

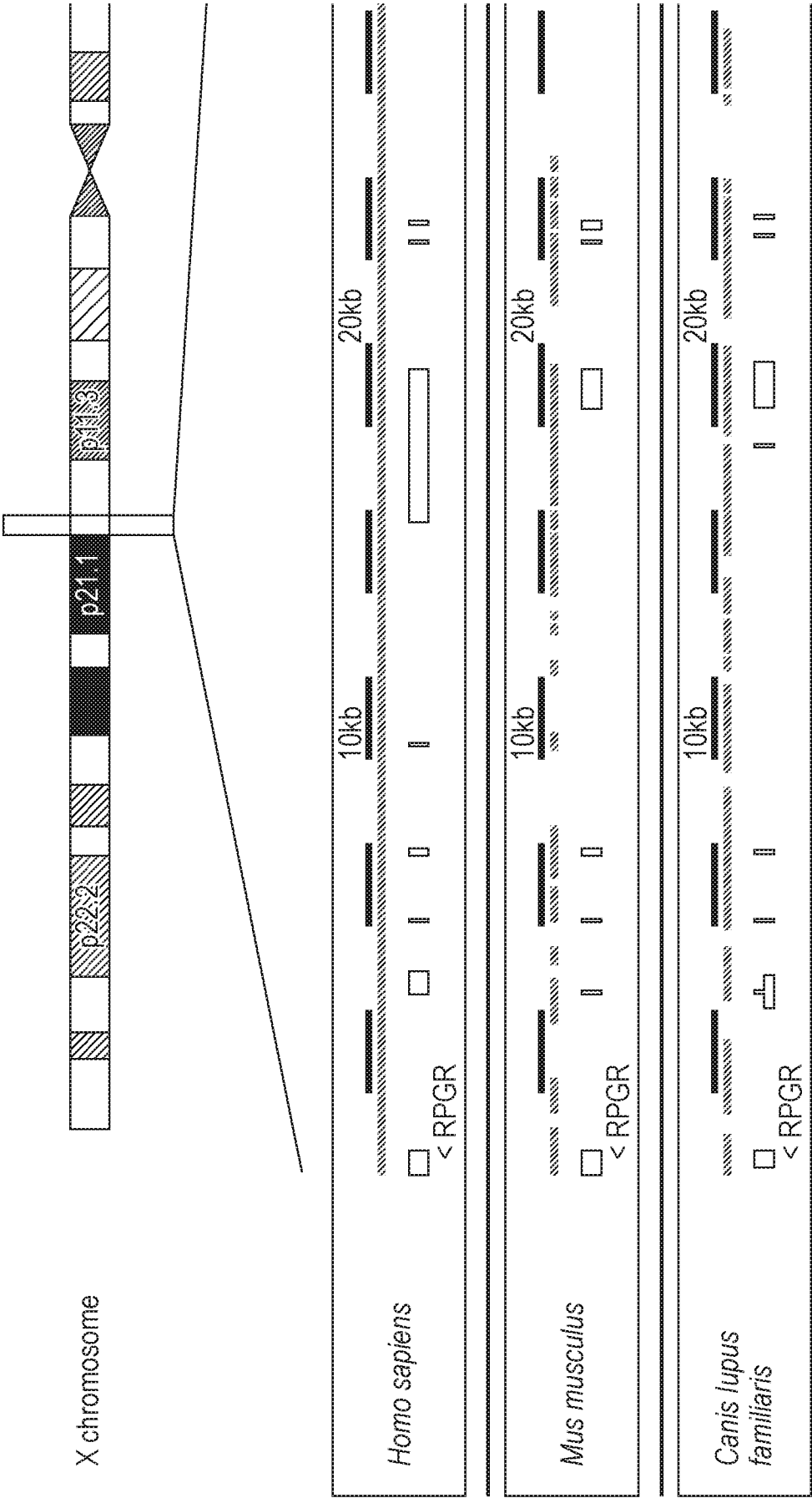


FIG. 1

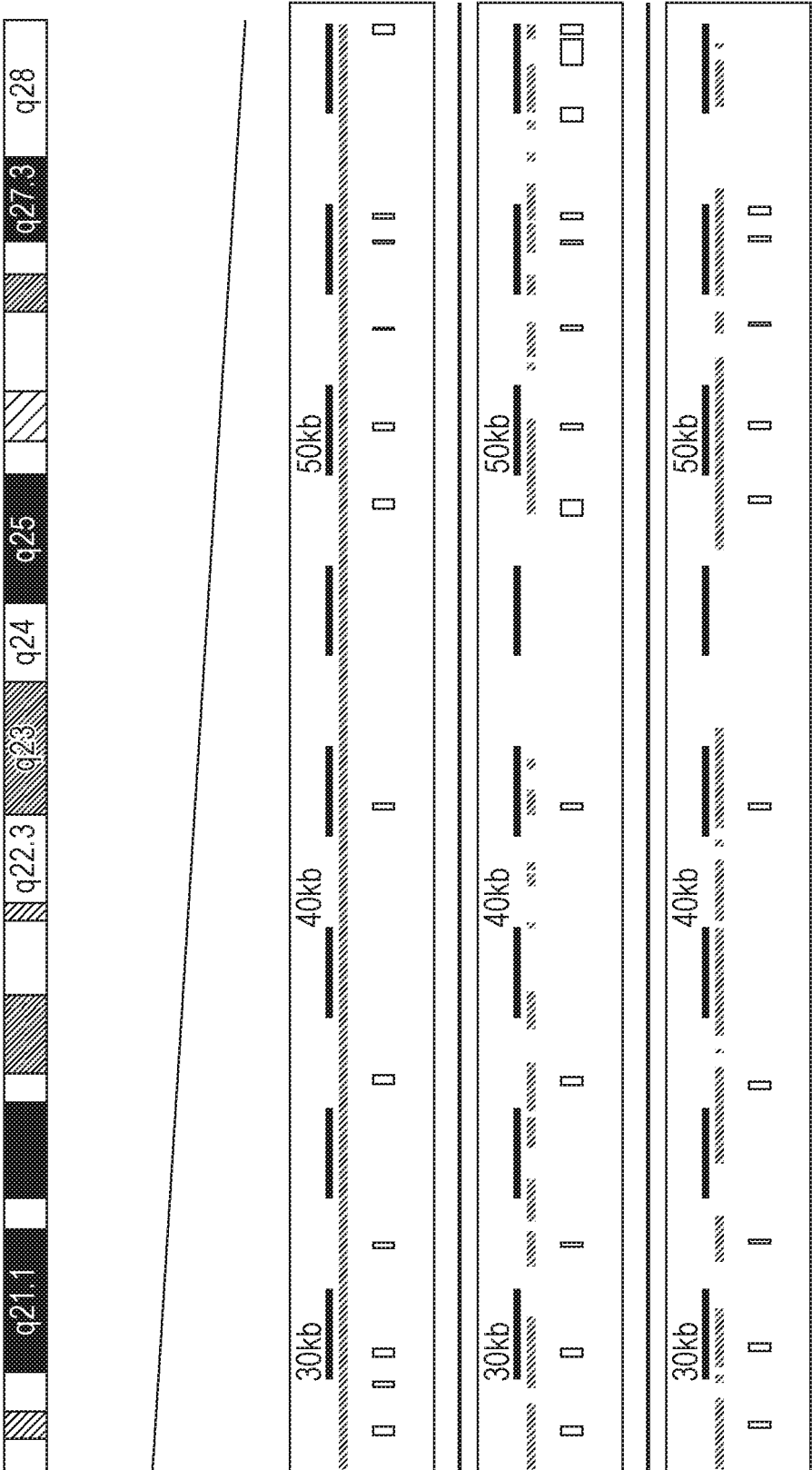


FIG. 1 (Continued)

