

FIG. 1

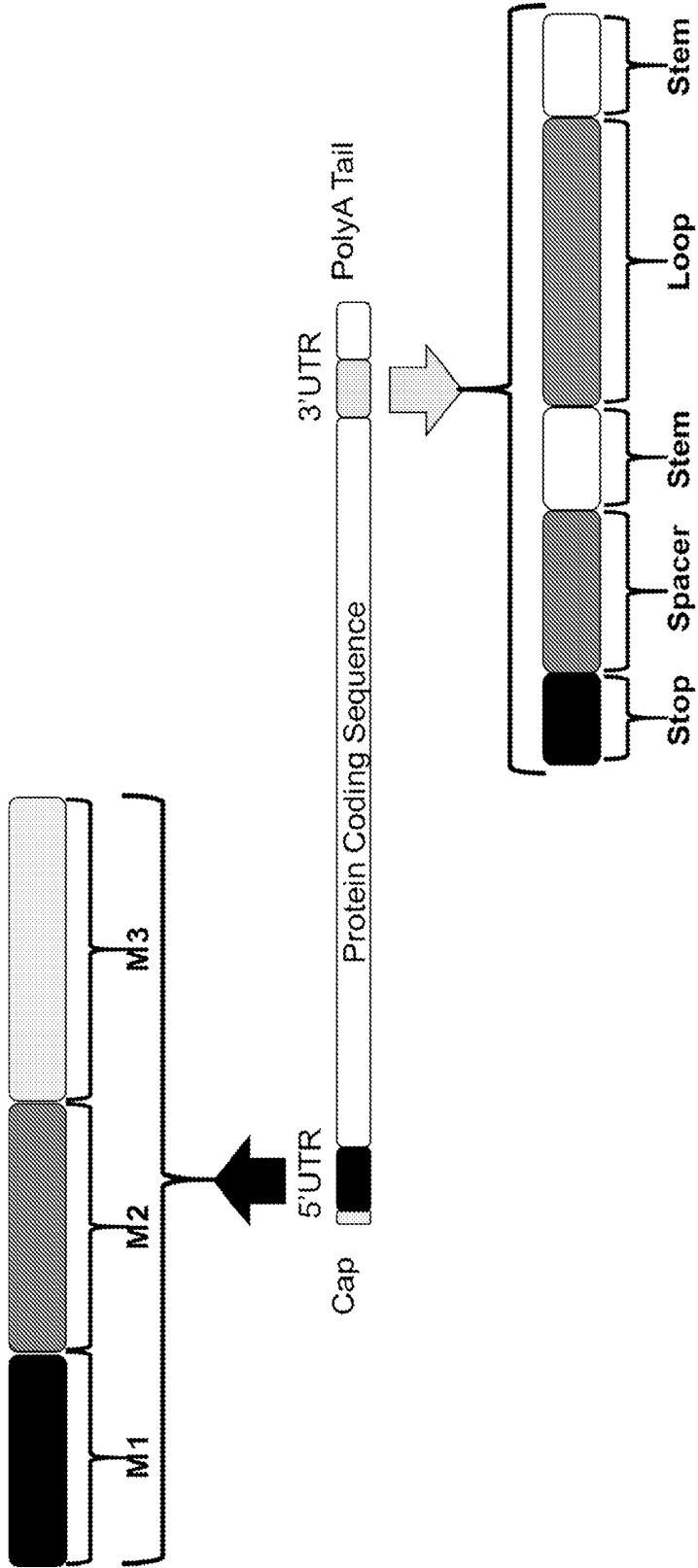


FIG. 2

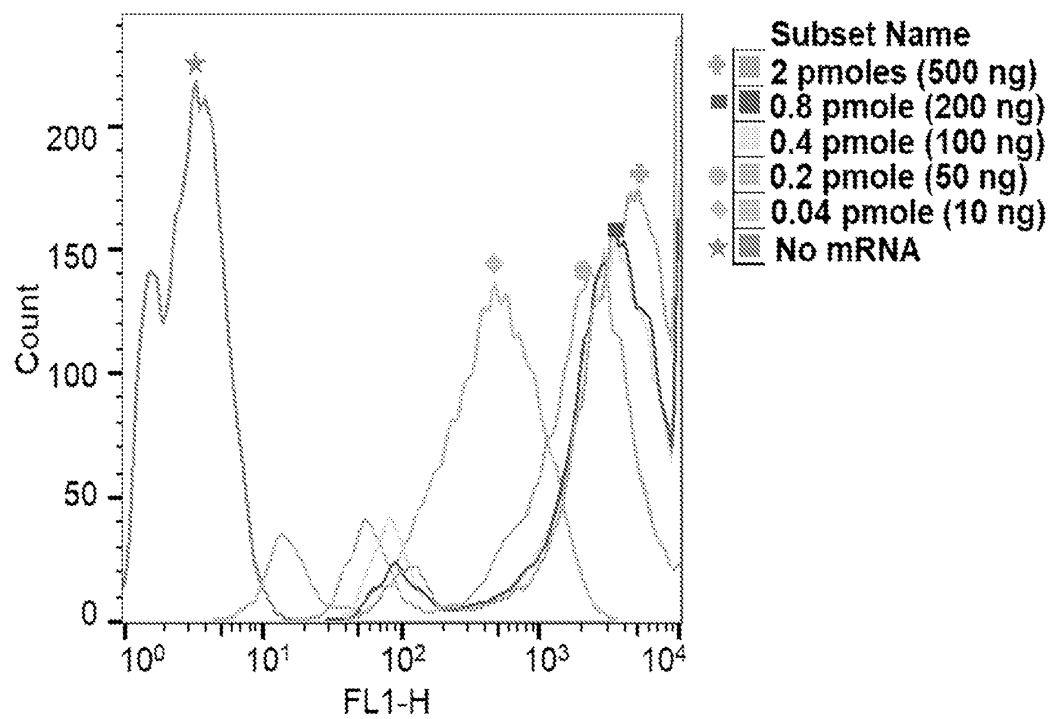


