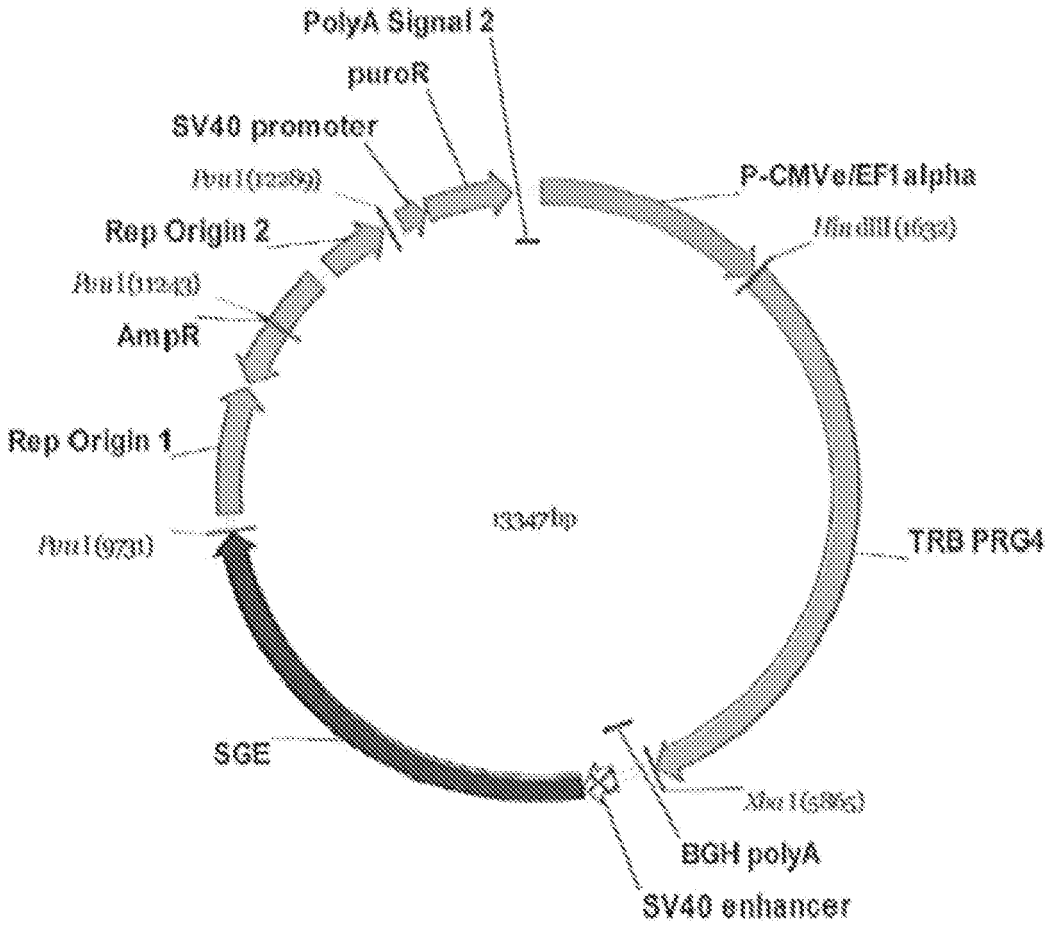

PolyA Signal 2
puroR
SV40 promoter
P-CMVe/EF1alpha
Rep Origin 2
AmpR
Rep Origin 1
TRB PRG4
SGE
BGH polyA
SV40 enhancer