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Optimized	1	<u>ATGAGAGAGCCAGAGGAGCTGATGCCAGACAGTGGAGCAGTGT</u> <u>TACATTCGGAAAATCT</u>
Original	1	ATGAGGGAGCCGGAAGAGCTGATGCCCCATTCCGGGTGCTGTGTTACATTTGGGAAAAGT
Optimized	61	<u>AAGTTCGCTGAAAAATAACCCAGGAAAGTTCTGGTTTAAAAACGACGTGCCCCGCCACCTG</u>
Original	61	AAATTTGCTGAAAAATAATCCCGGTAAATTCTGGTTTAAAAATGATGTCCCTGTACATCTT
Optimized	121	<u>TCTTGTGGCGATGAGCATAGTGCCGTGGTCACTGGGAACAATAAGCTGTACATGTTCGGG</u>
Original	121	TCATGTGGAGATGAACATTCTGCTGTTGTTACCGGAAATAATAAACTTTACATGTTTGGG
Optimized	181	<u>TCCAACAAC</u> <u>TGGGGACAGCTGGGGCTGGGATCCAAATCTGCTATCTCTAAGCCAACCTGC</u>
Original	181	AGTAACAACTGGGGTCAGTTAGGATTAGGATCAAAGTCAGCCATCAGCAAGCCAACATGT
Optimized	241	<u>GTGAAGGCACTGAAACCCGAGAAGGTCAA</u> <u>ACTGGCCGCTTGTGGCAGAAACCACACTCTG</u>
Original	241	GTCAAAGCTCTAAACCTGAAAAAGTGAAATTAGCTGCCTGTGGAAGGAACCACACCCTG
Optimized	301	<u>GTGAGCACCGAGGGCGGGAATGTCTATGCCACCGGAGGCAACAATGAGGGACAGCTGGGA</u>
Original	301	GTGTCAACAGAAGGAGGCAATGTATATGCAACTGGTGGAATAATGAAGGACAGTTGGGG
Optimized	361	<u>CTGGGGGACACTGAGGAAAGGAATACCTTT</u> <u>CACGTGATCTCCTTCTTTACATCTGAGCAT</u>
Original	361	CTTGGTGACACCGAAGAAAGAAACACTTTTCATGTAATTAGCTTTTTTACATCCGAGCAT
Optimized	421	<u>AAGATCAAGCAGCTGAGCGCTGGCTCCAACACATCTGCAGCCCTGACTGAGGACGGGCGC</u>
Original	421	AAGATTAAGCAGCTGTCTGCTGGATCTAATACTTCAGCTGCCCTAACTGAGGATGGAAGA
Optimized	481	<u>CTGTTTATGTGGGGAGATAATT</u> <u>CAGAGGGCCAGATTGGGCTGAAAAACGTGAGCAATGTG</u>
Original	481	CTTTTTATGTGGGGTGACAATTCCGAAGGGCAAATTGGTTTAAAAAATGTAAGTAATGTC
Optimized	541	<u>TGCGTCCCTCAGCAGGTGACCATCGGAAAGCCAGTCAGTTGGATTTCATGTGGCTACTAT</u>
Original	541	TGTGTCCCTCAGCAAGTGACCATTGGGAAACCTGTCTCCTGGATCTCTTGTGGATATTAC
Optimized	601	<u>CATAGCGCCTTCGTGACCACAGATGGCGAGCTGTACGTCTTGGGGAGCCCGAAAACGGA</u>
Original	601	CATTCAGCTTTTGTAACAACAGATGGTGAGCTATATGTGTTTGGAGAACCTGAGAATGGG
Optimized	661	<u>AAACTGGGCCTGCCTAACCAGCTGCTGGGCAATCACC</u> <u>GGACACCCAGCTGGTGTCCGAG</u>
Original	661	AAGTTAGTCTTCCCAATCAGCTCCTGGGCAATCACAGAACACCCAGCTGGTGTCTGAA
Optimized	721	<u>ATCCCTGAAAAAGTGATCCAGGTCGCTGCGGGGGAGAGCATACAGTGGTCCTGACTGAG</u>
Original	721	ATTCCGGAGAAGGTGATCCAAGTAGCCTGTGGTGGAGAGCATACTGTGGTTCTCACGGAG
Optimized	781	<u>AATGCTGTGTATACCTTCGGACTGGGCCAGTTTGGCCAGCTGGGGCTGGGAACCTTCTCTG</u>
Original	781	AATGCTGTGTATACCTTTGGGCTGGGACAAFTTGGTCAGCTGGGTCTTGGCACTTTTCTT

FIG. 2

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Optimized	841	<u>TTTGAGACATCCGAACCAAAAGTGATCGAGAACATT</u> <u>CGCGACCAGACTATCAGCTACATT</u>
Original	841	TTTGAAACTTCAGAACCCAAAGTCATTGAGAATATTAGGGATCAAACAATAAGTTATATT
Optimized	901	<u>TCCTGCGGAGAGAATCACACCGCACTGATCACAGACATTGGCCTGATGTATACCTTTGGC</u>
Original	901	TCTTGTGGAGAAAATCACACAGCTTTGATAACAGATATCGGCCTTATGTATACTTTTGGG
Optimized	961	<u>GATGGACGACACGGGAAGCTGGGACTGGGACTGGAGAACTTCACTAATCATTTTATCCCC</u>
Original	961	GATGGTCGCCACGGAAAATTAGGACTTGGACTGGAGAATTTTACCAATCACTTCATTCCT
Optimized	1021	<u>ACCCTGTGTTCTAACTTCCTGCGGTTTCATCGTGAAACTGGTCGCTTGGCGGGGTGTCAC</u>
Original	1021	ACTTTGTGCTCTAATTTTTTGGAGTTTATAGTTAAATTGGTTGCTTGTGGTGGATGTCAC
Optimized	1081	<u>ATGGTGGTCTTCGCTGCACCTCATAGGGGCGTGGCTAAGGAGATCGAATTTGACGAGATT</u>
Original	1081	ATGGTAGTTTTTGTGCTCCTCATCGTGGTGTGGCAAAAGAAATTGAATTCGATGAAATA
Optimized	1141	<u>AACGATACATGCCTGAGCGTGGCAACTTTCCTGCCATACAGCTCCCTGACTTCTGGCAAT</u>
Original	1141	AATGATACTTGCTTATCTGTGGCGACTTTTCTGCCGTATAGCAGTTTAACCTCAGGAAAT
Optimized	1201	<u>GTGCTGCAGAGAACCCTGAGTGCAAGGATGCGGAGAAGGGAGAGGGAACGCTCTCCTGAC</u>
Original	1201	GTA CTGCAGAGGACTCTATCAGCACGTATGCGGCGAAGAGAGAGGGAGAGGTCTCCAGAT
Optimized	1261	<u>AGTTTCTCAATGCGACGAACCCTGCCACCTATCGAGGGAACACTGGGACTGAGTGCCTGC</u>
Original	1261	TCTTTTCAATGAGGAGAACACTACCTCCAATAGAAGGGACTCTTGGCCTTTCTGCTTGT
Optimized	1321	<u>TTCCTGCCTAACTCAGTGTTTCCACGATGTAGCGAGCGGAATCTGCAGGAGTCTGTCTTG</u>
Original	1321	TTTCTCCCAATTCACTCTTTCCACGATGTTCTGAGAGAAACCTCCAAGAGAGTGTCTTA
Optimized	1381	<u>AGTGAGCAGGATCTGATGCAGCCAGAGGAACCCGACTACCTGCTGGATGAGATGACCAAG</u>
Original	1381	TCTGAACAGGACCTCATGCAGCCAGAGGAACCAGATTATTTGCTAGATGAAATGACCAAA
Optimized	1441	<u>GAGGCCGAAATCGACAACCTCTAGTACAGTGGAGTCCCTGGGCGAGACTACCGATATCCTG</u>
Original	1441	GAAGCAGAGATAGATAATTCTTCAACTGTAGAAAGCCTTGGAGAACTACTGATATCTTA
Optimized	1501	<u>AATATGACACACATTATGTCACTGAACAGCAATGAGAAGAGTCTGAAACTGTCACCACTG</u>
Original	1501	AACATGACACACATCATGAGCCTGAATTCCAATGAAAAGTCATTAAAATTATCACCAGTT
Optimized	1561	<u>CAGAAGCAGAAGAAACAGCAGACTATTGGCGAGCTGACTCAGGACACCGCCCTGACAGAG</u>
Original	1561	CAGAAACAAAAGAAACAACAACAATTGGGGAACTGACGCAGGATACAGTCTTACTGAA
Optimized	1621	<u>AACGACGATAGCGATGAGTATGAGGAAATGTCCGAGATGAAGGAAGGCAAAGCTTGTAAG</u>
Original	1621	AACGATGATAGTGATGAATATGAAGAAATGTCAGAAATGAAAGAAGGGAAAGCATGTAAA

