▶ A G Q Q P A R K R L N F G Q T G D A
6583 actcagtacctgacccccagcctctcggacagccaccagagccccctctggtct
180▶ D S V P D P Q P L G Q P P A A P S G L
6638 gggaactaatcagatggctacaggcagtggcgcaccaatggcagacaataacgag
198▶ G T N T M A T G S G A P M A D N N E

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Fig. 13Q

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6693  ggcgccgacggagtgggtaattcctcgggaaattggcatttgcgattccacatgga
217▶  G A D G V G N S S G N W H C D S T W
6748  tggcgacagatcatcaccaccagaccggaacctgggccctgccacactacaa
235▶  M G D R V I T T S T R T W A L P T Y N
6803  caaccacctctacaacaatttccagccaatcaggagcctcgaaacgacaatcac
253▶  N H L Y K Q I S S Q S G A S N D N H
6858  tactttggctacagcacccttgggggtattttgacttcaacagattccactgcc
272▶  Y F G Y S T P W G Y F D F N R F H C
6913  actttccaccagtactggcaagactcatcaacaacaactggggattccgacc
290▶  H F S P R D W Q R L I N N N W G F R P
6968  caagagactcaactcaagctctttaacattcaagtcaagagggtcacgcagaat
308▶  K R L N F K L F N I Q V K E V T Q N
7023  gacggtacgacgattgccaataaccttaccagacgggttcagggtttactg
327▶  D G T T T I A N N L T S T V Q V F T
7078  actcggagtaccagctcccgtagctcctcggtcggcgcatcaaggatgcctccc
345▶  D S E Y Q L P Y V L G S A H Q G C L P

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Fig. 13R

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7133 gccgttcccagcagcgtcttcatggtgccacagtatggataacctcaccctgaac
 363▶ P F P A D V F M V P Q Y G Y L T L N
 N382D
 7188 gacgggagtcaggcagtaggacgctcttcatctttactgcctggagtagtcttctt
 382▶ D G S Q A V G R S S F Y C L E Y F P
 7243 ctcagatgctgcgtaccggaacaactttaccttcagctacacttttgaggacgt
 400▶ S Q M L R T G N N F T F S Y T F E D V
 7298 tcctttccacagcagctacgctcacagccagagtctggaccgtctcatgaatcct
 418▶ P F H S S Y A H S Q S L D R L M N P
 7353 ctcatcgaccagtagctgtattacttgagcagaacaacactccaagtgggaacca
 437▶ L I D Q Y L Y Y L S R T N T P S G T
 7408 ccacgcagtcagggttcagttttctcaggccggagcgagtgacatctcgggacca
 455▶ T T Q S R L Q F S Q A G A S D I R D Q
 7463 gtctagggaactggcttcttgaccctgttacgccagcagcgagtatcaagaca
 473▶ S R N W L P G P C Y R Q Q R V S K T
 7518 tctgcggataacaacaacagtgatactcgtggactggagctaccaagtaccacc

Fig. 13S

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492▶ S A D N N N S E Y S W T G A T K Y H
 7573 tcaatggcagagactctctggtgaatccgggcccgccatggcaagccacaagga
 510▶ L N G R D S L V N P G P A M A S H K D
 7628 cgatgaagaaaagtttttctctcagagcgggttctcatcttttgggaagcaaggc
 528▶ D E E K F F P Q S G V L I F G K Q G
 7683 tcagagaaaacaaatgtggacattgaaaaggtcatgtattacagacgaagaggaaa
 547▶ S E K T N V D I E K V M I T D E E E
 7738 tcaggacaaccaatcccgtaggctacggagcagtatggttctgtatctaccaacct
 565▶ I R T T N P V A T E Q Y G S V S T N L
 LADQDYTKTA insert
 7793 ccagagaggcaacctagcagaccagactacacaaaaaactgctaggcaagcagct
 583▶ Q R G N L A D Q D Y T K T A R Q A A
 7848 accgcagatgtcaacacacacagcggttcttcaggcatggtctggcaggacagag
 1▶ M S T H K A F F Q A W S G R T E
 602▶ T A D V N T Q G V L P G M V W Q D R
 7903 atgtgtaccttcaggggcccatctgggcaagattccacacacggacggacattt
 17▶ M C T F R G P S G Q R F H T R T D I
 620▶ D V Y L Q G P I W A K I P H T D G H F

Fig. 137

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7958 tcacctctccccctcatgggtggattcggacttaaacacctctctcccagatt
35▶ F T P L P S W V D S D L N T L L P R F
638▶ H P S P L M G G F G L K H P P P Q I
8013 ctatcaagaacaccccggtacctggaatccttcgaccaccttcagtgcggcaa
53▶ S S R T P P R Y L R I L R P P S V R Q
657▶ L I K N T P V P A N P S T T F S A A
8068 agtttgcttctcatcacacagtactccacgggacaggtcagcgtggagatcga
72▶ S L L P S S H S T P R D R S A W R S
675▶ K F A S F I T Q Y S T G Q V S V E I E
V708I
8123 gtgggagctgcagaaggaaacagcaaacgctgggaatcccgaaattcagtacact
90▶ S G S C R R K T A N A G I P K F S T L
693▶ W E L Q K E N S K R W N P E I Q Y T
8178 tccaactacaacaagtctattaatgtggactttactgtggacactaatggcgtgt
108▶ P T T T S L L M W T L L W T L M A C
712▶ S N Y N K S I N V D F T V D T N G V
NotI
8233 attcagagcctcgccccatttggcaccagataacctgactcgtaatctgtaattgcgg
127▶ I Q S L A P L A P D T
730▶ Y S E P R P I G T R Y L T R N L
8289 ccgcttggttaatcaataaacggtttaattcgtttcagttgaactttggctctcggtatttct
8352 ttcttatctagtttccat