FIG. 1

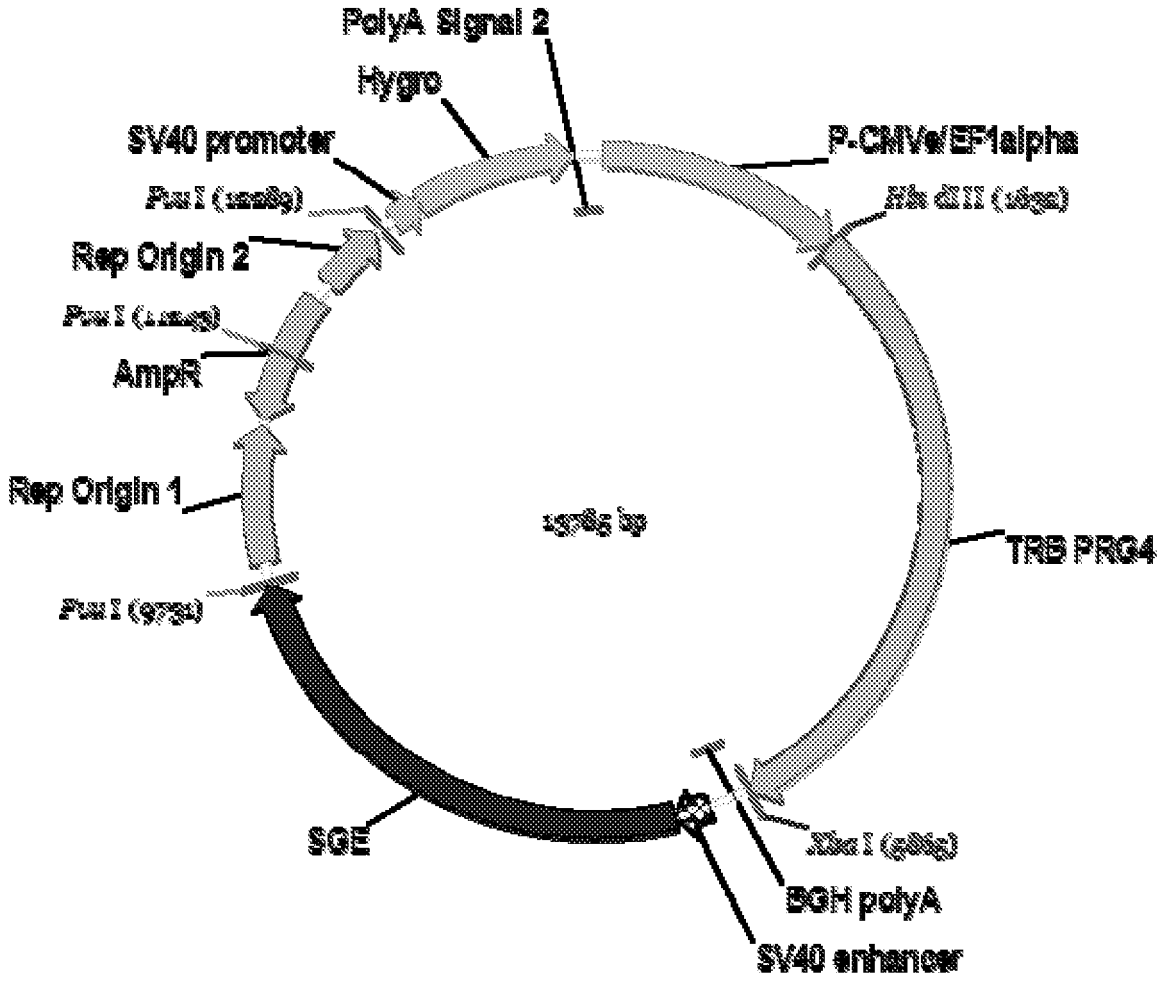

PolyA Signal 2
Hygro
SV40 promoter
P-CMVe/EF1alpha
Rep Origin 2
AmpR
Rep Origin 1
TRB PRG4
SGE
BGH polyA
SV40 enhancer

FIG. 2

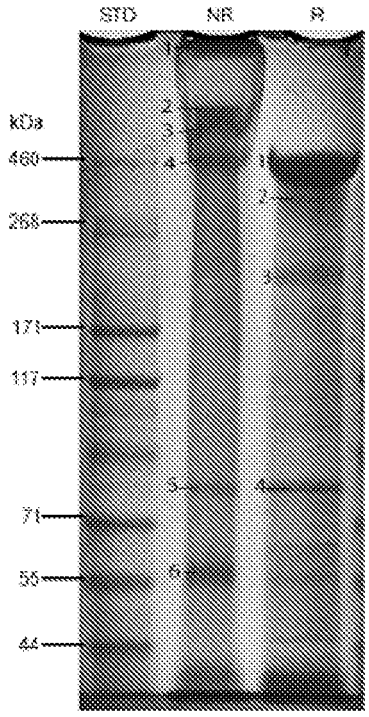


FIG. 3

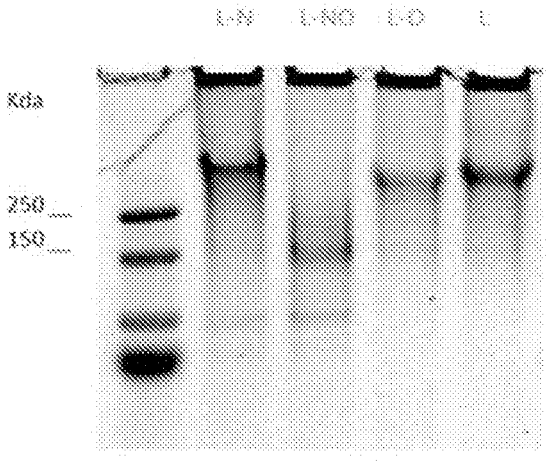
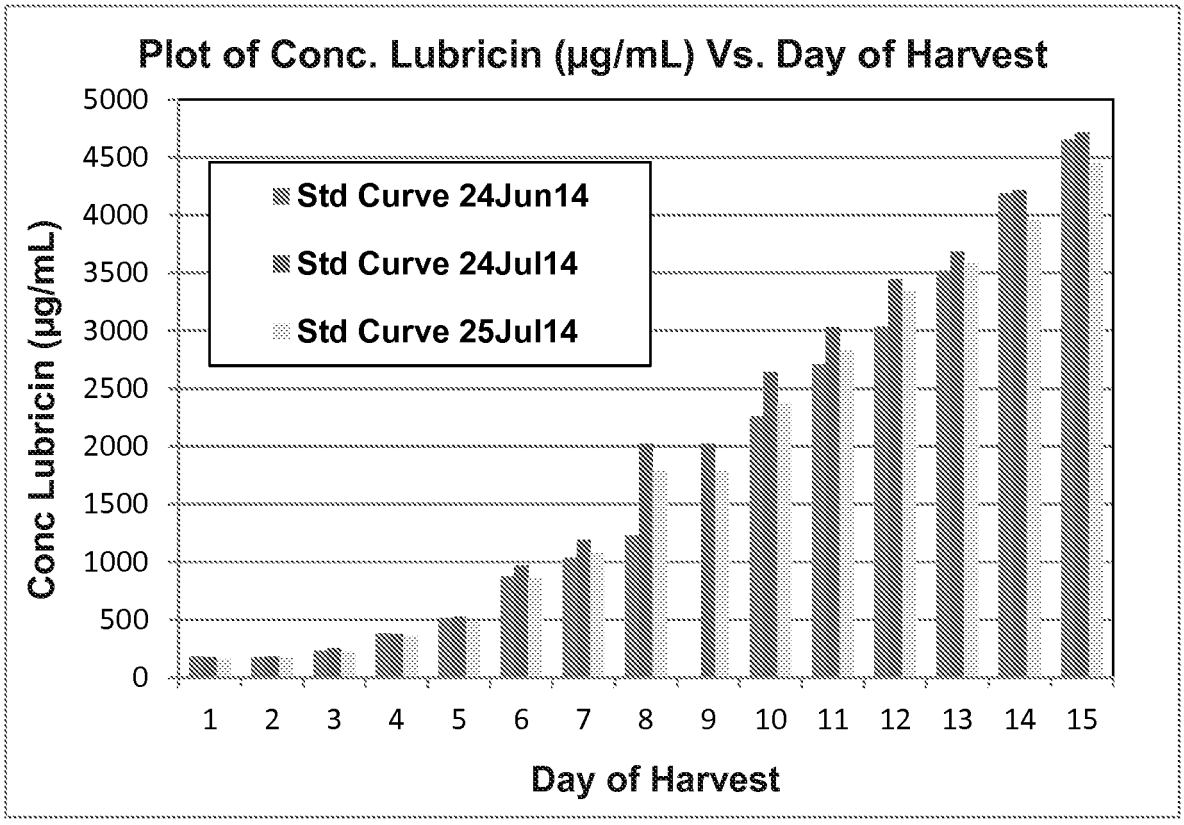


FIG. 4

FIG. 5


Plot of Conc. Lubricin (µg/mL) Vs. Day of Harvest
Conc Lubricin (µg/mL)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Std Curve 24Jun14
Std Curve 24Jul14
Std Curve 25Jul14
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Day of Harvest