FIG. 2 (Continued)

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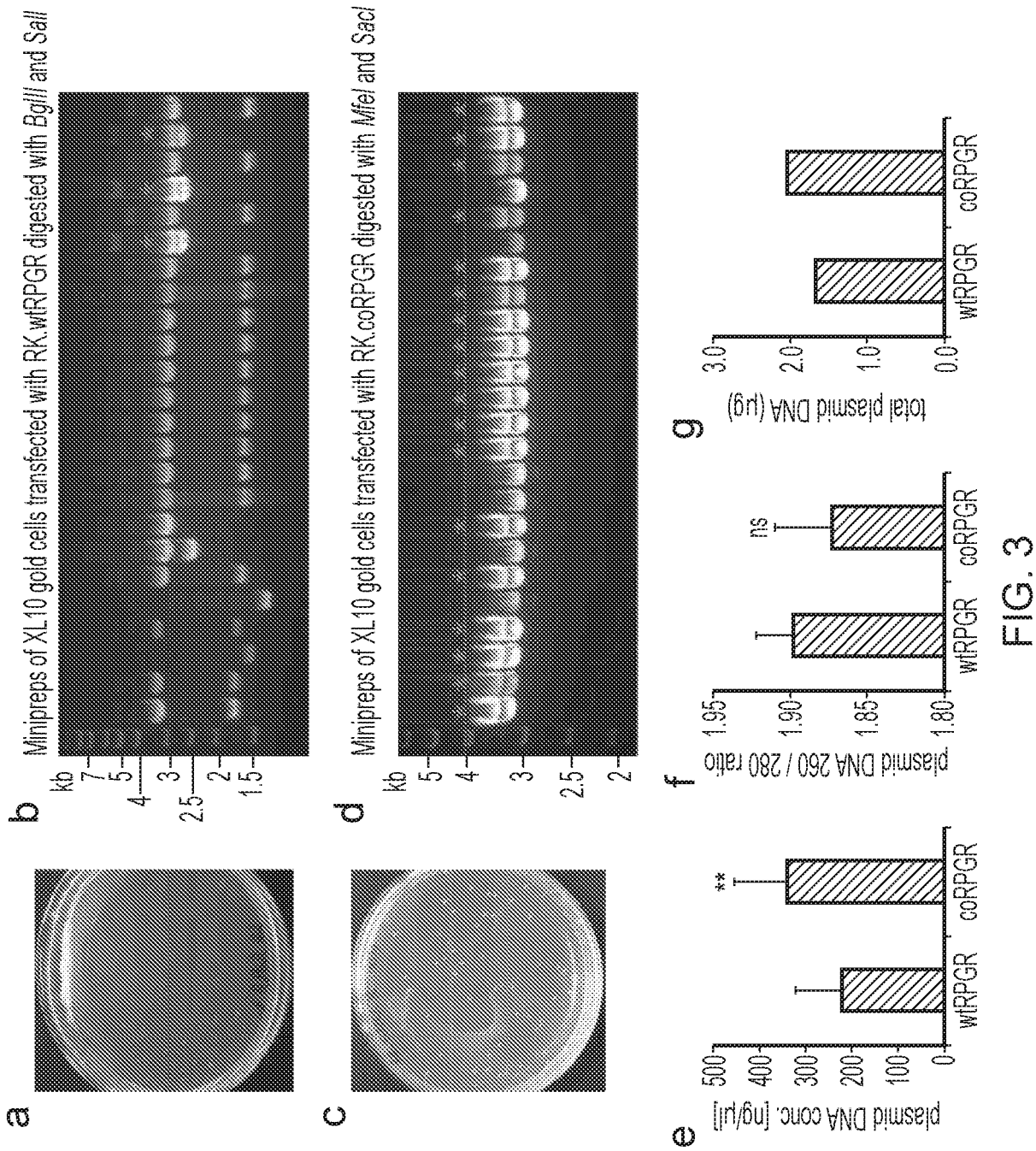
Optimized	1681	<u>CAGCATGT</u> <u>CAGTCAGGGGATCTTCATGACACAGCCAGCCACA</u> <u>ACTATTGAGGCTTTTTCA</u>
Original	1681	CAACATGTGTACAAGGGATTTTCATGACGCAGCCAGCTACGACTATCGAAGCATTTTCA
Optimized	1741	<u>GACGAGGAAGTGGAGATCCCCAGGAAAAAGAGGGCGCAGAAGATTCCAAGGGGAATGGA</u>
Original	1741	GATGAGGAAGTAGAGATCCCAGAGGAGAAGGAAGGAGCAGAGGATTCAAAAGGAAATGGA
Optimized	1801	<u>ATTGAGGAACAGGAGGTGGAAGCCAACGAGGAAAAATGTGAAAGTCCACGGAGGCAGGAAG</u>
Original	1801	ATAGAGGAGCAAGAGGTAGAAGCAAATGAGGAAAAATGTGAAGGTGCATGGAGGAAGAAAG
Optimized	1861	<u>GAGAAAACAGAAATCCTGTCTGACGATCTGACTGACAAGGCCGAGGTGTCCGAAGGCAAG</u>
Original	1861	GAGAAAACAGAGATCCTATCAGATGACCTTACAGACAAAGCAGAGGTGAGTGAAGGCAAG
Optimized	1921	<u>GCAAAATCTGTCCGAGAGGCAGAAGACGGACCAGAGGGACGAGGGGATGGAACCTGCGAG</u>
Original	1921	GCAAAATCAGTGGGAGAAGCAGAGGATGGGCCTGAAGGTAGAGGGGATGGAACCTGTGAG
Optimized	1981	<u>GAAGGCTCAAGCGGGGCTGAGCATTGGCAGGACGAGGAACGAGAGAAGGGCGAAAAGGAT</u>
Original	1981	GAAGGTAGTTTCAGGAGCAGAACACTGGCAAGATGAGGAGAGGGAGAAGGGGGAGAAAGAC
Optimized	2041	<u>AAAGGCCGCGGGGAGATGGAACGACCTGGAGAGGGCGAAAAAGAGCTGGCAGAGAAGGAG</u>
Original	2041	AAGGGTAGAGGAGAAATGGAGAGGCCAGGAGAGGGAGAGAAGGAAGTAAGCAGAGAAGGAA
Optimized	2101	<u>GAATGGAAGAAAAGGGACGGCGAGGAACAGGAGCAGAAAGAAAGGGAGCAGGGCCACCAG</u>
Original	2101	GAATGGAAGAAGAGGGATGGGGAAGAGCAGGAGCAAAAGGAGAGGGAGCAGGGCCATCAG
Optimized	2161	<u>AAGGAGCGCAACCAGGAGATGGAAGAGGGCGCGGAGGAAGAGCATGGCGAGGGAGAAGAG</u>
Original	2161	AAGGAAAGAAACCAAGAGATGGAGGAGGGAGGGGAGGAGGAGCATGGAGAAGGAGAAGAA
Optimized	2221	<u>GAAGAGGGCGATAGAGAAGAGGAAGAGGAAAAAGAAGGCCAAGGGGAAGGAGGAAGGAGAG</u>
Original	2221	GAGGAGGGAGACAGAGAAGAGGAAGAAGAGAAGGAGGGAGAAGGGAAAGAGGAAGGAGAA
Optimized	2281	<u>GGCGAGGAAGTGAAGGCCGAGAGGGAAAAGAGGAAGGAGAACGGAAGAAAGAGGAAAGA</u>
Original	2281	GGGGAAGAACTGGAGGCAGAACCTGAAAAGGAGGAAGCAGAGAGGAAAAAGGAGGAAACA
Optimized	2341	<u>GCCGGCAAAGAGGAAAAAGGGCGAGGAAGAGGGCGATCAGGGCGAAGGCCAGGAGGAAGAG</u>
Original	2341	GCGGGGAAGGAGGAGAAAGGAGAGGAAGAAGGAGACCAAGGAGAGGGGGAAGAGGAGGAA
Optimized	2401	<u>ACCGAGGGCCGCGGGGAAGAGAAAGAGGAGGGAGGAGAGGTGGAGGGCGGAGAGGTCAA</u>
Original	2401	ACAGAGGGGAGAGGGGAGGAAAAAGAGGAGGGAGGGGAAGTAGAGGGAGGGGAAGTAGAG
Optimized	2461	<u>GAGGGAAAGGGCGAGCGCAAGAGGAAGAGGAAGAGGGCGAGGGCGAGGAAGAAGAGGGC</u>
Original	2461	GAGGGGAAGGAGAGAGGGAAGAGGAAGAGGAGGAGGGTGAGGGGAAGAGGAGGAAGGG
Optimized	2521	<u>GAGGGGAAGAAGAGGAGGGAGAGGGCGAAGAGGAAGAGGGGAGGGAAAGGGCGAAGAG</u>
Original	2521	GAGGGGAAGAGGAGGAAGGGGAGGGGGAAGAGGAGGAAGGAGAAGGGAAAGGGGAGGAA