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ITR (-1)

1 tagctgcgcgtcgctcactgagcgcccgggcaagccggcgctcggcg
 58 acctttggtcgccggcctcagtgcgagcgagcgagagggagtggccaac
 115 tccatcactaggggttcctttagttaataaccgccatgctacttatctacg
 172 tagccatgctctaggtaccattgacgtcaataatgacgtatgttcccatagtaacgc

CMV enhancer (263)

229 caataagagactttccattgacgtcaatgggtggactatttacggtaactgcccaact
 286 tggcagtacatcaagtgtatcatatgccaaagtacgccccctatttgacgtcaatgacg
 343 gtaaatggcccgccctggcatttatgcccgatcacatgaccttatgggactttcctactt

CBA promoter (413)

400 ggcagtacatctacgtatttagtcatcgctattaccatggtcgcggtgagccccacgt
 457 tctgcttcactctcccatctccccctcccccccccaattttgtatttttta
 514 ttttttaattattttgtgcagcgatggggcgggggggggggggcgcgccag
 571 gcggggcgggcgggcgagggcgggcgggcgggcgagggcgaggggtgcggcggcag
 628 ccaatcagagcggcgcgtccgaaagtctccttttatggcgagggcgggcgggcggc

CBA-RBG intron (720)

685 ggccctataaaagcgagcgcgcgggcggaagtgcgtgcgacgtgccttcgc
 742 ccggtccccgctccgcgcgcctcgcgccgccccggctctgactgacgcgcg
 799 ttactcccaacaggtgagcggggcgagccctctcctcgggctgtaattagcgc

Fig. 14A

856 ttggtttaatgacggcttgattcttctgtggtgcgtgaagccttgaggggctc
 913 cggagggccctttgtcggggggagcggctcgggctgtcgcgggggacggctg
 970 ccttcgggggacgggacggggttcggcttctggcgtgtgaccggcggctc
 1027 tagagcctctgctaaccatgttcatgccttcttcttcttctacagctcctgggcaa
 1084 cgctggttattgtactgtctcatcattttggcaagaattggatccactcgagtg

FLAG (1163)
 1141 gagctcgcgactagaattccaccatggactacaagaacgatgacgacaagggcagca
 1► M D Y K D D D D K G S

mCherry (1208)
 1198 ctagggccgcgtgagcaaggcgaggaggataacatggccatcatcaaggagttca
 12► T R A A V S K G E E D N M A I I K E F
 1255 tgcgcttcaaggtgcacatggagggtccgtgaacggccaacgagttcgaagatcgagg
 31► M R F K V H M E G S V N G H E F E I E
 1312 gcgaggcgaggcccccctacgaggggcaccacgacccgaagctgaaggtgacca
 50► G E G R P Y E G T Q T A K L K V T
 1369 aggtggccccctgccttcgctgggacatcctgtccctcagttcatgtacggct
 69► K G G P L P F A W D I L S P Q F M Y G
 1426 ccaaggcctacgtgaagcaccgccgacatccccgactacttgaaagctgtcctcc
 88► S K A Y V K H P A D I P D Y L K L S F
 1483 ccgagggttcaagtgggagcgcgtgatgaactcgagggaaggcggtggtgaccg
 107► P E G F K W E R V M N F E D G G V V T

Fig. 14B

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gatttaaatcagggtatggctgcgatgggtatcttccagattggctcgaggacactc
tctctgaagggaataagacagtgggtggaagctcaaacctggccaccaccacccaaa
ggccgcagagcgggcataaaggacgacagcaggggtcttgcttctcgggtacaag
tacctcggaaccttcaacggactcgacaaggagagcgggtcaacgaggcagacg
ccgcgccctcgagcagcaaaagcctacgacggcagctcgacagcggagacaa
cccgtaacctcaagtacaaccacgcccagcggaggtttcaggagcgcccttaagaa
gatacgtcttttgggggcaacctcggaagcagcagctcttcaggcgaaaaagaggg
ttcttgaaacctctgggcctgggtgaggaaacctgttaagacggctccgggaaaaaa
gaggccggtagagcactctctgtggagccagactcctcctcgggaaocgggaaag
gggggcccagcagcctgcaagaaaaaagattgaattttggtcagactgggagacgcag
actcagtaacctgacccccagcctctcggaacagccaccagcagccccctctgggtct