FIG. 3A

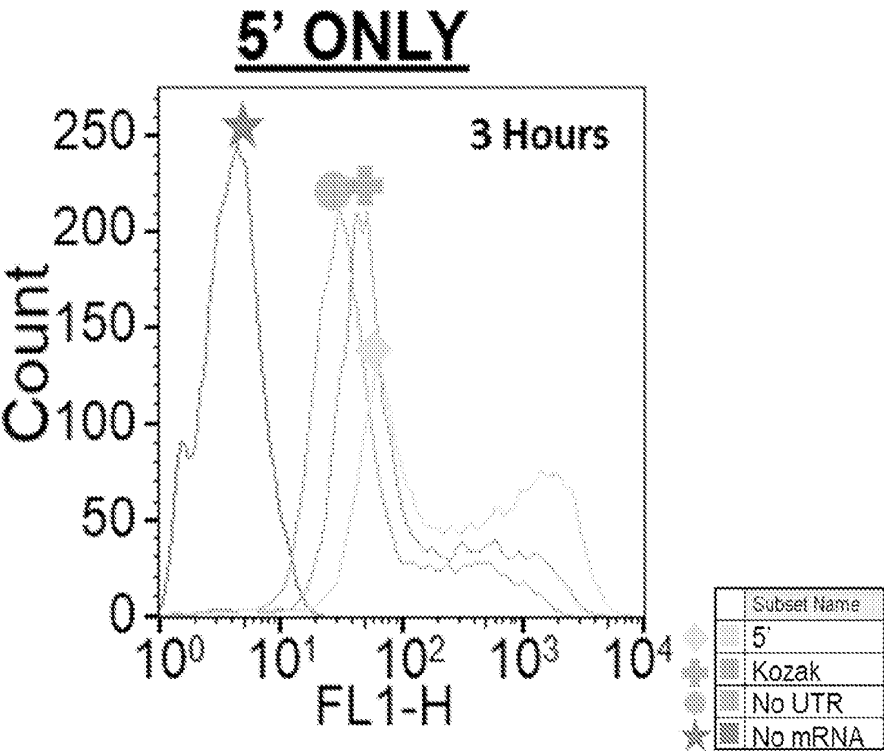


FIG. 3A (cont'd)