FIG. 2 (Continued)

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Optimized	2581	<u>GAAGGAGAGGAAGGGGAGGGAGAGGAAGAGGGGGAGGAGGGCGAGGGGAAGGCCAGGAG</u>
Original	2581	GAAGGGGAAGAAGGACAAGGGGAGGAAGAAGGGGAGGAAGGAGAAGGGGAGGGGAAGAG
Optimized	2641	<u>GAAGAAGGAGAGGGGAAGGCCAAGAGGAAGGCCAGGGGAAGGAGAGGAGGAAGAAGGG</u>
Original	2641	GAGGAAGGAGAAGGGGAGGGAGAAGAGGAAGGAGAAGGGGAGGGAGAAGAGGAGGAAGGA
Optimized	2701	<u>GAAGGCCAAGGCCAAGAGGAGGGGACAAGGAGAGGGGGAGGAAGAGGAAGGACAAGGCAAG</u>
Original	2701	GAAGGGGAGGGAGAAGAGGAAGGAGAAGGGGAGGGAGAAGAGGAGGAAGGAGAAGGGAAA
Optimized	2761	<u>GGCGAGGAGGAAGGCCAAGAGGGGAGAGGGGAAGGCCAGGAAGAGGAAGGCCAGGGCGAA</u>
Original	2761	GGGGAGGAGGAAGGAGAGGAAGCAGAAGGGGAGGGGAAGAGGAGGAAGGACAAGGGGAA
Optimized	2821	<u>GGAGAGGACGGCGAGGGCGAGGGAGAAGAGGAGGAAGGGGAATGGGAAGGCCAAGAAGAG</u>
Original	2821	GGGGAGGATGGAGAAGGGGAGGGGGAAGAGGAGGAAGGAGAATGGGAGGGGAAGAGGAG
Optimized	2881	<u>GAAGGCCAAGGCCAAGGCCAAGAAGAGGGCCAAGGGGAGGGCGAGGAGGGCCAAGGCCAA</u>
Original	2881	GAAGGAGAAGGGGAGGGGGAAGAGGAAGGACAAGGGGAAGGGGAGGAAGGAGAAGGGGAG
Optimized	2941	<u>GGGGAGGAAGAGGAAGGCCAAGGAGAAGGCCAGGAAGAAGAGGGAGAGGAGGAAGGCCAG</u>
Original	2941	GGGGAAGAGGAGGAAGGAGAAGGGGAGGGGGAAGAGGAGGAAGGGGAAGAGAAGGGGAG
Optimized	3001	<u>GAGCAAGGAGAGGGGGAGGAGGGGAGAAGGCCAGGGCGAAGAACAAGAAGAGGGAGAA</u>
Original	3001	GAAGAAGGAGAGGGGAGGGAAGAAGGGGAGGGAGAAGGGGAGGAAGAAGAGGAAGGGGAA
Optimized	3061	<u>GTGGAGGGCGAAGTTCGAGGGGGAGGAGGGAGAAGGGGAAGGGGAGGAAGAAGAGGGCGAA</u>
Original	3061	GTGCAAGGGGAGGTGGAAGGGGAGGAAGGACAGGGGGAAGGAGAGGAAGAGGAAGGAGAG
Optimized	3121	<u>GAAGAAGGCCAGGAAAGAGAAAAAGAGGGAGAAGGCCAGGAAAAACCGAGAAATAGGGAA</u>
Original	3121	GAGGAAGGAGAAGAAAGGGAAGAGGGGGAAGGAGAAGAAAAACAGGAGGAACAGAGAA
Optimized	3181	<u>GAGGAGGAAGAGGAAGAGGGAAAGTACCAGGAGACAGGCCAAGAGGAAAAACAGCGGCAG</u>
Original	3181	GAGGAGGAGGAAGAAGAGGGGAAGTATCAGGAGACAGGCCAAGAAGAGAATGAAAGGCAG
Optimized	3241	<u>GATGGCGAGGAATATAAGAAAAGTGAGCAAGATCAAAGGATCCGTCAAGTACGGCAAGCAC</u>
Original	3241	GATGGAGAGGAGTACAAAAAAGTGAGCAAAATAAAAGGATCTGTGAAATATGGCAAACAT
Optimized	3301	<u>AAAACCTATCAGAAGAAAAGCGTGACCAACACACAGGGGAATGGAAAAGAGCAGAGGAGT</u>
Original	3301	AAAACATATCAAAAAAAGTCAGTTACTAACACACAGGGAAATGGGAAAGAGCAGAGGTC
Optimized	3361	<u>AAGATGCCTGTGCAGTCAAAACGGCTGCTGAAGAATGGCCATCTGGAAGTAAAAAATTC</u>
Original	3361	AAAATGCCAGTCCAGTCAAAACGACTTTTAAAAAACGGGCCATCAGGTTCCAAAAAGTTC
Optimized	3421	<u>TGGAACAATGTGCTGCCCCACTATCTGGAAGTGAATAA</u>
Original	3421	TGGAATAATGTATTACCACATTACTTGGAATTGAAGTAA

FIG. 2 (Continued)