Fig. 15A

gggaaactaatcgtggctacaggcagtggtggcgaccacaaatggcagacaataacgag
 ggccgcgacggagtgggtaatctctgggaaattggcattgcgattccacatggga
 tgggcgacagagtcataccaccagcaccgaaactgggcctggcccactacaa
 caaccacctctacaacaaattccagccaatcaggagcctcgaacgacaatcac
 tacttggctacagcacccttgggggtatttgacttcaacagattccactgcc
 acttttcaccacgtgactggcaagactcatcaacaacaactggggattccgacc
 caagagactcaacttcaagctctttaacattcaagtcaaaagaggtcacgcagaat
 gacggtacgacgacgattggccaataaaccttaccagcaggttcagggtgttactg
 actcggagtagcagctccgtacgtcctcgtggctcggcgcatcaaggatgcctccc
 gccgttcccagcagacgtcttcatggtggccacagtatggatacctcacccctgaac
 gacgggagtcaggcagtaggacgctcttcatttactgctggagtagtcttctt
 ctcagatgctgcgtaccggaaacaactttaccttcagctacacttttgaggacgt
 tctttccacagcagctacgtcacagccagaggtcggacggtctcatgaatcct
 ctcatcgaccagtagctgtattacttgagcagaacaacaactccaagtggaaacca
 ccacgcagtcaggccttcagttttctcaggccggagcgagtgacattcggggacca
 gtctaggaaactggcttctcgtgacccctgtttaccgccagcagcgagtagtatcaaaagaca
 tctcgggataaacaacacagtggaatactcgtggactggagctaccaagtaccacc

Fig. 15B

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tcaatggcagagactctctggtgaaatccgggcccggccatggcaggaagccacaaggga
cgatgaagaaaagtttttctcagagcgggttctcatctttgggaagcaaggc
tcagagaaaacaaatgtggacattgaaaaggtcatgattacagacgaagaggaaa
tcaggacaaccaatccgtggctacggagcagtatggttctgtatctaccaact
ccagagaggcaacctagcagaccaagactacacaaaaactgctaggcaagcagct
accgcagatgtcaacacacaaaggcgttcttcaggcatggtctggcaggacagag
atgtgtaccttcaggggcccatcttgggcaaaagattccacacaggacggacattt
tcacccctctccctcatgggtgattcggacttaaacacctctctcccagatt
ctcatcaagaacaccccgggtacctgcgaatccttcgaccaccttcagtgcgga
agtttgcttcttcacacagtagtactccacgggacaggtcagcgtggagatcga
gtgggagctgcagaaggaaaacagcaaacgctggaatccgaaattcagtacact
tccaaactacaacaagctctattaatgtggactttactgtggacactaatggcgtgt
attcagagctcgcccatggcaccagataacctgactcgtaatctgtaattgcgg
ccgcttgtaatacaataaacggttaattcggttcagttgaacttgggtctctcggtattct
ttcttatctagttccat (SEQ ID NO: 4)

Fig. 15C

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MAADGYLPDWLEDTLSEGIRQWWKLKPGPPPKPAERHKDDSRGLVLP
 YKYLGPFGNLDKGEPVNEADAAALEHDKAYDRQLDSGDNPLYKYNHADAE
 FQERLKEDTSFGGNLGRAVFQAKKRVLEPLGLVEEPVKTAGKKRPVEHS
 PVEPDSSSGTGKAGQQPARKRLNFGQTGDADSVDPQPLGQPPAAPSGL
 GTNTMATGSGAPMADNNEGADGVGNSSGNWHCDSTWMDRVITTTSTRT
 WALPTYNNHLYKQISSQSGASNDNHYFGYSTPWGYFDNRFHCHFSPRD
 WQRLINNNWGFPRKRLNFKLFNIQVKEVTQNDGTTTIANNLSTVQVFT
 DSEYQLPYVLGSAHQGCLPPFPADVFMVPQYGYLTLDGSSQAVGRSSFYC
 LEYFPSQMLRTGNNTFSYTFEDVPFHSSYAHQSLSRLMNPIDQYLYYL
 SRTNTPSGTTTQSRQLQFSQAGASDIRDQSRNWLPGPCYRQQRVSKTSADN
 NSEYSWTGATKYHLNGRDSLVNPGPAMASHKDDEEKFFPQSGVLIFGKQ
 GSEKTNVDIEKVMITDEEEIRTTNPVATEQYGSVSTNLQRGNLADQDYTKT
 ARQAATADVNTQGVLPGMVWQDRDVYLLQGPIWAKIPHDTGHHFHPSPLMG
 GFGLKHPPPOILIKNTVPANPSTTFSAAKFASFITQYSTGQVSVEIEWELQ
 KENSKRWNPEIQYTSNYNKSINVDFTVDNMGVYSEPRPIGTRYLTRNL(SEQ
 ID NO: 5)

TGCATCTTTGAACAAataaatgatttaaatcaggATGGCTGCCGATGGTTATCTTCCAGATTGGCT
 CGAGGACAAACCTCTCTGAGGGCATTGCGGAGTGGTGGGACTTGAAACCTGGAGCCCCGAAACC
 CAA
 AGCCAAACCAGCAAAGCAGGACGACGGCCGGGTCTGTGCTTCCTGGCTACAAGTACCTCGG
 ACC
 CTTCAACGGACTCGACAAAGGGGGAGCCCCGTCAACGCGGGGACGCAGCGGCCCTCGAGCAG
 ACAA