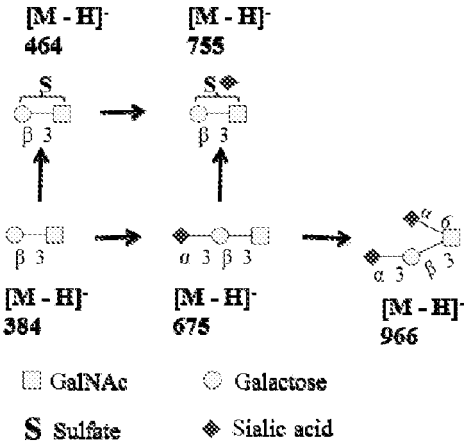


FIG. 6 - glycosylation (recombinant)

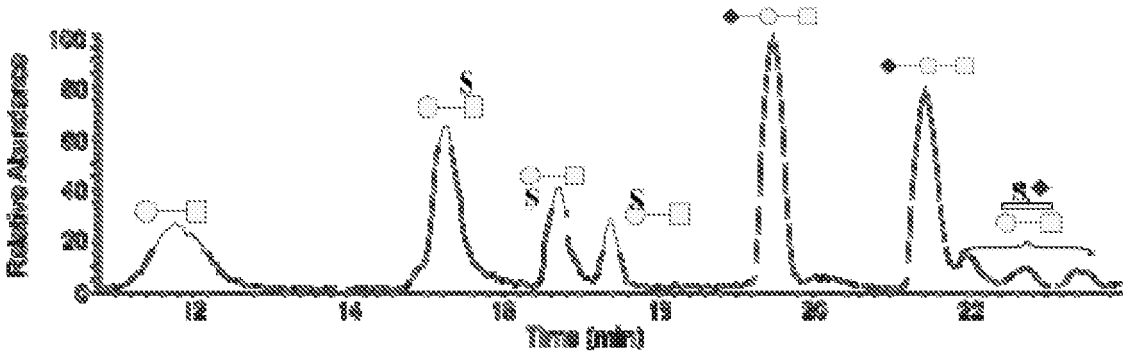


FIG. 7 - glycosylation (recombinant)

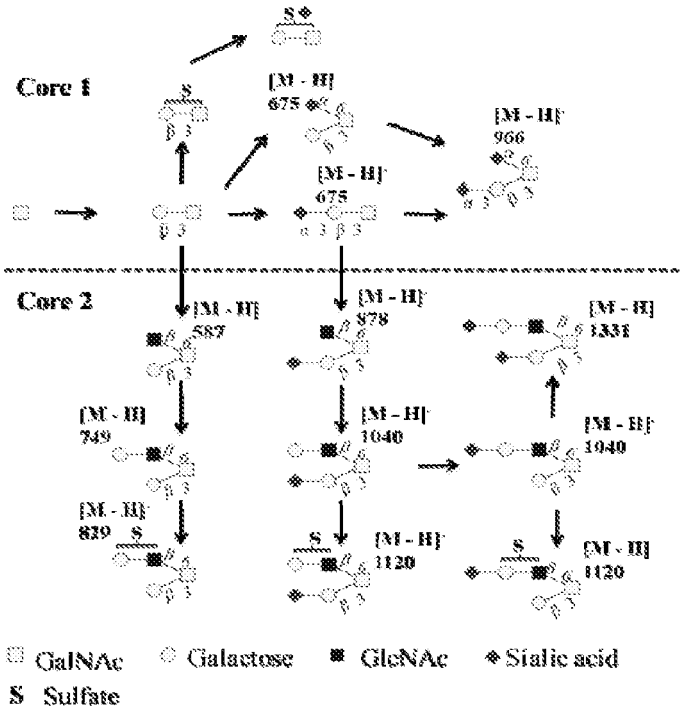


FIG. 8 - glycosylation (native)

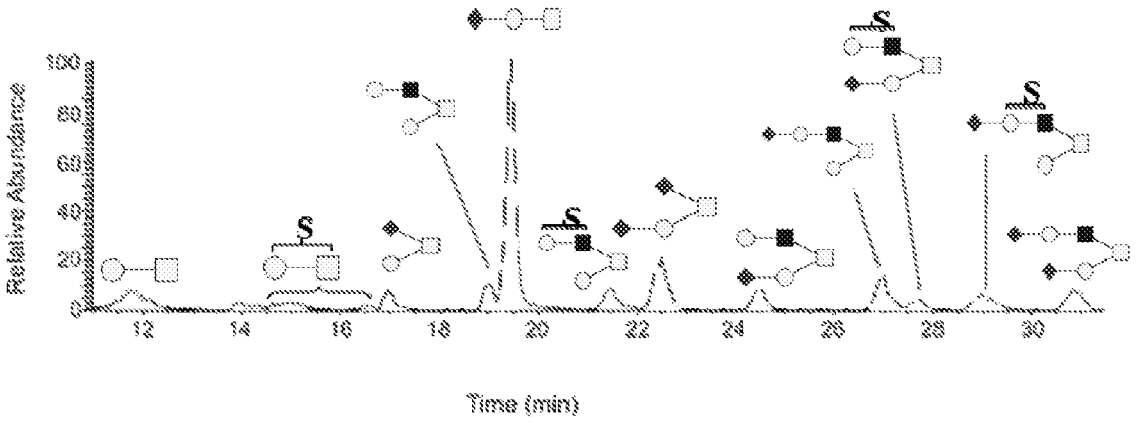


FIG. 9 - glycosylation (native)