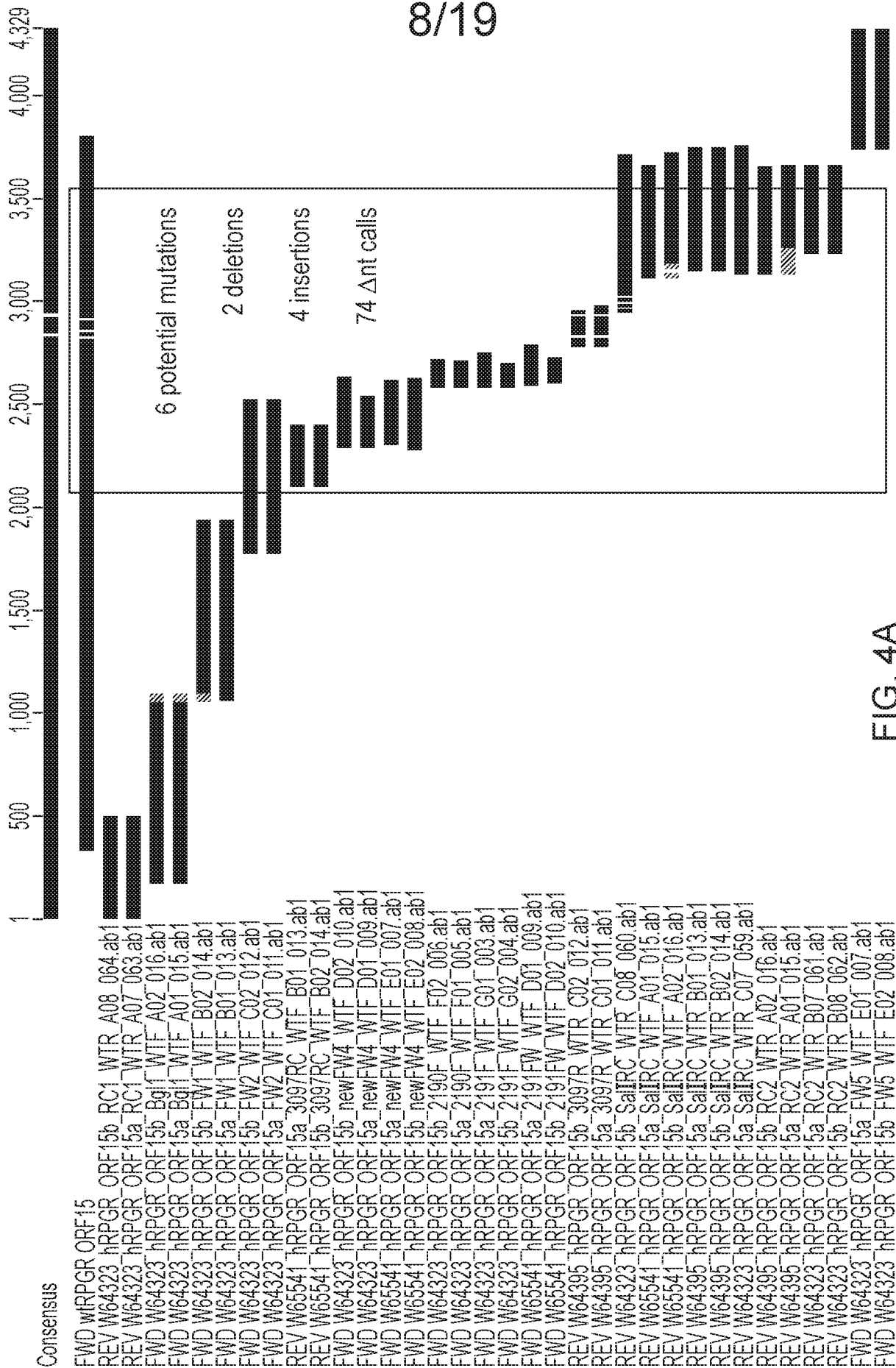


FIG. 4A

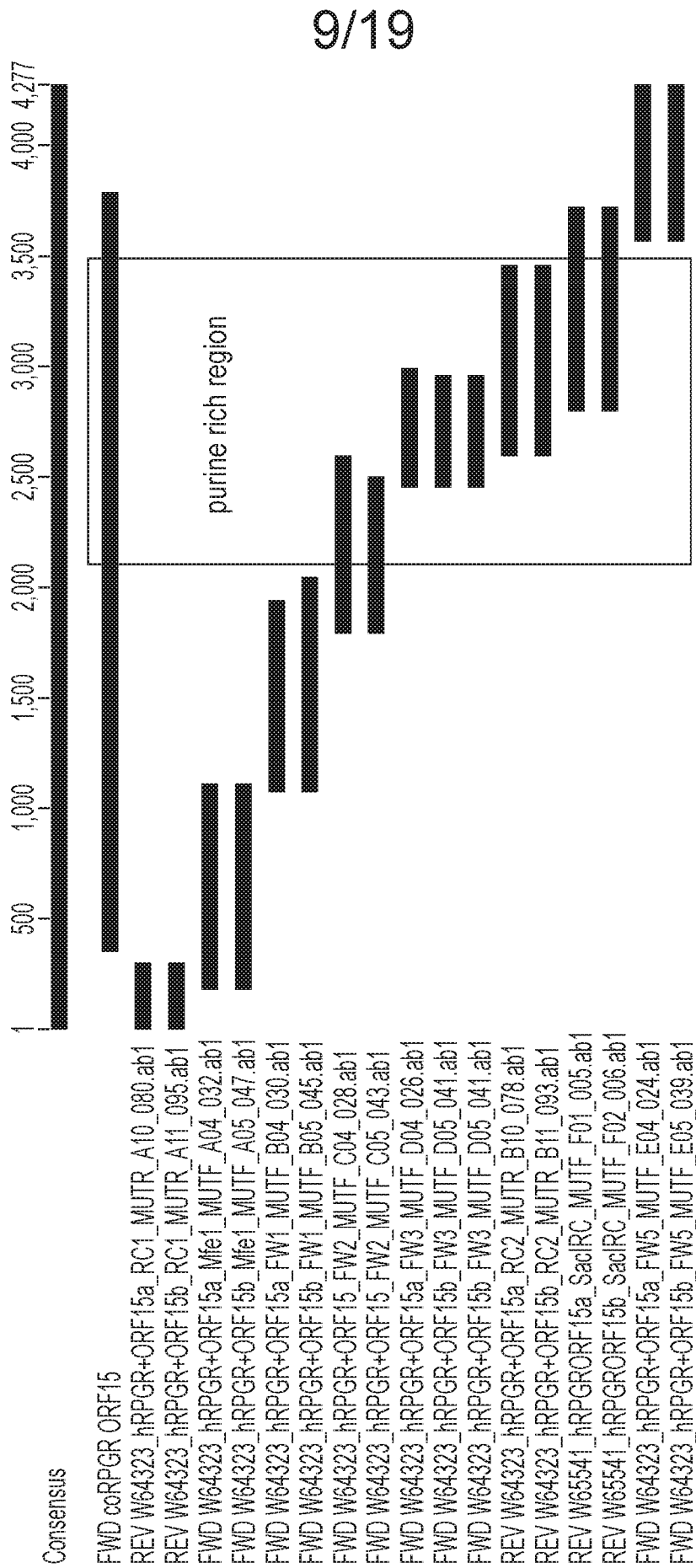


FIG. 4B

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1 MREPEELMPD SGAVTFGKS KFAENNPCKF WFKNDVPVHL SCGDEHSAVV TGNKLYMFG SNNWGQLGLG 70
 confirmed
 120 TGGNNEGOLG LGDTEERNTE HVISFTSEH KIKQLSAGSN TSAALTEDGR LEMWGDNSEG QIGLKNVSNV 180
 confirmed
 230 KLGLPNQLLG NHRTPQLVSE IPEKVIQVAC GGEHTVVLT NAVYTFGLGQ FGOLGLGTFL FETSEPKVIE 290
 confirmed
 340 LENFTNHFIPTLC SNFLRFI VKLVACGGCH MVVFAAPHRG VAKEIEFDEI NDTCLSVATF LPYSSLTSGN 400
 confirmed
 450 FLPNSVFPRC SERNLQESVL SEODLMOPEE PDYLLDEMTK EAEIDNSSV ESLGETTDIL NMTHIMSLNS 510
 confirmed
 560 SEMKEGKACK QHVSOGIFMT OPATTIEAFS DEEVEIPEEK EGAEDSKNG IEEQOEVEANE ENVKVHGGRK 620
 confirmed
 670 confirmed EGSSGAEHWO DEEREKGEKD KGRGEMERPG EGEKELAEKE EWKKRDGEEQ EOKEREQGH KERNQEMEEG 730
 confirmed
 780 EGERKKER AGKEEKGEEE GDOGEGEEEEE TEGRGEEKEE GGEVEGGEVE EGKGEREEEEE EGEGEREEEG 840
 confirmed
 890 EGEGEREEEEE GEGEGEEEGEG EGEGEREEEGEG EGEGEREEEGEG EGEGEREEEGEG GEDGEGEREE 950
 confirmed
 1000 EEEEEEGEG EGEGEREEEGEG EGEGEREEEGEG EGEGEREEEGEG EGEGEREEEGEG EGEENRRNRE 1060
 confirmed
 1110 KTYQKKSVTN TOGNKGEORS KMPVOSKRLL KNGPSGSKKE WNNVLPHYLE LK 1,152
 confirmed

FIG. 5

80	90	100	110
SKSAISKPTC	VKALKPEVK	LAACGRNHTL	VSTEGGNVYA
190	200	210	220
CVPQOVTIGK	PVSWISCGYY	HSAFVTTDGE	LYVEGEPENG
300	310	320	330
NIRDQTI SYI	SCGENHTALI	TDIGIMYTFG	DGRHGKLG LG
410	420	430	440
VLORTLSARM	RRRERSPD	SFSMRRTLPP	IEGTLGLSAC
520	530	540	550
NEKSLKLSPV	QKQKKQOTIG	ELTQDTALTE	NDDSDYEEM
630	640	650	660
EKTEILLSDDL	TDKAEVSE GK	AKSVGEAEDG	PEGRDGTCE
740	750	760	770
GEEHGE GEE	EEGDREEEEE	KEGEGKEEGE	GEEVEGEREK
850	860	870	880
EGEEEGEGE	EEGEGKGEE	EGEEGEGEEE	GEEGEGEGEE
960	970	980	990
EEGEWE GEEE	EGEGEGEEEG	EGEGEGEGEGE	GEEEGEGEGE
1,070	1,080	1,090	1,100
EEEEEGKYQ	ETGEEENERO	DGEEYKKVSK	IKGSVKY GKH