Fig. 15D

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GGCCTACGACCAGCAGCTCAAAGCGGGTGACAAATCCGTACCTGCGGTATAACCACGCCGACGC
CGA
GTTTCAGGAGCGTCTGCAAGAAGATACGTCTTTTGGGGCAACCTCGGGCGAGCAGTCTTCCA
GGC
CAAGAAGCGGGTTCTCGAACCTCTCGGTCTGGTTGAGGAAGGCGCTAAGACGGCTCCTCTGGAAA
GAA
GAGACCGGTAGAGCCATCACCCAGCGTTCTCCAGACTCCTCTACGGGCATCGGCAAGAAAGG
CCA
GCAGCCCGGAAAAAGAGACTCAACTTTGGGCAGACTGGCGACTCAGAGTCAGTGCCCCGACCC
TCA
ACCAATCGGAGAACCCCCCGCAGGCCCTCTGGTCTGGGATCTGGTACAATGGCTGCAGGCGGG
TGG
CGCTCCAATGGCAGACAATAACGAAGCGCCGACGGAGTGGGTAGTTCTCAGGAAATTGGCA
TTG
CGATTCCACATGGCTGGCGACAGAGTCATCACCACCCAGACCCGAACCTGGGCCCTCCCCACC
TA
CAACAACCACTCTACAAGCAAATCTCCAACGGGACTTCGGGAGGAAGCACCAACGACAACAC
CTA
CTTCGGCTACAGCACCCCTGGGGTATTTTGACTTTAACAGATTCCACTGCCACTTCTCACCAC
G
TGACTGGCAGCGACTCATCAACAACAACTGGGGATTCCGGGCCCAAGAGACTCAACTTCAAGCTC

Fig. 15E

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TT
CAACATCCAGGTCAAGGAGGTACGCAGAAATGAAGGCACCAAGACCATCGCCAATAACCTTAC
CAG
CAGGATTCAGGTCTTTACGGACTCGGAATACCAGCTCCCGTACGTCCTCGGCTCTGCGCACCAG
GG
CTGCCTGCCTCCGTTCCCGGGGACGTCCTTCATGATTCCTCAGTACGGGTACCTGACTCTGAACA
A
TGGCAGTCAGGCCGTGGCCGTTCCCTCTACTGCCCTGGAGTACTTTCCTTCTCAAATGCTGA
G
AACGGGCAACAACCTTTGAGTTCAGCTACCAGTTTGAGGACGTGCCTTTTCACAGCAGCTACGCG
CA
CAGCCAAAGCCTGGACCGGCTGATGAACCCCTCATCGACCAGTACCTGTACTACCTGTCTCGG
AC
TCAGTCCACGGGAGGTACCGCAGGAACCTCAGCAGTTGCTATTTTCTCAGGCCGGCCTAATAAC
AT
GTGGGCTCAGGCCAAAACCTGGCTACCCGGGCCCTGTACCGGCAGCAACGGGTCTCCACGAC
ACT
GTGCGAAAATAACAACAGCAACTTTGCCTGGACCGGTGCCACCAAGTATCATCTGAATGGCAGA
GA
CTCTCTGTAAATCCCGGTGTCGCTATGGCAACCCACAAGGACGACGAAGAGCGATTTTTCGG
TC

SUBSTITUTE SHEET (RULE 26)

Fig. 15F

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CAGCGAGTCTTAATGTTTGGGAAACAGGAGCTGGAAAGACAACGTGGACTATAGCAGCGT
TAT
GCTAACCACTGAGGAAGAAATTAACCAACCAACCCAGTGCCACAGAACAGTACGGCGTGGT
GGC
CGATAACCTGCAACAGCAAAACGCCGCTCCTATTGTAGGGGCCGTCAACAGTCAAGGAGCCTTA
CC
TGGCATGGTCTGCGAGAACCGGGACGTGTACCTGCAGGGTCCTATCTGGGCCAAGATTCTCTCAC
AC
GGACGGAACTTTCATCCCTCGCCGCTGATGGGAGGCTTTGGACTGAAACACCCGCCCTCCTCAG
AT
CCTGATTAAAGAATACACCTGTTCCCGGGATCCTCCAACCTACCTTCAGTCAAGCTAAGCTGGCGT
C
GTTTCATCAGCAGTACAGCACCGGACAGGTCAGCGTGGAATTGAATGGGAGCTGCAGAAAGA
AAA
CAGCAAACGCTGGAAACCCAGAGATTCAATACACTTCCAACCTACTACAAATCTACAAATGTGGAC
TT
TGCTGTTAACACAGATGGCACCTTATTCTGAGCCTCGCCCCCATCGGCACCCGTTACCTCACCCCGTA
A
TCTGtaattgcttgtaatacaataaaccggtgattcgtttcagttgaacttggctctcgcgaag
ggcgaattcgtttaaacctgcaggactagaggtcctgtattagaggtaacgtgagtggttttgcgac
atthtgcacaccatgtggtcagctgggtatttaagcccgagtgagcagcagcaggggtctccatttt