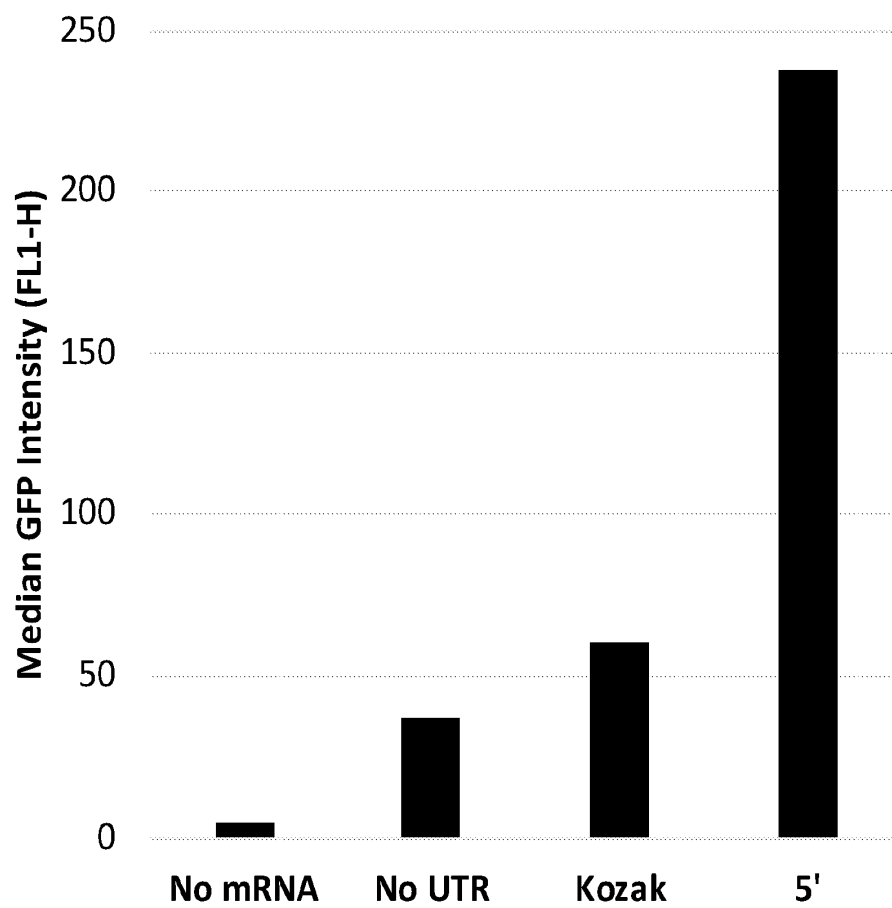


FIG. 3B

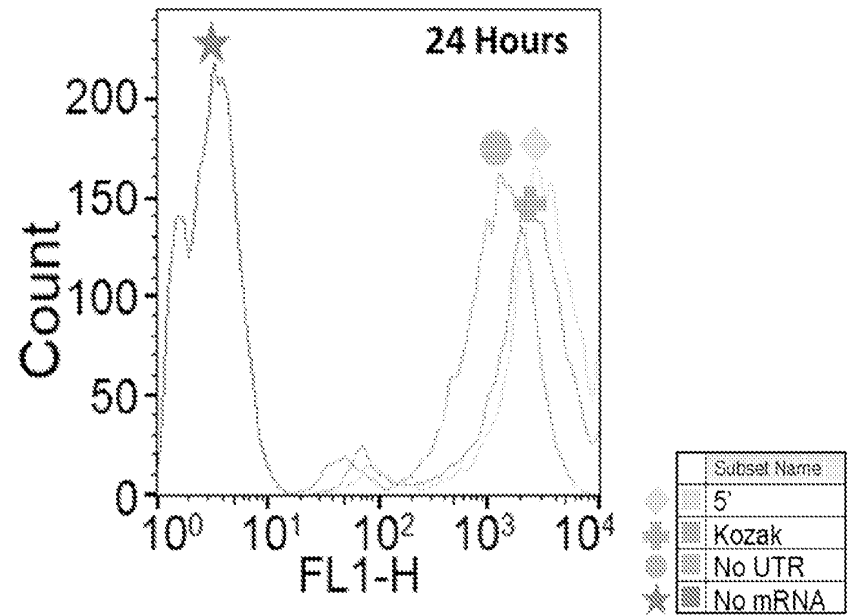


FIG. 3B (cont'd)

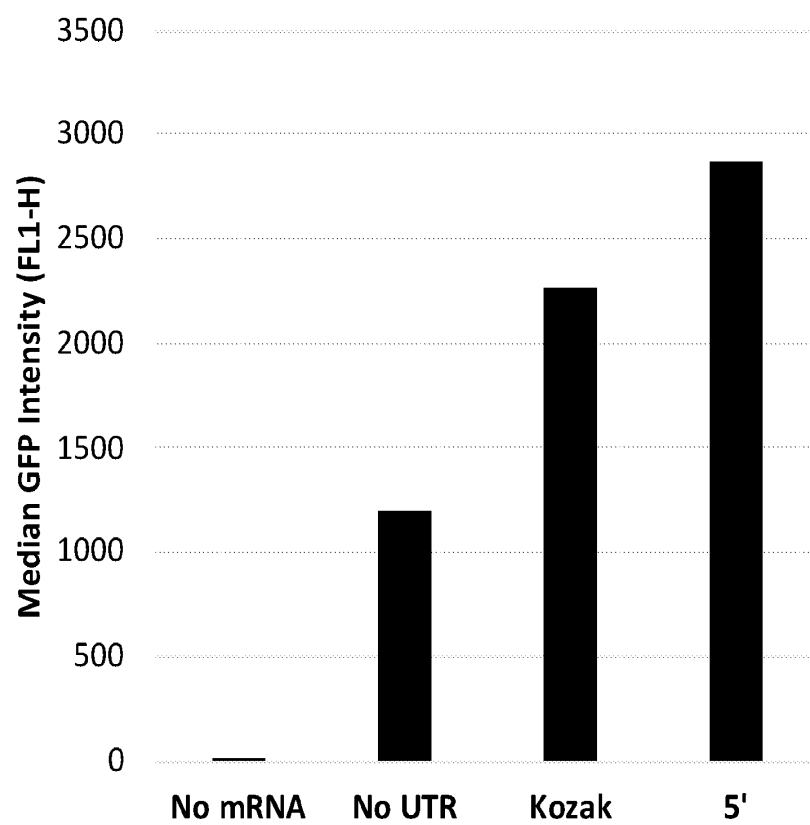


FIG. 4A

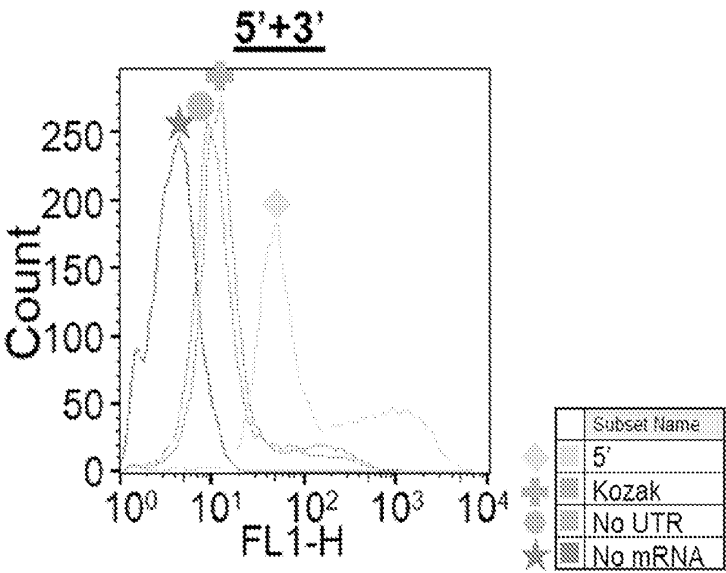


FIG. 4A (cont'd)