FIG. 5 (Continued)

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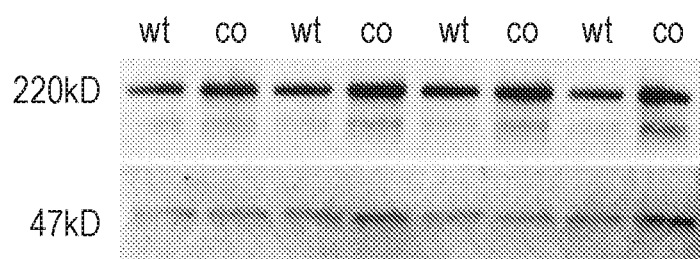
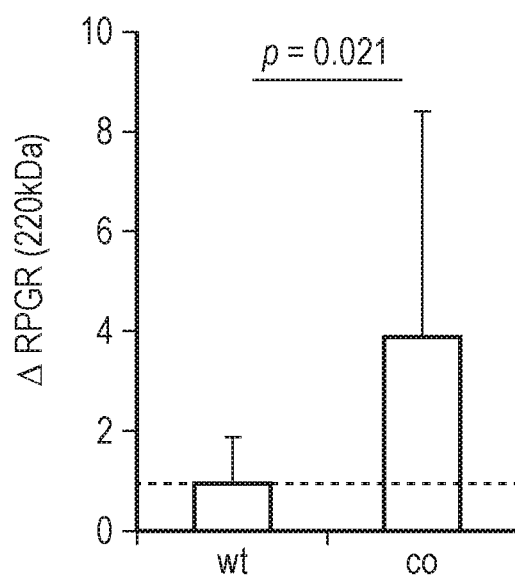


FIG. 6

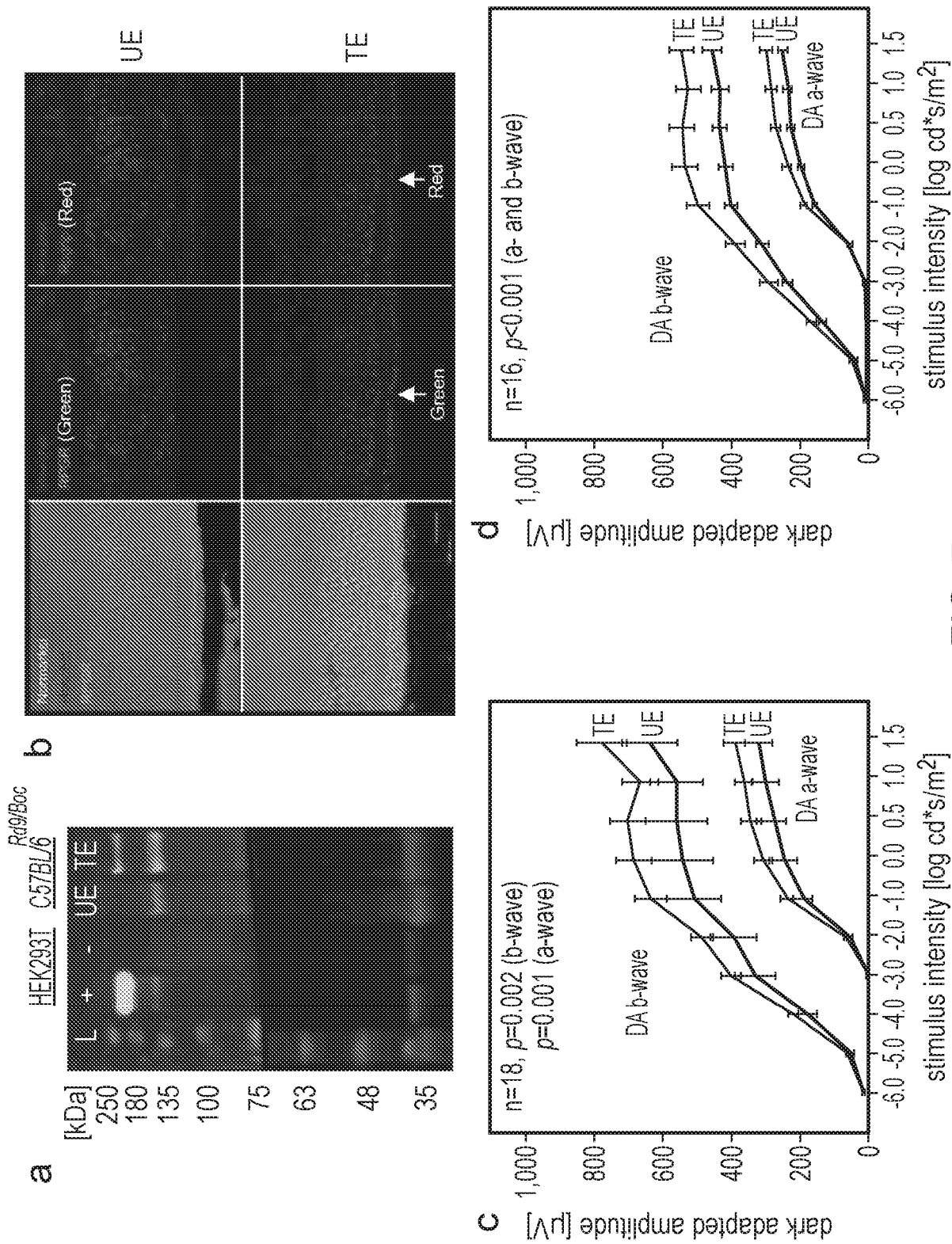


FIG. 7

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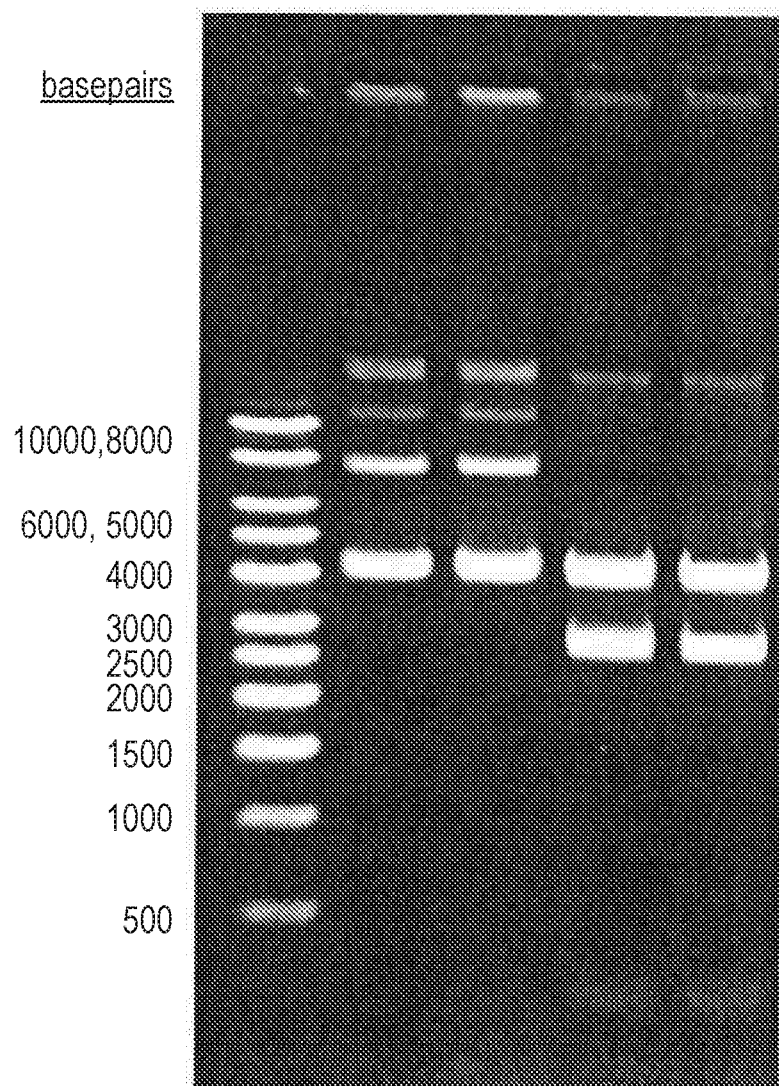