Fig. 15C

gaagcgggagggttgaacggcagccggccaagccgaattctgcagatatccactggcggccc
 gctcgactagagcggccgccaacggcggtggagctccagcttttggttcccttagtgagggttaatt
 ggcgcttgggcgtaatcatgggtcatagctgttctctgtgtgaaattgttatccgctcacaattcca
 cacaacatacagagccgggaagcataaagtgtaaagccctgggggtgcctaataagtgagtgactaactcaca
 ttaattgcgttgcgctcactgcccgtttccagtcggggaaacctgtcgtgccagctgcattaatga
 atcggcccaacgcgcgggggaagagcggtttgcgtattgggcgctcttccgcttctcgcctcactgac
 tcgctgcgctcggtcgttcggctgcggcgagcggtatcagctcactcaaaaggcggtaatacgggtta
 tccacaggaatcagggggataaacgcagggaagaaacatgtgagcaaaaaggccaagccagggaac
 cgtaaaaaaggccggttgctggcggttttccataggctccgccccctgacgagagcatcacaaaaat
 cgacgctcaagtcagaggtggcgaacccgcagagactataaagataccaggcggttccccctggga
 agctccctcgtgcgctctcctgttccgaacctgcgcttaccgggatacctgtccgaccttttccct
 tcggggaagcgtggcgctttctcatagctcacgcgtgaggatctcagttcgggtgtaggtcgttcgc
 tccaagctgggctgtgtgcacgaacccccggttcagcccgacccgctggcgcttatccggtaactat
 cgctttgagtcacaacccggtaaggacacgacttatcgccactggscagcagccactgggtaacaggatt
 agcagagcgaggtatgtaggcggtgtctacagagttcttgaagtggtggcctaactacgggtacact
 agaagaaacagtatttgggtatctgcgctctgtcgaagccagttaccttcgggaaaaagagttggtagc
 tcttgatccggcaaaacaaacccgctggtgtagcgggtgtttttgtttgcaagcagcagattacg
 cgcaaaaaaaaaggatctcaagaaagatcctttgatctttctacgggggtcgtgacgctcagtggaac
 gaaaactcacggttaagggttttgggtcatgagattatcaaaaaaggatcttccactagatcctttta
 aattaaaaatgaagtttaaatcaatctaaagtatatatgagtaaaacttggctgacagttaccaaa
 tgcttaatcagtgaggcaccttatctcagcgatctgtcttatcttcgttcacatagttgcctgactc
 cccgtcgtgtagataaactacgatacggggagggttaccatctggccccagtgctgcaatgataccg

Fig. 15H

cgagaccacgctaccggctccagatttatcagcaataaaaccagccaggccggaggccgagcgc
 agaatgggtcctgcactttatccgcctccatccagtcataattgttgcggggaagctagagta
 agtagttccagttaatagtttgcgaacgttgttgcattgctacagggcacgtggtgtcaagc
 tcgtcgtttggtagtgcttcattcagctccggttccaaagatcaaggcgagttacatgatcccc
 atgttggtcaaaaaagcggttagctcttcggctctccgatcgtgtgtcagaagtaagtggccgca
 gtgttatcactcatgggttatggcagcactgcataattcttactgtcatgccatccgtaagatgc
 tttctgtgactggtgagtactcaaccaagtcattctgagaaatagtgtagcgggcgaccgaggtgc
 tcttgcccggtgcataacgggataataccggccacatagcagaacttaaaagtgctcatcatt
 ggaaaacgttcttcggggcgaaaactctcaaggatcttacccgtgttgagatccagttcgtatgaa
 ccactcgtgcaccccaactgatcttcagcatcttttactttcacccagcgtttctgggtgagcaaaa
 acaggaaaggcaaaatgccgcacaaaaggggataaaggggcgacacgggaaatgttgaatactcactc
 ttcttttcaatatattgaagcatttatcagggttattgtctcatgagcggatatacatatattgaa
 tgtatttagaaaaataaaacaaataggggttcgcgcacattccccgaaaaagtgccaccctaaattg
 taagcgttaatatattgttaaaattcgcgttaaaattttgttaaatcagctcatttttaaccaat
 agcccgaaatcgggcaaaatcccttatataatacaaaagaatagaccgagatagggttgagttgttc
 cagtttggaaacaaagagtcactattaaagaacgtgggactccaacgtcaaaaggcgaaaaaacgtct
 atcaggsgcgatggccactacgtgaaccatcaccttaataaagtttttgggggtcgagsgtgcgta
 aagcactaaaatcggaacccctaaaggaggagccccgatttagagcttgacggsggaaagccggcgaaacg
 tggcgagaaaaagggaagaaagcgaagaaggagcggcgctagggcgctgggcaagtgtagcgggtca
 cggctgcggtaaaccacacaccccgcgcttaatgcgcgcgtacagggcgctccattcgccat
 tcaggctgcgcaactgttggsggaaggcgatcggtgcggggcctcttcgctattacggcagctggcgga
 aaggsgsgatgtgctgcagaaggcgattaaagttggsgtaacgccaggsgtttccccagtcacgacgttgta