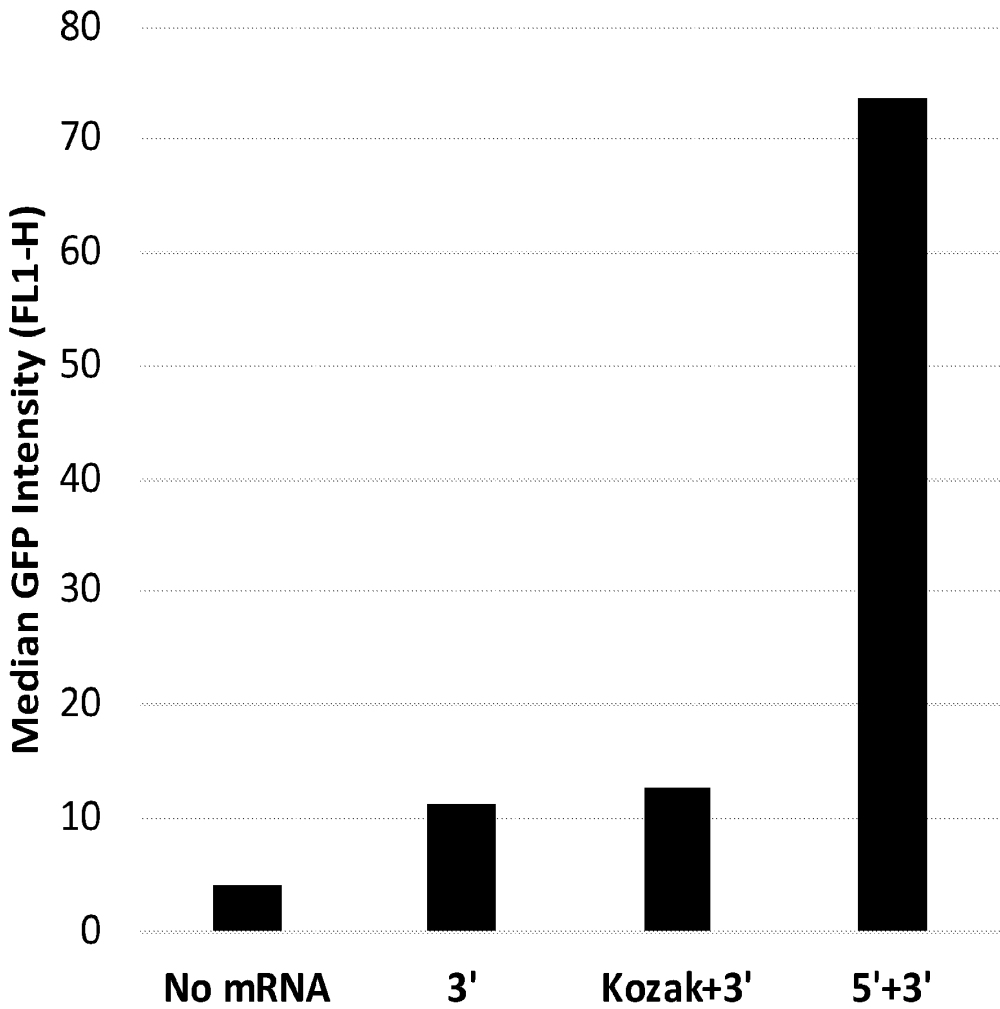


FIG. 4B

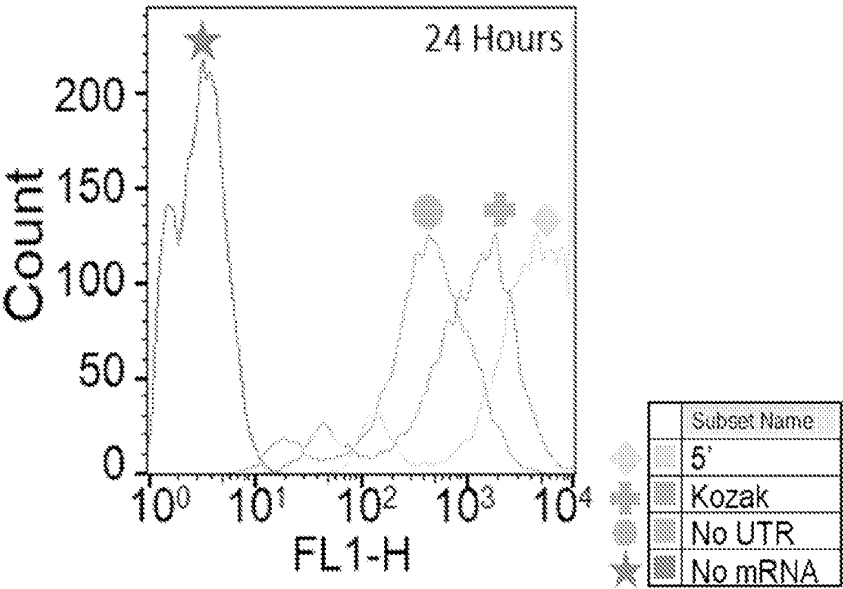


FIG. 4B (cont'd)