FIG. 8

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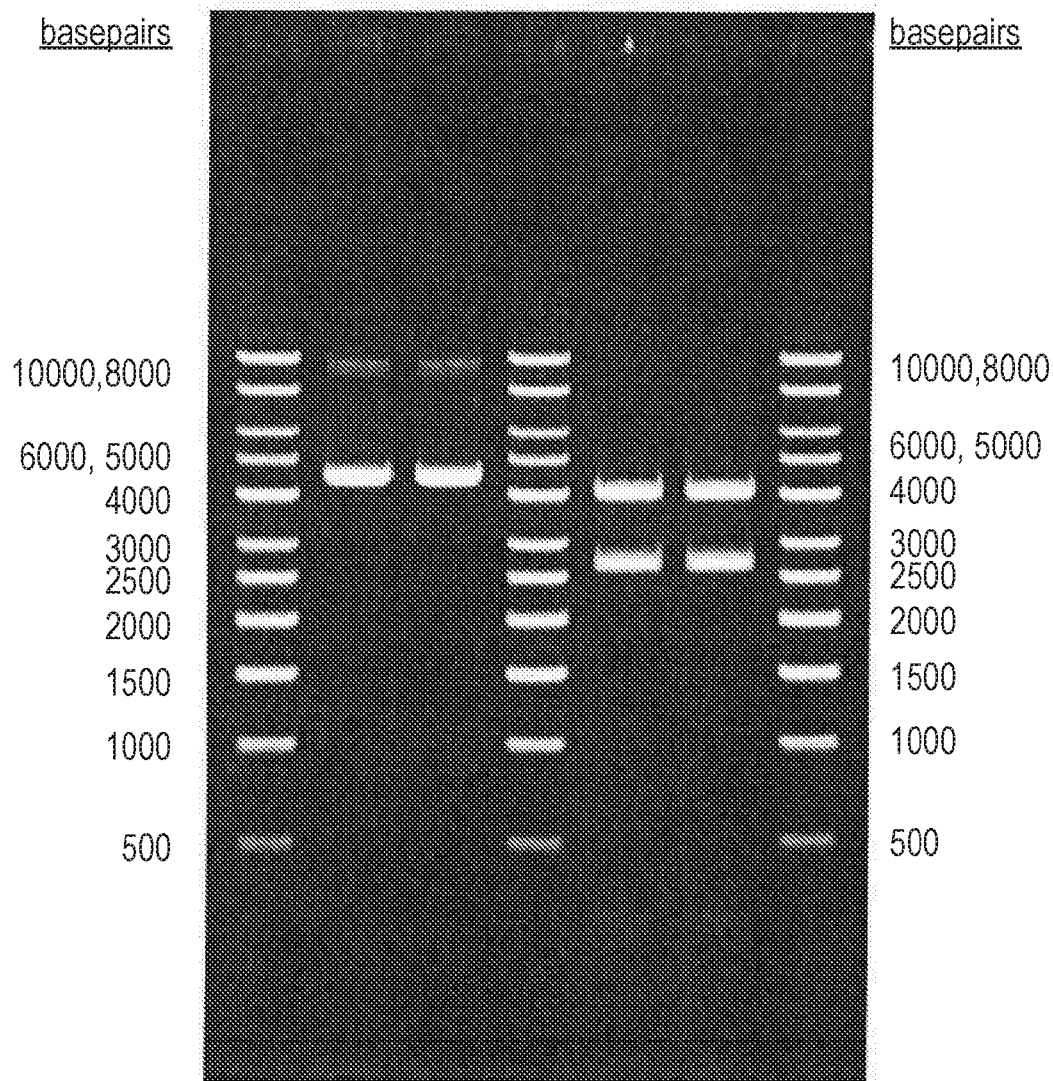


FIG. 9

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DNA Concentration

Method: UV-Absorption at 260 nm

	Dilution	A ₂₆₀	DNA Concentration
1	1:50	0.402	1.005
2	1:50	0.402	1.004

$$\rho_{\text{pDNA}} = \frac{A_{260} \cdot 0.05 \cdot V_{\text{cuv}}}{V_{\text{sample}}} [\text{mg mL}^{-1}]$$

ρ_{pDNA} concentration of your plasmid DNA solution [mg mL^{-1}]

A_{260} Absorbance at a wavelength of 260 nm

V_{cuv} Filling volume of the UV-cuvette (1 mL)

V_{sample} Sample volume (e.g. 0.02 mL for a 1:50 dilution)

0.05 Factor (1 A_{260} is equivalent to 0.05 mg mL^{-1} doublestranded plasmid DNA)

Calculated averaged concentration: 1.0 mg mL^{-1}

FIG. 10

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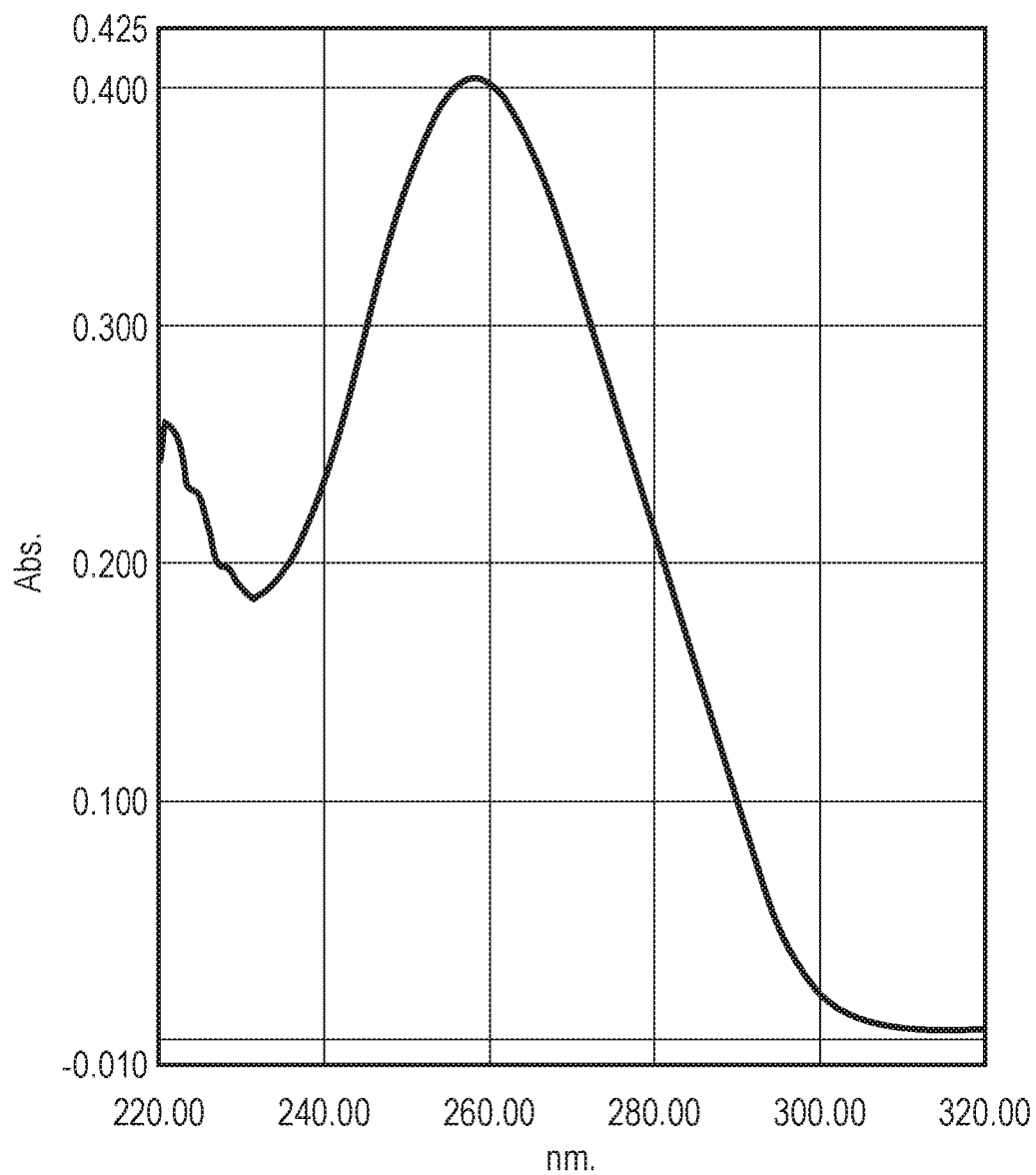