Fig. 151

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aaacgagccagtgagcgcgtaatacgactcactatagggcggaattgggtaccgggccccccc
 tcgatcgaggtcgacggtatcggggagctcgagggtctccatttgaagcgggaggtttgaacg
 cgcagccgcc (SEQ ID NO: 6)

MAADGYLPDWLEDNLSEGIREWWDLKPGAPKPKANQQKQDDGRGLVLP
 GYKYLGPFNGLDKGEPVNAADAAALEHDKAYDQQLKAGDNPYLRYNHADA
 EFQERLQEDTSFGGNLGRAVFQAKKRVLEPLGLVEEGAKTAPGKKRPVEPS
 PQRSPDSSTGIGKKQQPAKKRLNFGQTGDSVDPQPIGEPAGPSGL
 GSGTMAAGGAPMADNNEGADGVGSSSGNWHCDSTWLGDRVITSTRT
 WALPTYNNHLYKQISNGTSGGSTNDNTYFGYSTPWWGYDFNRFCHFS
 PRDWQRLINNNWGFPRKRLNFKLFNIQVKEVTQNEGTKIANNLTSTIQV
 FTDSEYQLPYVLGSAHQGCLPPFPADVFMIPQYGYLTLLNGSQAVGRSS
 FYCLEYFPSQMLRTGNFFESYQFEDVPPFHSSYAHSQSLDRLMNPLID
 QYLYLSRTQSTGGTAGTQQLLFSQAGPNMMSAQAKNWLPGPCYRQQRV
 STTLSQNNNSNFAWTGATKYHLNGRDSLVPNVPGVAMATHKDDDEERF
 FSPSSGVLMFGKQAGKDNVDYSSVMLTSEEEIKTTNPVATEQYGVVADNL
 QQQNAAPIVGA VNSQGALPGMVWQNRDVYLLQGPIWAKIPHTDGNFHP
 SPLMGGFGLKHPP PQILIKNTPVPADPPTTFSQAKLASFITQYSTGQV
 SVEIEWELQKENS~~KRW~~ NPEIQYTSNYYKSTNVDFAVNTDGT
 YSEPRPIGTRYLTRNL (SEQ ID NO: 7)

Fig. 15J

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Fig. 15K

1540 tgaccacaggactcctccctgcaggacggcgaggttcattctacaagggtgaagctgcgcg
 126▶ V T Q D S S L Q D G E F I Y K V K L R
 1597 gcaccaacttccctccgacggcccgtaatgcagaagaagaccatgggctgggagg
 145▶ G T N F P S D G P V M Q K K T M G W E
 1654 cctcctcggagcgatgtaccccgaggacggcgccctgaaggcgagatcaagcaga
 164▶ A S S E R M Y P E D G A L K G E I K Q
 1711 ggctgaagctgaaggacggcgccactacgacgctgagggtcaagaccacctacaagg
 183▶ R L K L K D G G H Y D A E V K T T Y K
 1768 ccaagaagcccgctgcagctgccggcgccctacaacgctcaacatcaagttggacatca
 202▶ A K K P V Q L P G A Y N V N I K L D I
 1825 cctcccaacaacgaggactacaccatcgtggaaacagtacgaacgcgcgagggccgcc
 221▶ T S H N E D Y T I V E Q Y E R A E G R
 1882 actccacggcgcatggacgagctgtacaagtaataagggaattcgatatcaagctta
 240▶ H S T G G M D E L Y K • •

WPRE (1943)

1939 tcgataatcaaccctctggattacaaaatttgtgaagattgactgggtattcttaact
 1996 atgttgctccttttacgctatgtggatacgctgctttaatgcctttgtatcatgcta
 2053 ttgcttcccgatggctttcatttctcctccttgataaattcctggtgctgtc
 2110 tttatgaggagtgtggccggtgtcaggcaacgtggcggtggtgactgtgtttg
 2167 ctgacgcaacccccactgggtggggcattgccaccacacctgtcagctccttccggga
 2224 ctttcgcttccccctccctatttgccaagggaactcatcgccgctgcttgc
 2281 gctgctggacaggggctcggtgttgggcactgacaattccgtgtgtgtcgggga

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2338 aatcatcgctctttccttggtgctgcctgtgttgccacctggattctgcgcggga
2395 cgctcttctgtacgtcccttcggccctcaatccagcggaccttcttcccgcgcc
2452 tgctcgggctctgcggccttccggtcttcgcttcgcccctcagacgagtcgga
BGH
2509 tctccctttgggcgcctcccgcatacgcgtgcactgcgtgatcagcctcgac
2566 tgtgccttctagttagccacatctgtgtttgttgcctcccgcgtgcttctcttgac
2623 cctggaaggtgcaactcccactgtcttcttaataaatgaggaaattgcatacgca
2680 ttgtctgagtgggtgtcattctattctgggggtgggtgggcaggacagcaagggg
2737 ggaggattgggaagacaatagcaggcatgtctggggtgcggtgggctctatggcttc
2794 tgaggcggaagaaaccagctgggctcgactagagcatggctacgtagataagtagc
2851 atggcgggttaatcattaaactacaaggaaacccctagtgtggtggttgccactccct
2908 ctctgcgcgctcgctcgtcactgaggcgggcgaccaaaggctgcgcgacgcgcgg
ITR (3004)
2965 gctttgcccgggcctcagtgagcgagcgagcgagcgtttttgcanaagcc
3022 taggcctccaaaaagcctcctcactacttctggaatagctcagagggcgagcgcc
3079 ctgcgcctctgcataaataaaaaaattagtcagccatggggcgaggaaatgggcgga
3136 actggcggaagttagggcggaatgggcggaattaggggcgggactatggttgctga
3193 ctaattgagatgcattgctttgcatacttctgcctgctggggagcctggggactttcc
3250 acacctggttgctgactaaattgagatgcattgttgcatacttctgctgtgaggga
3307 gcctggggactttccacaccctaactgacacacattccacagctgcattaatgaatc