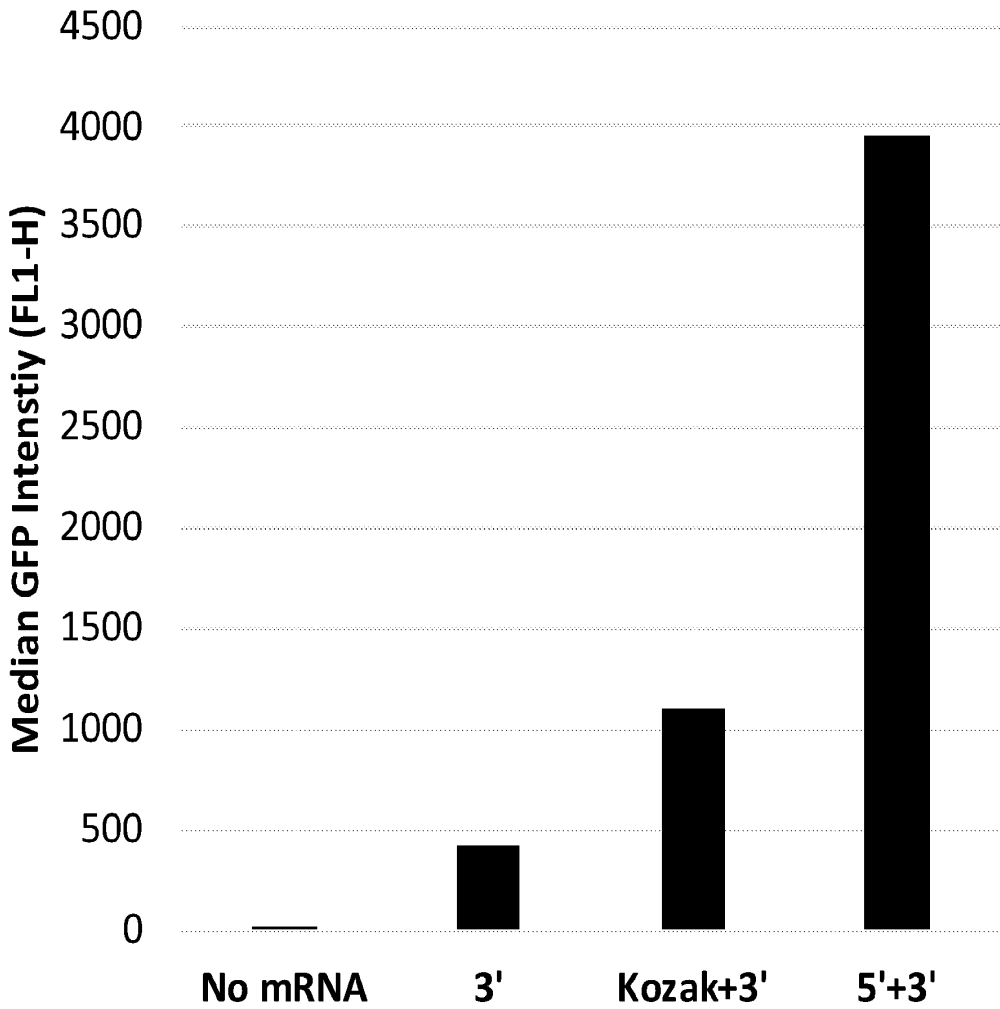
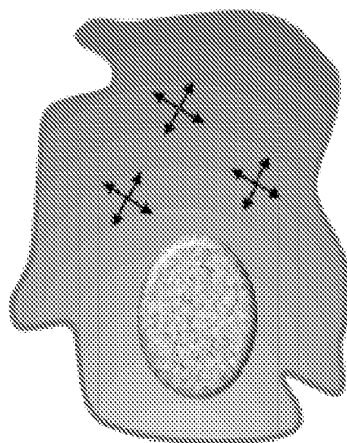