FIG. 11

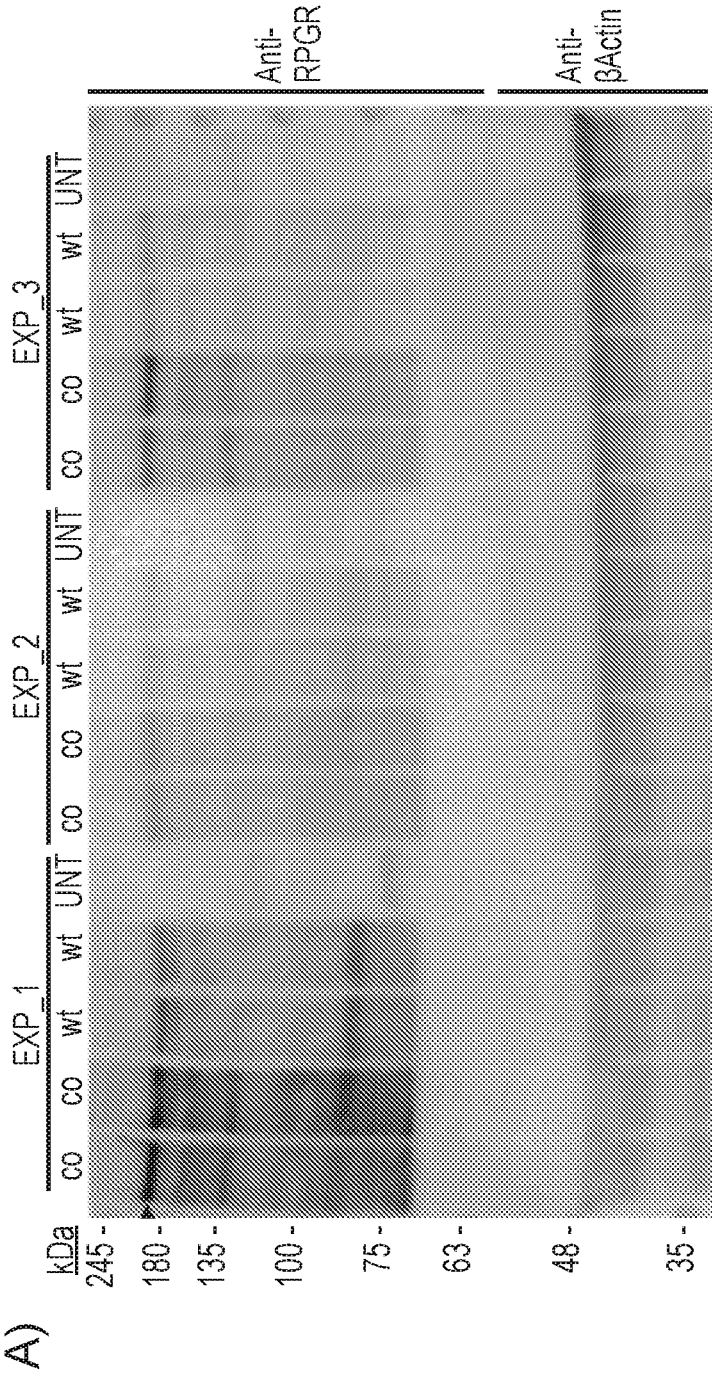
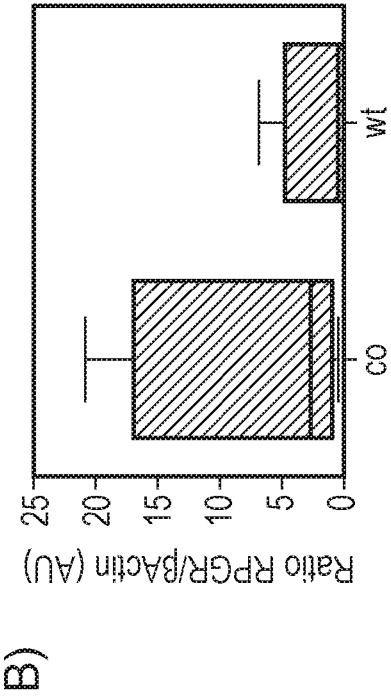


FIG. 12

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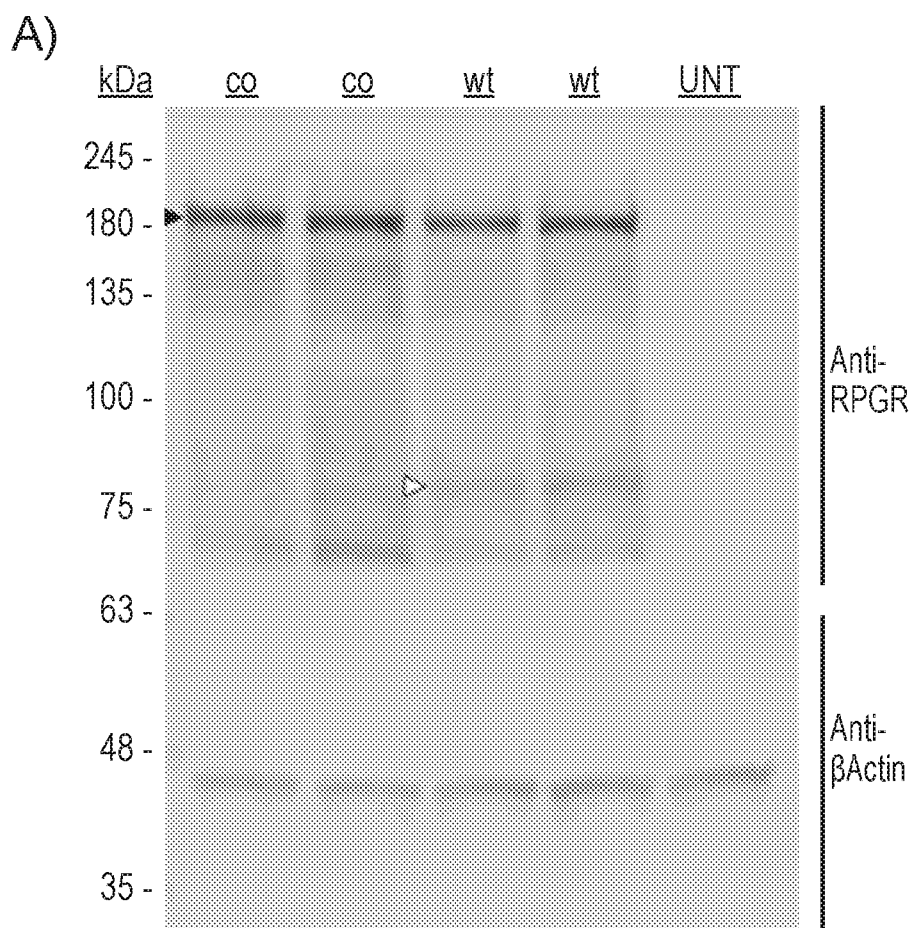
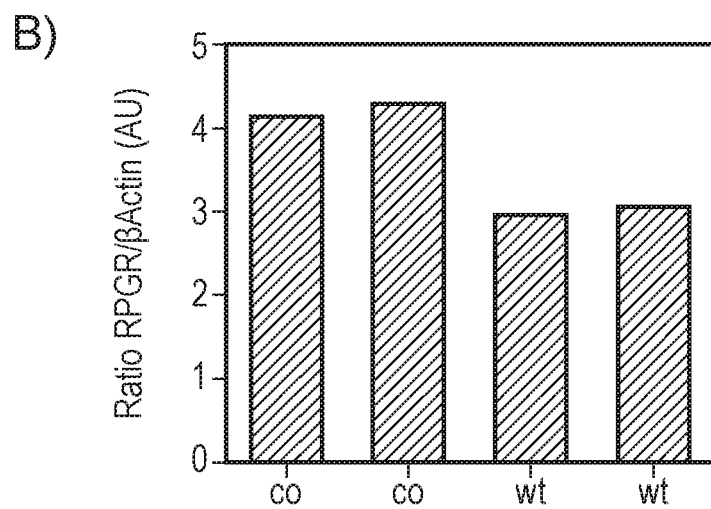


FIG. 13