Fig. 15L

3364 ggccaa cgcg cggg agag ggggtt tgcgtat tggg cgtctt ccgctt cctc gctc
 3421 actgac tgcgt cgcgt cgttc ggtcgt tgcggc gagggt atcagc tcaact caaag
 3478 gcggtat acggtt atccac agaatc agggga taacgc aggaag aacatg tgagca
 3535 aaaggg ccagca aaaggg ccagga accgtaa aaaggg cgtt gctggc gttttccat
 3592 aggtcc gccccct gacg agcatc acaaaa atcgac gctca agtcag aggtgg cga
 3649 aacccg acagga ctataa agatac ccaggc gtttcccc ctgga agctcc ctcgtgcgc
 3706 tctcct gttcc gacctg ccgctt accggg ataccct gtcgc ctttct ccccttcggga
 3763 agcgtg gcgttt tctcat agctca cgtgt aggtat ctca gttc ggtgt aggtcgtt
 3820 cgtcca agctgg gctgt gtgcac gaaccccc cgttc agcccg accgct gcgcctta
 3877 tccggt aactat cgtctt gtagtc caaccc cggtaa gacac gacttat cgcactgg ca
 3934 gcagcc actggg taacagg attagc agagcg aggtat gtaggc ggtgcta cagagtc
 3991 ttgaag tggtag cctaact acggct acacta gaaagaa acagtat ttggta tctgcgt
 4048 ctgctg aagccag ttacct tcggaa aaagag ttggt agctctt gatccg gcaacaa
 4105 accacc gctgg tagcgg tgggtt tttttg ttgcaa gcagc agattac gcgcag aaaaa
 4162 aaaggat ctcaga agatcc ctttga tctttt ctaac ggggtc tgacgc tcaagt ggaac
 4219 gaaaact cacgt taaggga ttttgg tcatga gatata caaaaa aggatc ttcaccta g
 4276 atccttt ttaaat taaaaa atgaag ttttaa atcaat ctctaa agtatata tatg agtaaa ct

Ampicillin (4345)
 4333 tggctc tgacag ttaccaa tgcctta atcag tgcagtg aggcac cttatc tcagcg atctgt cta
 2864 W H K I L S A G I E A I Q R

4390 ttctcgttcatccatagttgcctgactccccgcgtgtagatataactacgatacgggag
 271◀ N R E D M T A Q S G T T Y I V V I R S
 4447 ggcttaccatctggccccagtgctgcaatgataccgcgagaccacgctcacggct
 252◀ P K G D P G L A A I I G R S G R E G A
 4504 ccagatttatcagcaataaacccagccggaaggcgagcgcaagaagtgtcct
 233◀ G S K D A I F W G A P L A S R L L P G
 4561 gcaactttatccgcctccatccagtcctatttaattgttgcgggaagctagagtaagt
 214◀ A V K D A E M W D I L Q Q R S A L T L
 4618 agttcgccagttaatagtttgcgcaacggtgttgccattgctacaggcatcggtg
 195◀ L E G T L L K R L T T A M A V P M T T
 4675 tcacgctcgctgttggtatggcttcattcagctccggtcccaacgatcaaggcga
 176◀ D R E D N P I A E N L E P E W R D L R
 4732 gttacatgatcccccatgttgtgcanaaaagcggttagctccttcggtcctccgac
 157◀ T V H D G M N H L F A T L E K P G G I
 4789 gttgtcagaagtaagttggccgcagtggttatcactcatgggttatggcagcactgcat
 138◀ T T L L N A A T N D S M T I A A S C
 4846 aattcttactgtcatgccatccgtaagatgcttttctgtgactggtgagtactca
 119◀ L E R V T M G D T L H K E T V P S Y E
 4903 accaagtcattctgagaatagtgatgcggcgaccgagttgctcttgcccggcgctca
 100◀ V L D N Q S Y H I R R G L Q E Q G A D
 4960 atacgggataataaccgcgcacatagcagaactttaaagtgctcatcttggaanaa
 81◀ I R S L V A G C L L V K F T S M M P F
 5017 cgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgatg
 62◀ R E E P R F S E L I K G S N L D L E I