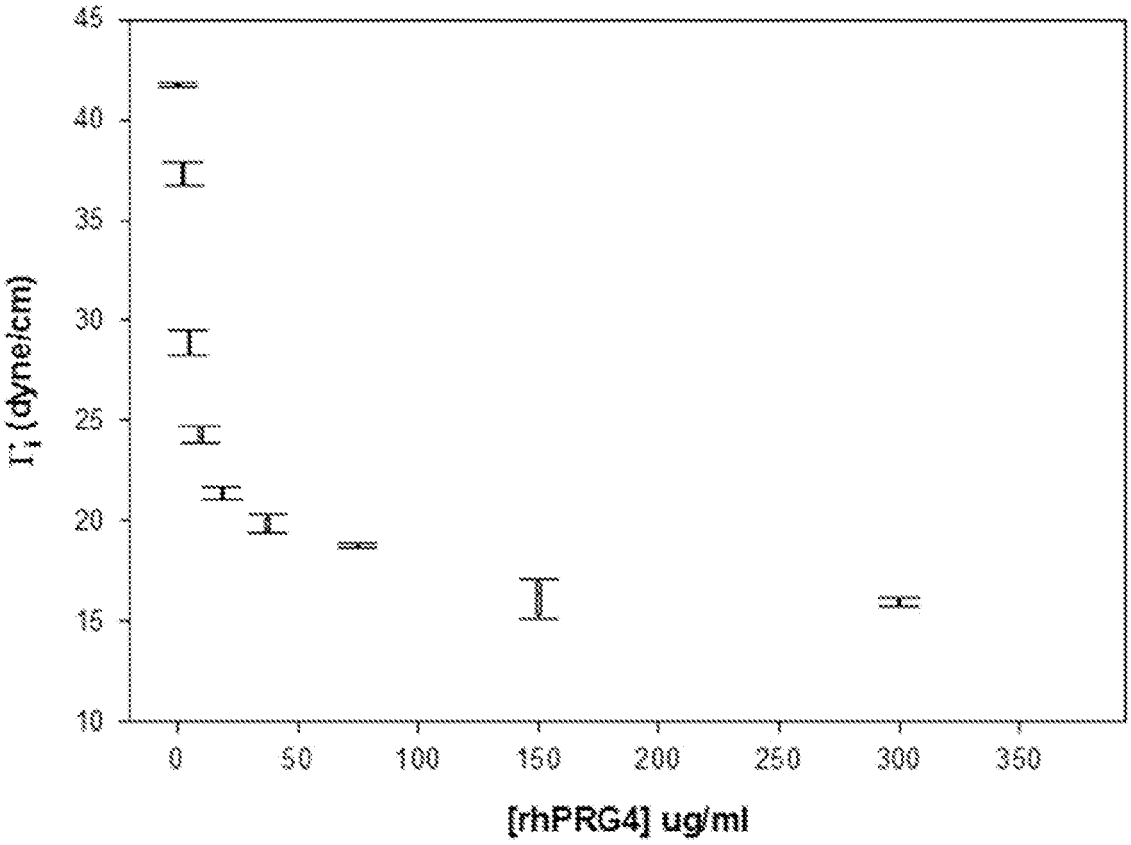


FIG. 10A rhPRG4 Surfactant Properties

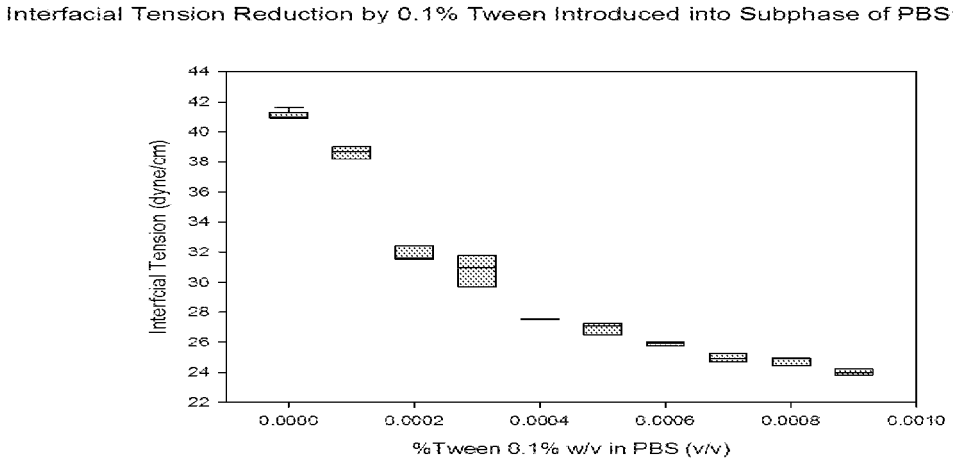

Interfacial Tension Reduction by 0.1% Tween Introduced into Subphase of PBS::Cyclohexane
Interfcial Tension (dyne/cm)
44
42
40
38
36
34
32
30
28
26
24
22
0.0000
0.0002
0.0004
0.0006
0.0008
0.0010
%Tween 0.1% w/v in PBS (v/v)