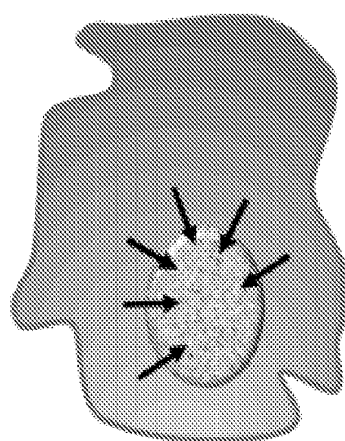
FIG. 5

Cytoplasmic



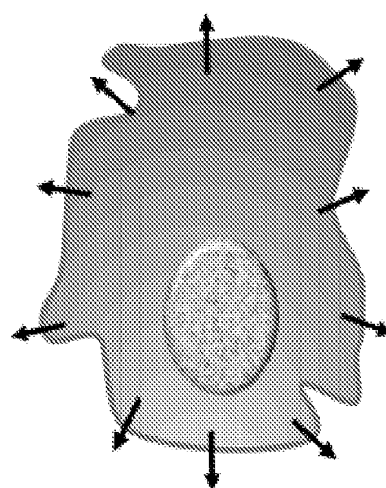
e.g. GFP

Nuclear



e.g. OCT3/4

Secretory



e.g. IL2

FIG. 6A

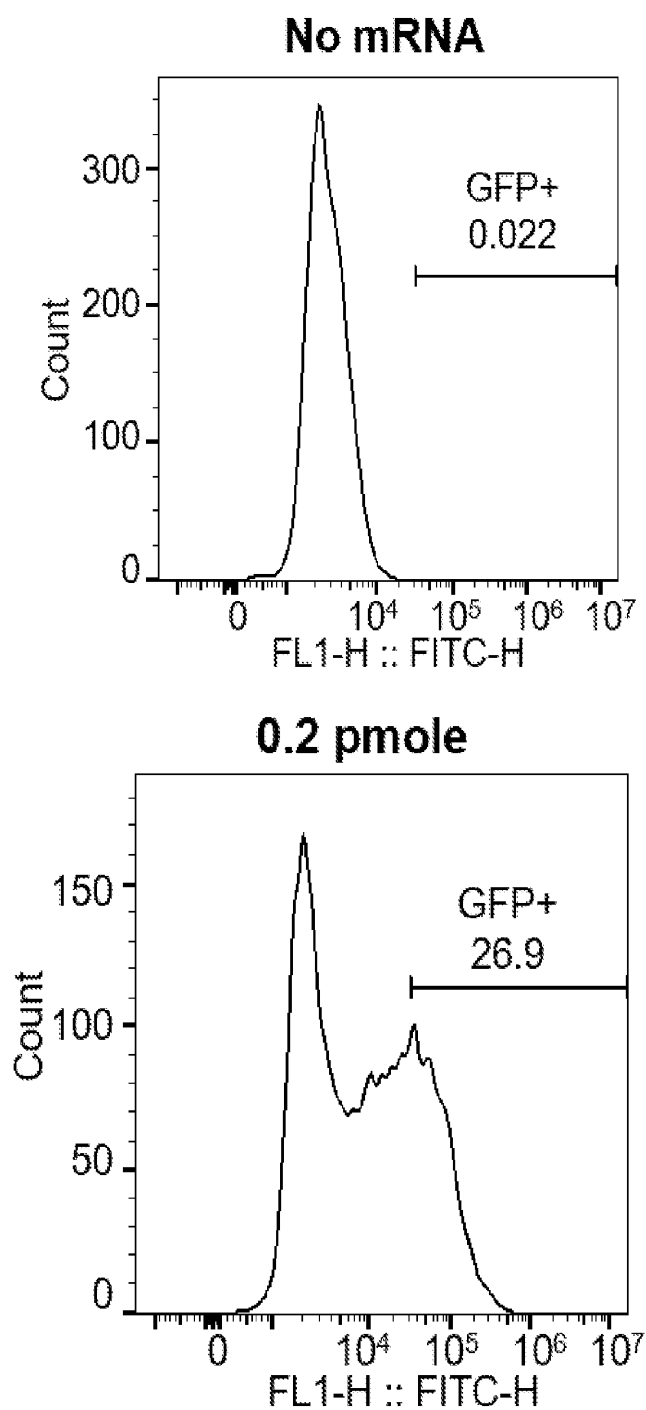


FIG. 6A (cont'd)