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5074 taaccactcgtgcacccaactgatcttcagcatcttttacttttaccagcgtttct
 43 Y G V R A G L Q D E A D K V K V L T E
 5131 gggtagcaaaaacagggaaggcaaatgccgcacaaaagggaataaggcgacacgg
 24 P H A F V P L C F A A F F P I L A V R
 5188 aatgttgatactcatactcttcttttcaatatatttgagcatttatcaggg
 5 F H Q I S M
 5245 tattgtctcatgagcgatacatatttgatgtatttagaaaaataaacaatagg
 5302 gtccgcgcacatttcccgaaaagtgcacctgacgtctaagaaccattattatc
 5359 atgacattaacctataaaaataggcgtatcacgagggccttctcgcgcttc
 5416 ggtgatgacggtgaaaacctctgacacatgcatgctccggagacggtcacagctgt
 5473 ctgtaagcggatgccgggagcagacaagccgctcagggcgctcagcgggtgtggc
 5530 ggggtgcgggctggcttaactatgcggcatcagagcagattgtactgagagtgcac
 5587 cattcgacgctctcccttatgcgactcctgcatttaggaagcagcccagtagagtt
 5644 gaggccggtgagcacccgcgcgcaagggaatggtgcatgcaaggagatggcgccaa
 5701 cagtcgcccgccacggggcctgcccaccataccacgccggaacaagcgctcatgag

Fig. 150

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5758 cccgaagtggcgagcccgatcttcccatcggtgatgtcggcgatatagggccagc
5815 aaccgcacctgtggcgccggtgatgcggccacgatacgtcggcgtagagatctg
5872 gctagcgatgacctgctgattggttcgctgacatttccgggtgcggacggcgtt
5929 accagaaactcagaagggttcgtccaaacacgactctgacggcagtttacgagag
5986 agatgatagggtctgcttcagtaagccagatgctacacaattaggcttgtaacatt
6043 gtcgttagaacgcggctacaattataacataaccttatgtatcatacacatacgatt
6100 taggtgacactatagaaatacacggaattaatc

Fig. 15P

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M4 human

manftpvngs sgnqsvrlvt ssshnyetv emvfiatvtg slslvtvvgv ilvmlsikvn
 rqlqtvnnvf lfslacadli igafsmnlyt vyikgywpl gavvcdlwa ldyvvsnasv
 mnlliisfdr yfcvtkplty parrttkmag lmiiaawvls fvlwapailf wqfvvgkrtv
 pdnqcfiqfl snpavtfgta iaafylpvvi mtvlyihisl asrsrvhkhv pegpkekkak
 tlaflksplm kqsvkkpppg eaareelrng kleeapppal pppprpvadk dtsnesssgs
 atqntkerpa telstteatt pampapplqp ralnpasrws kiqivtkqtg necvtaieiv
 patpagmrpa anvarkfasi arnqvrkkrq maarerkvtr tifaillafi ltwtpynvmv
 lvntfcqsci pdtvwsigyw lcyvnstinp acyalcnatf kktfrhllic qyrnigtar

(SEQ ID NO:10)

manftpvngs sgnqsvrlvt ssshnyetv emvfiatvtg slslvtvvgv ilvmlsikvn
 rqlqtvnnvf lfslacadli igafsmnlyt vyikgywpl gavvcdlwa ldyvvsnasv
 mnlliisfdr yfcvtkplty parrttkmag lmiiaawvls fvlwapailf wqfvvgkrtv
 pdnqcfiqfl snpavtfgta iaafylpvvi mtvlyihisl asrsrvhkhv pegpkekkak
 tlaflksplm kqsvkkpppg eaareelrng kleeapppal pppprpvadk dtsnesssgs
 atqntkerpa telstteatt pampapplqp ralnpasrws kiqivtkqtg necvtaieiv
 patpagmrpa anvarkfasi arnqvrkkrq maarerkvtr tifaillafi ltwtpynvmv
 lvntfcqsci pdtvwsigyw lcyvnstinp acyalcnatf kktfrhllic qyrnigtar

(SEQ ID NO:11)

Fig. 16A

M3 human

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mtlhnnstts plfpniSSsw ihspSDaglp pgtvthfgsy nvsraagnfs spdgtdddpl
 gghtvwqvff iafltgilal vtiiignilvi vsfkvnkqlk tvnnyfllsl acadliigvi
 smnlfttyii mnrwalgnla cdlwlaidyv asnasvmnl visfdryfsi trpltyrkr
 ttkragvmig lawvisfvlw apailfwqyf vgkrtvppge cfiglsept itfgtaiaaf
 ympvtimtil ywriyketek rtkelagla sgteaetenf vhptgssrsc ssyelqqqsm
 krsnrrkygr chfwfttksw kpsseqmdqd hssdswnnn daaaslensa ssdeedigse
 traiysivlk lpghstilns tklpssdnlq vpeeelgmvd lerkadklqa qksvddggsf
 pkfsklpiq lesavdtakt sdvnssvgks tatlpIsfke atlakrfalk trsqitkrkr
 mslvkekkaa qtlSaillaf iitwtpynim vlvntfcdsc ipktfwnlgy wlcynstvn
 pvcyalcnkt frttfkmlll cqcdkkrk qqyqqrqsvi fhkrapeqal (SEQ ID

NO.: 12)

Fig. 16B