FIG. 10B

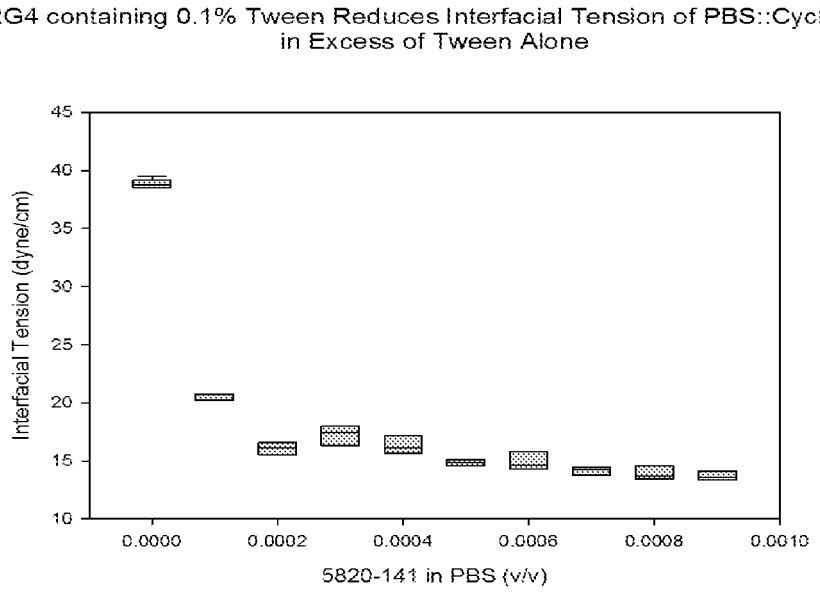
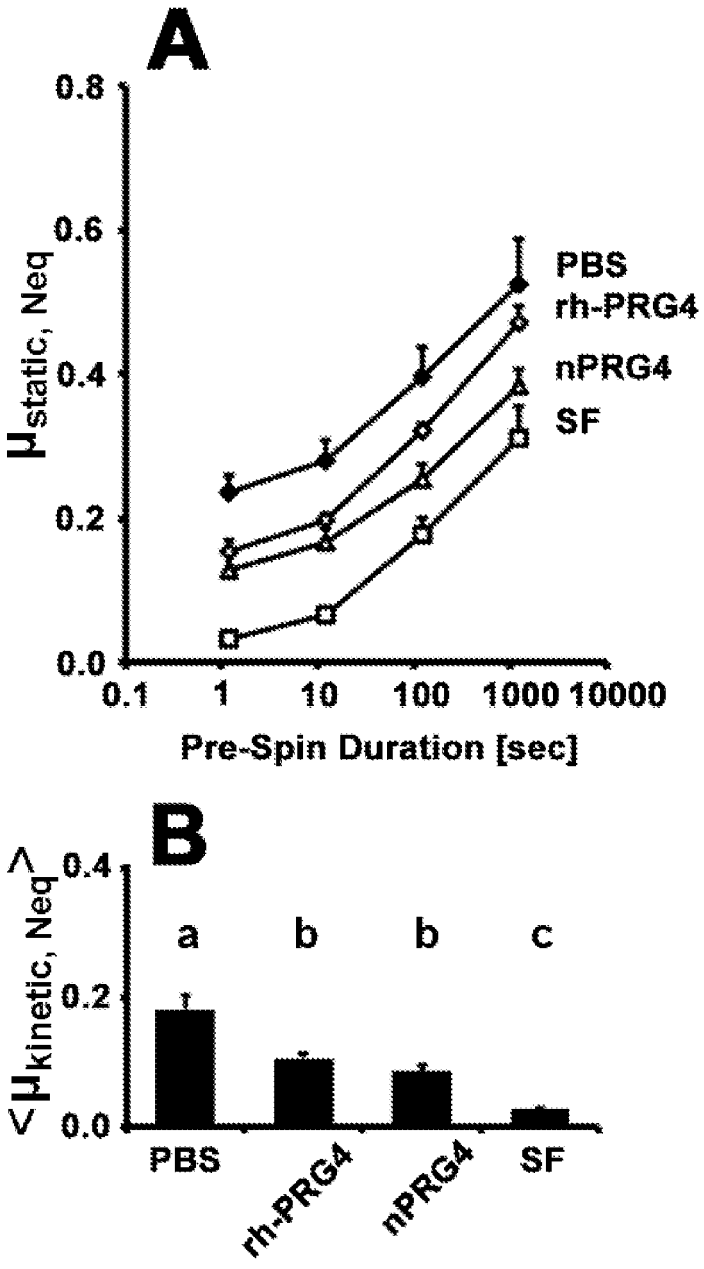
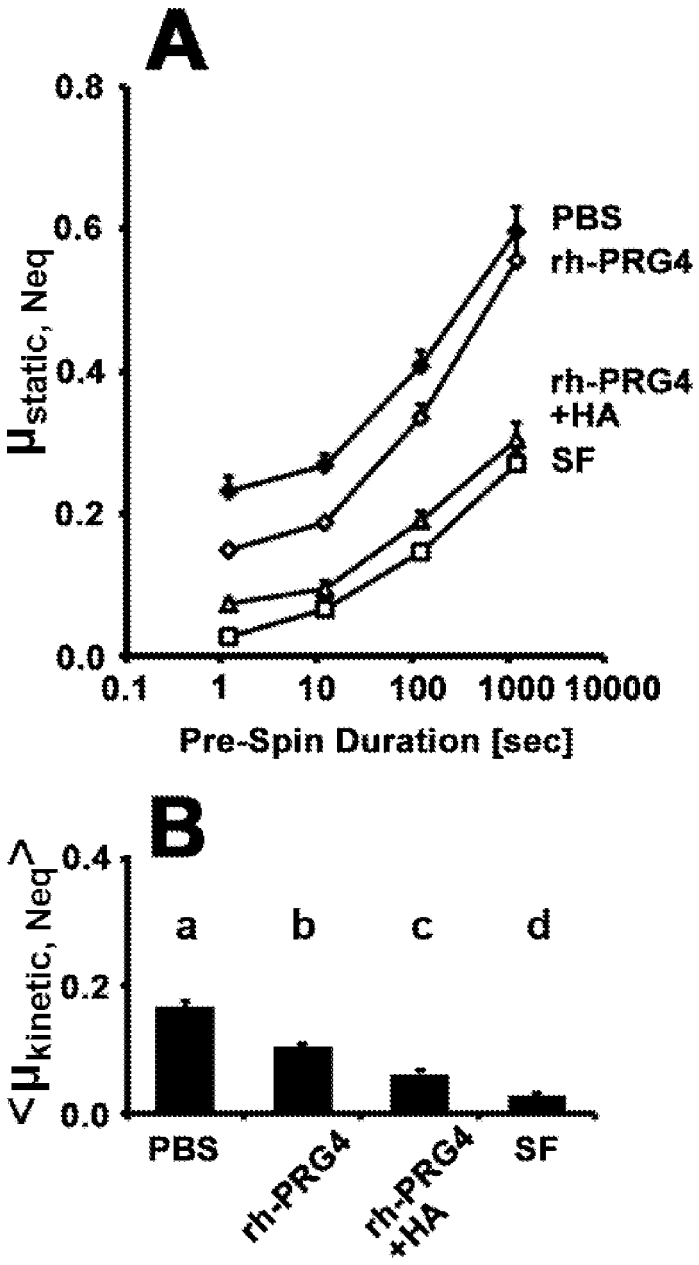

rhPRG4 containing 0.1% Tween Reduces Interfacial Tension of PBS::Cyclohexane in Excess of Tween Alone
Interfacial Tension (dyne/cm)
45
40
35
30
25
20
15
10
0.0000
0.0002
0.0004
0.0006
0.0008
0.0010
5820-141 in PBS (v/v)