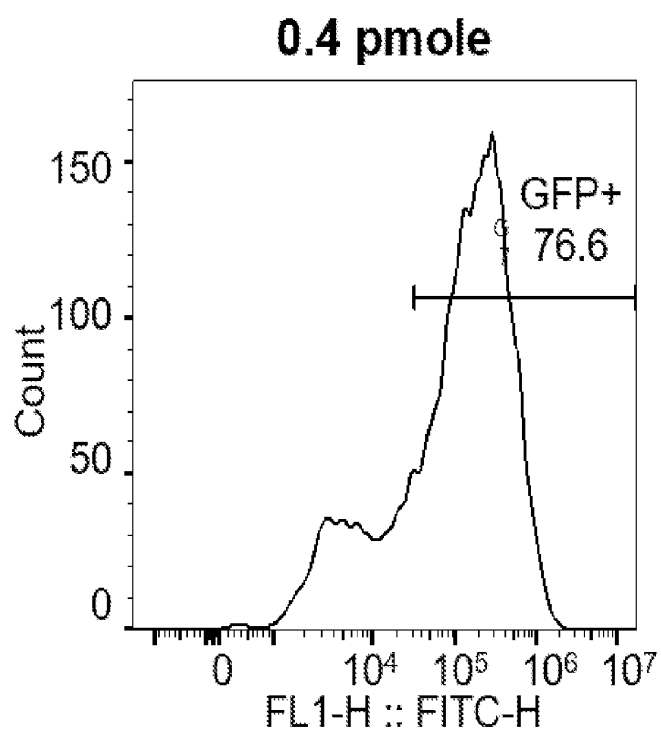
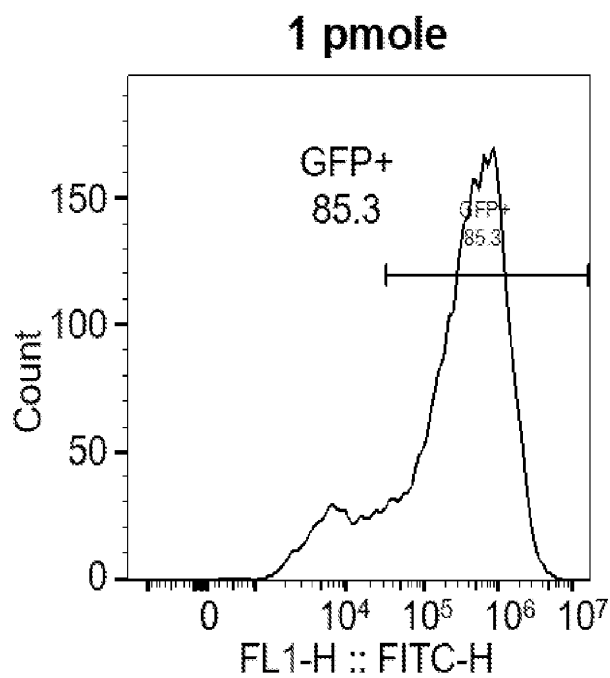


FIG. 6A (cont'd)

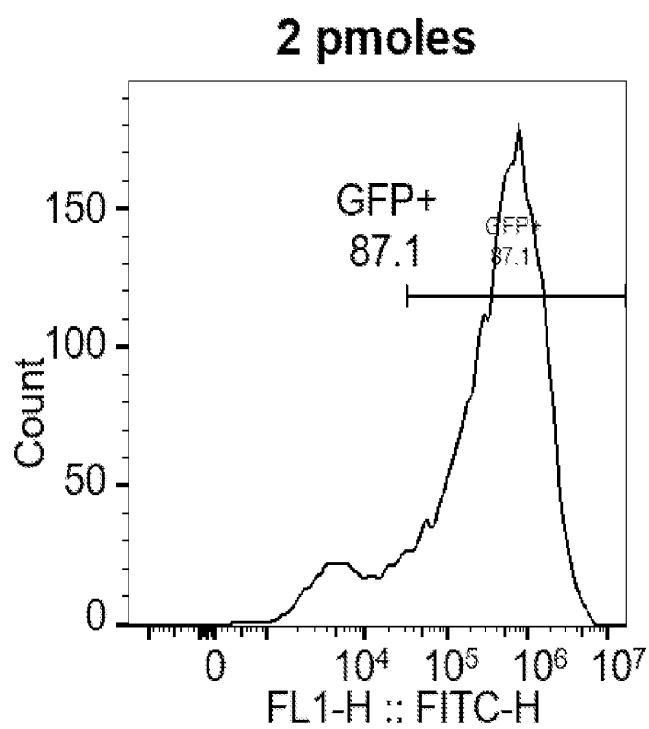
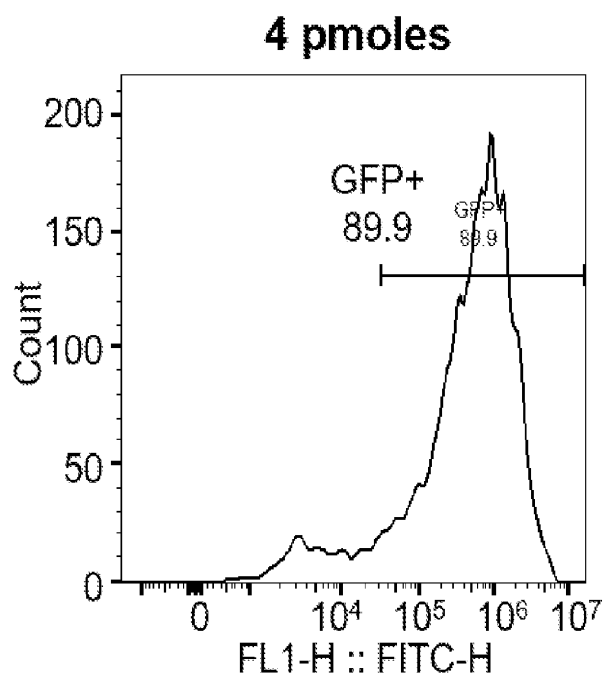