FIG. 10C



FIGS. 11A-B. Recombinant vs. Native PRG4



FIGS. 12A-B. rhPRG4 + HA vs. rhPRG4 alone

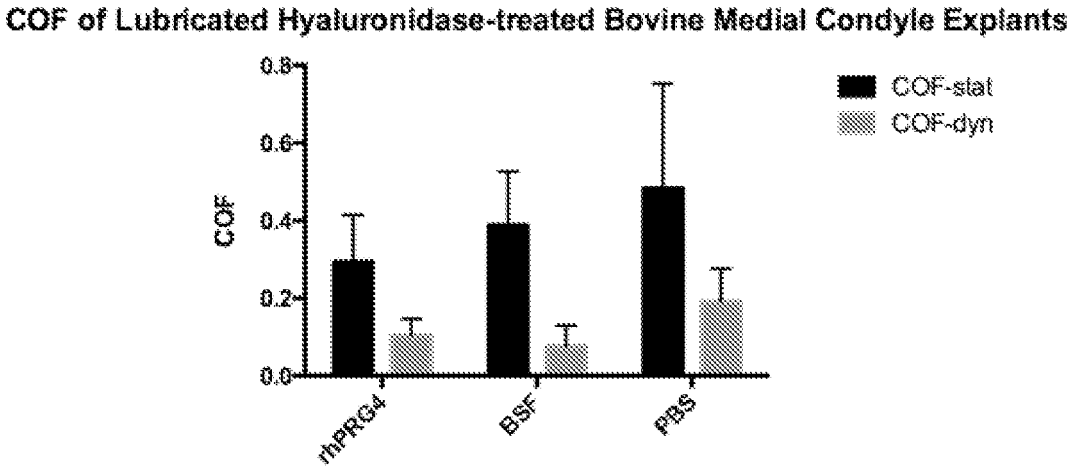
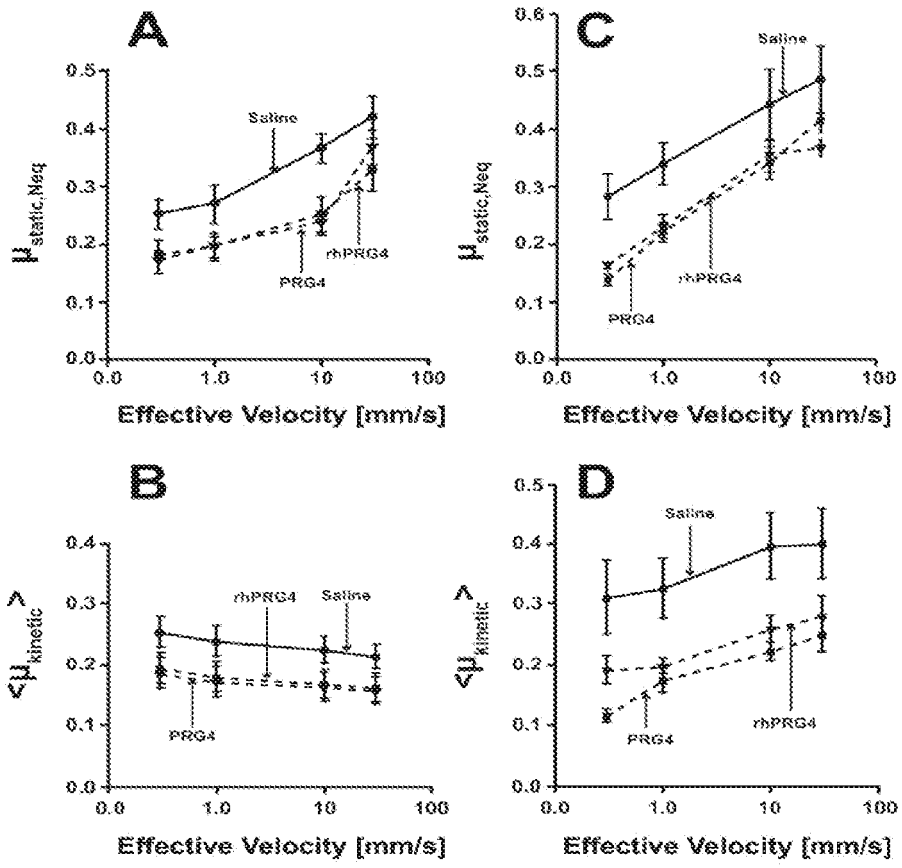

COF of Lubricated Hyaluronidase-treated Bovine Medial Condyle Explants
COF
0.8
0.6
0.4
0.2
0.0
COF-stat
COF-dyn
rhPRG4
BSF
PBS

FIG. 13



FIGS. 14A-D - Ocular Surface Lubrication

FIG. 15

SEQ ID NO: 1, LENGTH: 1404, ORGANISM: Homo sapiens, UniProt Accession No. Q92954:

MAWKTLPIYL LLLLSVFVIQ QVSSQDLSSC AGRCGEGYSR DATCNCDYNC QHYMECCPDF KRVCTAELSC KGRCFESFER GRECDCDAQC KKYDKCCPDY ESFCAEVHNP TSPPSSKKAP PPSGASQTIK STTKRSPKPP NKKKTKKVIE SEEITEEHSV SENQESSSSS SSSSSSSTIR KIKSSKNSAA NRELQKKLKV KDNKKNRTKK KPTPKPPVVD EAGSGLDNGD FKVTTPDTST TQHNKVSTSP KITTAKPINP RPSLPPNSDT SKETSLTVNK ETTVETKETT TTNKQTSTDG KEKTTSAKET QSIEKTSAKD LAPTSKVLAK PTPKAETTTK GPALTTPKEP TPTTPKEPAS TTPKEPTPTT IKSAPTTPKE PAPTTTKSAP TTPKEPAPTT TKEPAPTTPK EPAPTTTKEP APTTTKSAPT TPKEPAPTTP KKPAPTTPKE PAPTTPKEPT PTTPKEPAPT TKEPAPTTPK EPAPTAPKKP APTTPKEPAP TTPKEPAPTT TKEPSPTTPK EPAPTTTKSA PTTTKEPAPT TTKSAPTTPK EPSPTTTKEP APTTPKEPAP TTPKKPAPTT PKEPAPTTPK EPAPTTTKKP APTTPKEPAP TTPKETAPTT PKKLTPTTPE KLAPTTPEKP APTTPEELAP TTPEEPTPTT PEEPAPTTPK AAAPNTPKEP APTTPKEPAP TTPKEPAPTT PKETAPTTPK GTAPTTLKEP APTTPKKPAP KELAPTTTKE PTSTTCDKPA PTTPKGTAPT TPKEPAPTTP KEPAPTTPKG TAPTTLKEPA PTTPKKPAPK ELAPTTTKGP TSTTSDKPAP TTPKETAPTT PKEPAPTTPK KPAPTTPETP PPTTSEVSTP TTTKEPTTIH KSPDESTPEL SAEPTPKALE NSPKEPGVPT TKTPAATKPE MTTTAKDKTT ERDLRTTPET TTAAPKMTKE TATTTEKTTE SKITATTTQV TSTTTQDTTP FKITTLKTTT LAPKVTTTKK TITTTEIMNK PEETAKPKDR ATNSKATTPK PQKPTKAPKK PTSTKKPKTM PRVRKPKTTP TPRKMTSTMP ELNPTSRIAE AMLQTTTRPN QTPNSKLVEV NPKSEDAGGA EGETPHMLLR PHVFMPEVTP DMDYLPRVPN QGIIINPMLS DETNICNGKP VDGLTTLRNG TLVAFRGHYF WMLSPFSPPS PARRITEVWG IPSPIDTVFT RCNCEGKTFF FKDSQYWRFT NDIKDAGYPK PIFKGFGGLT GQIVAALSTA KYKNWPESVY FFKRGGSIQQ YIYKQEPVQK CPGRRPALNY PVYGETTQVR RRRFERAIGP SQTHTIRIQY SPARLAYQDK GVLHNEVKVS ILWRGLPNVV TSAISLPNIR KPDGYDYYAF SKDQYYNIDV PSRTARAITT RSGQTLSKVW YNCP

FIG. 16

SEQ ID NO: 2 LENGTH: 5041, TYPE: DNA, ORGANISM: Homo sapiens, GenBank Accession No. U70136.1:

GCGGCCGCGACTATTCGGTACCTGAAAACAACGATGGCATGGAAAACACTTCCCATTTACCT
GTTGTTGCTGCTGTCTGTTTTCGTGATTCAGCAAGTTTCATCTCAAGATTTATCAAGCTGTG
CAGGGAGATGTGGGGAAGGGTATTCTAGAGATGCCACCTGCAACTGTGATTATAACTGTCAA
CACTACATGGAGTGCTGCCCTGATTTCAAGAGAGTCTGCACTGCGGAGCTTTCCTGTAAAGG
CCGCTGCTTTGAGTCCTTCGAGAGAGGGAGGGAGTGTGACTGCGACGCCCAATGTAAGAAGT
ATGACAAGTGCTGTCCCGATTATGAGAGTTTCTGTGCAGAAGTGCATAATCCCACATCACCA
CCATCTTCAAAGAAAGCACCTCCACCTTCAGGAGCATCTCAAACCATCAAATCAACAACCAA
ACGTTCACCCAAACCACCAAACAAGAAGAAGACTAAGAAAGTTATAGAATCAGAGGAAATAA
CAGAAGAACATTCTGTTTCTGAAAATCAAGAGTCCTCCTCCTCCTCCTCCTCTTCCTCTTCT
TCTTCAACAATTTGGAAAATCAAGTCTTCCAAAAATTCAGCTGCTAATAGAGAATTACAGAA
GAAACTCAAAGTAAAAGATAACAAGAAGAACAGAACTAAAAAGAAACCTACCCCCAAACCAC
CAGTTGTAGATGAAGCTGGAAGTGGATTGGACAATGGTGACTTCAAGGTCACAACTCCTGAC
ACGTCTACCACCCAACACAATAAAGTCAGCACATCTCCCAAGATCACAACAGCAAAACCAAT
AAATCCCAGACCCAGTCTTCCACCTAATTCTGATACATCTAAAGAGACGTCTTTGACAGTGA
ATAAAGAGACAACAGTTGAAACTAAAGAAACTACTACAACAAATAAACAGACTTCAACTGAT
GGAAAAGAGAAGACTACTTCCGCTAAAGAGACACAAAGTATAGAGAAAACATCTGCTAAAGA
TTTAGCACCCACATCTAAAGTGCTGGCTAAACCTACACCCAAAGCTGAAACTACAACCAAAG
GCCCTGCTCTCACCACTCCCAAGGAGCCCACGCCCACCACTCCCAAGGAGCCTGCATCTACC
ACACCCAAAGAGCCCACACCTACCACCATCAAGTCTGCACCCACCACCCCCAAGGAGCCTGC
ACCCACCACCACCAAGTCTGCACCCACCACTCCCAAGGAGCCTGCACCCACCACCACCAAGG
AGCCTGCACCCACCACTCCCAAGGAGCCTGCACCCACCACCACCAAGGAGCCTGCACCCACC
ACCACCAAGTCTGCACCCACCACTCCCAAGGAGCCTGCACCCACCACCCCCAAGAAGCCTGC
CCCAACTACCCCCAAGGAGCCTGCACCCACCACTCCCAAGGAGCCTACACCCACCACTCCCA
AGGAGCCTGCACCCACCACCAAGGAGCCTGCACCCACCACTCCCAAAGAGCCTGCACCCACT
GCCCCCAAGAAGCCTGCCCCAACTACCCCCAAGGAGCCTGCACCCACCACTCCCAAGGAGCC
TGCACCCACCACCACCAAGGAGCCTTCACCCACCACTCCCAAGGAGCCTGCACCCACCACCA
CCAAGTCTGCACCCACCACTACCAAGGAGCCTGCACCCACCACTACCAAGTCTGCACCCACC
ACTCCCAAGGAGCCTTCACCCACCACCACCAAGGAGCCTGCACCCACCACTCCCAAGGAGCC
TGCACCCACCACCCCCAAGAAGCCTGCCCCAACTACCCCCAAGGAGCCTGCACCCACCACTC

CCAAGGAACCTGCACCCACCACCACCAAGAAGCCTGCACCCACCGCTCCCAAAGAGCCTGCC
CCAACTACCCCCAAGGAGACTGCACCCACCACCCCCAAGAAGCTCACGCCCACCACCCCCGA
GAAGCTCGCACCCACCACCCCTGAGAAGCCCGCACCCACCACCCCTGAGGAGCTCGCACCCA
CCACCCCTGAGGAGCCCACACCCACCACCCCTGAGGAGCCTGCTCCCACCACTCCCAAGGCA
GCGGCTCCCAACACCCCTAAGGAGCCTGCTCCAACTACCCCTAAGGAGCCTGCTCCAACTAC
CCCTAAGGAGCCTGCTCCAACTACCCCTAAGGAGACTGCTCCAACTACCCCTAAAGGGACTG
CTCCAACTACCCTCAAGGAACCTGCACCCACTACTCCCAAGAAGCCTGCCCCCAAGGAGCTT
GCACCCACCACCACCAAGGAGCCCACATCCACCACCTCTGACAAGCCCGCTCCAACTACCCC
TAAGGGGACTGCTCCAACTACCCCTAAGGAGCCTGCTCCAACTACCCCTAAGGAGCCTGCTC
CAACTACCCCTAAGGGGACTGCTCCAACTACCCTCAAGGAACCTGCACCCACTACTCCCAAG
AAGCCTGCCCCCAAGGAGCTTGCACCCACCACCACCAAGGGGCCCACATCCACCACCTCTGA
CAAGCCTGCTCCAACTACACCTAAGGAGACTGCTCCAACTACCCCCAAGGAGCCTGCACCCA
CTACCCCCAAGAAGCCTGCTCCAACTACTCCTGAGACACCTCCTCCAACCACTTCAGAGGTC
TCTACTCCAACTACCACCAAGGAGCCTACCACTATCCACAAAAGCCCTGATGAATCAACTCC
TGAGCTTTCTGCAGAACCCACACCAAAAGCTCTTGAAAACAGTCCCAAGGAACCTGGTGTAC
CTACAACTAAGACTCCTGCAGCGACTAAACCTGAAATGACTACAACAGCTAAAGACAAGACA
ACAGAAAGAGACTTACGTACTACACCTGAAACTACAACTGCTGCACCTAAGATGACAAAAGA
GACAGCAACTACAACAGAAAAAACTACCGAATCCAAAATAACAGCTACAACCACACAAGTAA
CATCTACCACAACTCAAGATACCACACCATTCAAAATTACTACTCTTAAAACAACTACTCTT
GCACCCAAAGTAACTACAACAAAAAAGACAATTACTACCACTGAGATTATGAACAAACCTGA
AGAAACAGCTAAACCAAAAGACAGAGCTACTAATTCTAAAGCGACAACTCCTAAACCTCAAA
AGCCAACCAAAGCACCCAAAAAACCCACTTCTACCAAAAAGCCAAAAACAATGCCTAGAGTG
AGAAAACCAAAGACGACACCAACTCCCCGCAAGATGACATCAACAATGCCAGAATTGAACCC
TACCTCAAGAATAGCAGAAGCCATGCTCCAAACCACCACCAGACCTAACCAAACTCCAAACT
CCAAACTAGTTGAAGTAAATCCAAAGAGTGAAGATGCAGGTGGTGCTGAAGGAGAAACACCT
CATATGCTTCTCAGGCCCCATGTGTTCATGCCTGAAGTTACTCCCGACATGGATTACTTACC
GAGAGTACCCAATCAAGGCATTATCATCAATCCCATGCTTTCCGATGAGACCAATATATGCA
ATGGTAAGCCAGTAGATGGACTGACTACTTTGCGCAATGGGACATTAGTTGCATTCCGAGGT
CATTATTTCTGGATGCTAAGTCCATTCAGTCCACCATCTCCAGCTCGCAGAATTACTGAAGT
TTGGGGTATTCCTTCCCCCATTGATACTGTTTTTACTAGGTGCAACTGTGAAGGAAAAACTT
TCTTCTTTAAGGATTCTCAGTACTGGCGTTTTACCAATGATATAAAAGATGCAGGGTACCCC
AAACCAATTTTCAAAGGATTTGGAGGACTAACTGGACAAATAGTGGCAGCGCTTTCAACAGC

TAAATATAAGAACTGGCCTGAATCTGTGTATTTTTTCAAGAGAGGTGGCAGCATTCAGCAGT
ATATTTATAAACAGGAACCTGTACAGAAGTGCCCTGGAAGAAGGCCTGCTCTAAATTATCCA
GTGTATGGAGAAATGACACAGGTTAGGAGACGTCGCTTTGAACGTGCTATAGGACCTTCTCA
AACACACACCATCAGAATTCAATATTCACCTGCCAGACTGGCTTATCAAGACAAAGGTGTCC
TTCATAATGAAGTTAAAGTGAGTATACTGTGGAGAGGACTTCCAAATGTGGTTACCTCAGCT
ATATCACTGCCCAACATCAGAAAACCTGACGGCTATGATTACTATGCCTTTTCTAAAGATCA
ATACTATAACATTGATGTGCCTAGTAGAACAGCAAGAGCAATTACTACTCGTTCTGGGCAGA
CCTTATCCAAAGTCTGGTACAACTGTCCTTAGACTGATGAGCAAAGGAGGAGTCAACTAATG
AAGAAATGAATAATAAATTTTGACACTGAAAAACATTTTATTAATAAAGAATATTGACATGA
GTATACCAGTTTATATATAAAAATGTTTTTAAACTTGACAATCATTACACTAAAACAGATTT
GATAATCTTATTCACAGTTGTTATTGTTTACAGACCATTTAATTAATATTTCCTCTGTTTAT
TCCTCCTCTCCCTCCCATTGCATGGCTCACACCTGTAAAAGAAAAAAGAATCAAATTGAATA
TATCTTTTAAGAATTCAAAACTAGTGTATTCACTTACCCTAGTTCATTATAAAAAATATCTA
GGCATTGTGGATATAAAACTGTTGGGTATTCTACAACTTCAATGGAAATTATTACAAGCAGA
TTAATCCCTCTTTTTGTGACACAAGTACAATCTAAAAGTTATATTGGAAAACATGGAAATAT
TAAAATTTTACACTTTTACTAGCTAAAACATAATCACAAAGCTTTATCGTGTTGTATAAAAA
AATTAACAATATAATGGCAATAGGTAGAGATACAACAAATGAATATAACACTATAACACTTC
ATATTTTCCAAATCTTAATTTGGATTTAAGGAAGAAATCAATAAATATAAAATATAAGCACA
TATTTATTATATATCTAAGGTATACAAATCTGTCTACATGAAGTTTACAGATTGGTAAATAT
CACCTGCTCAACATGTAATTATTTAATAAAACTTTGGAACATTAAAAAAATAAATTGGAGGC
TTAAAAAAAAAAAAAAAAA