FIG. 6B

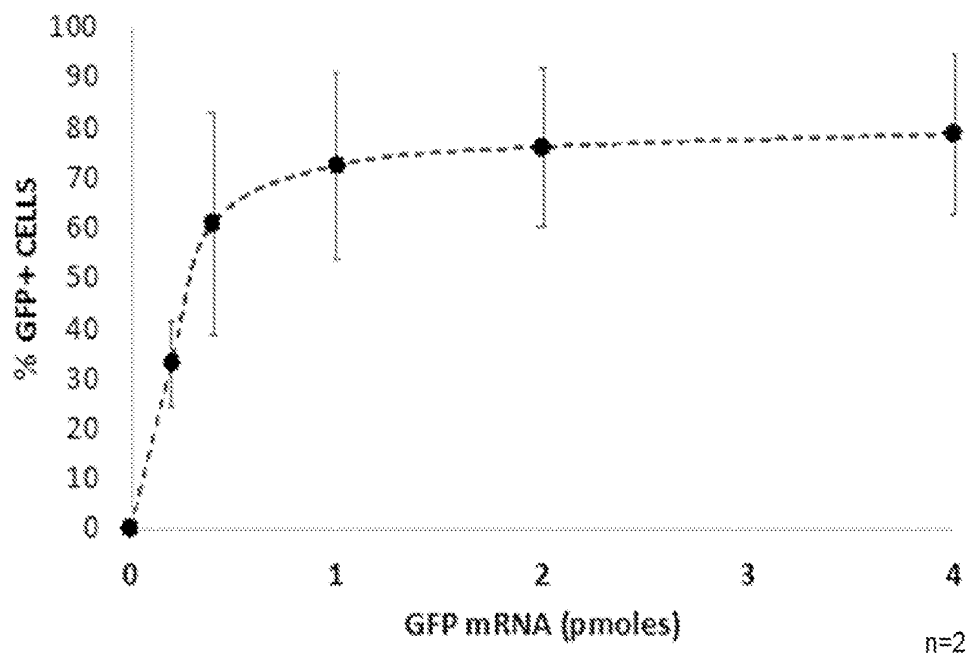


FIG. 6C

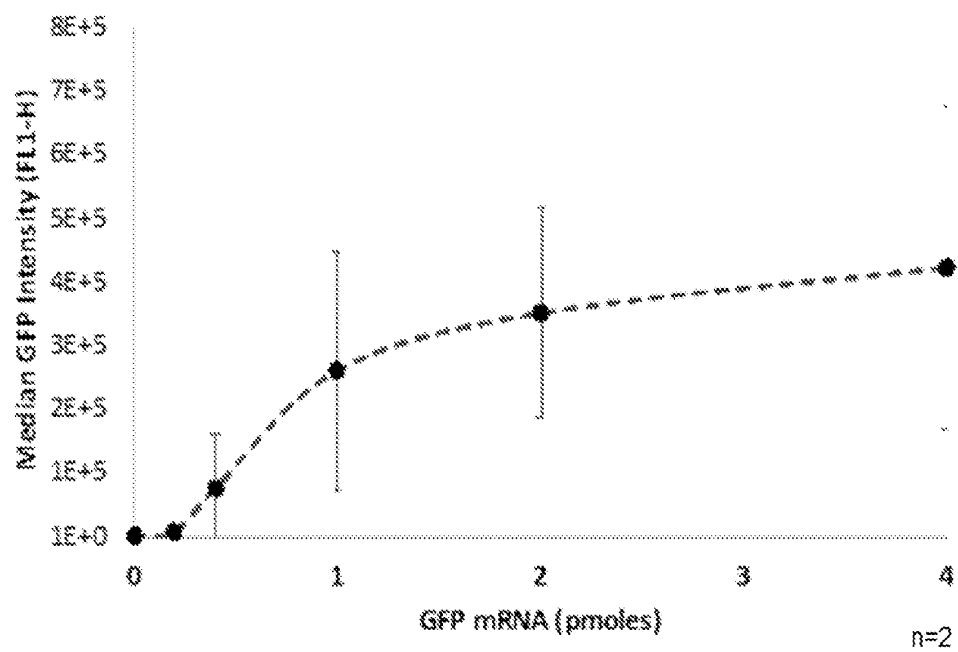


FIG. 7A

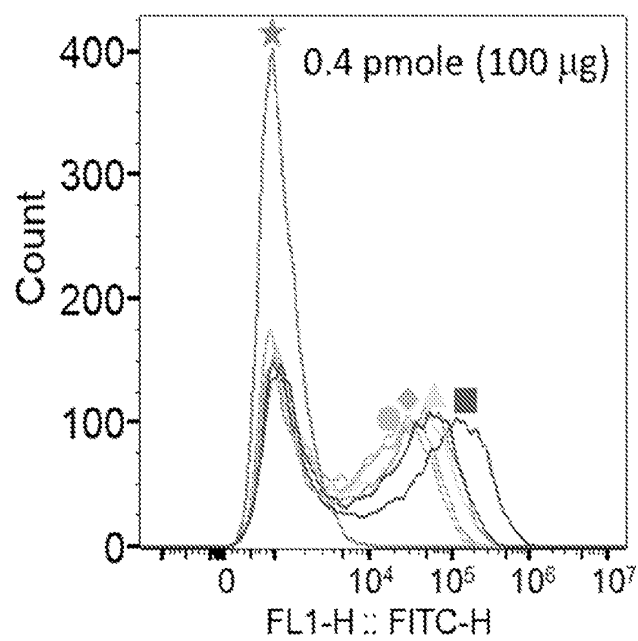


FIG. 7B

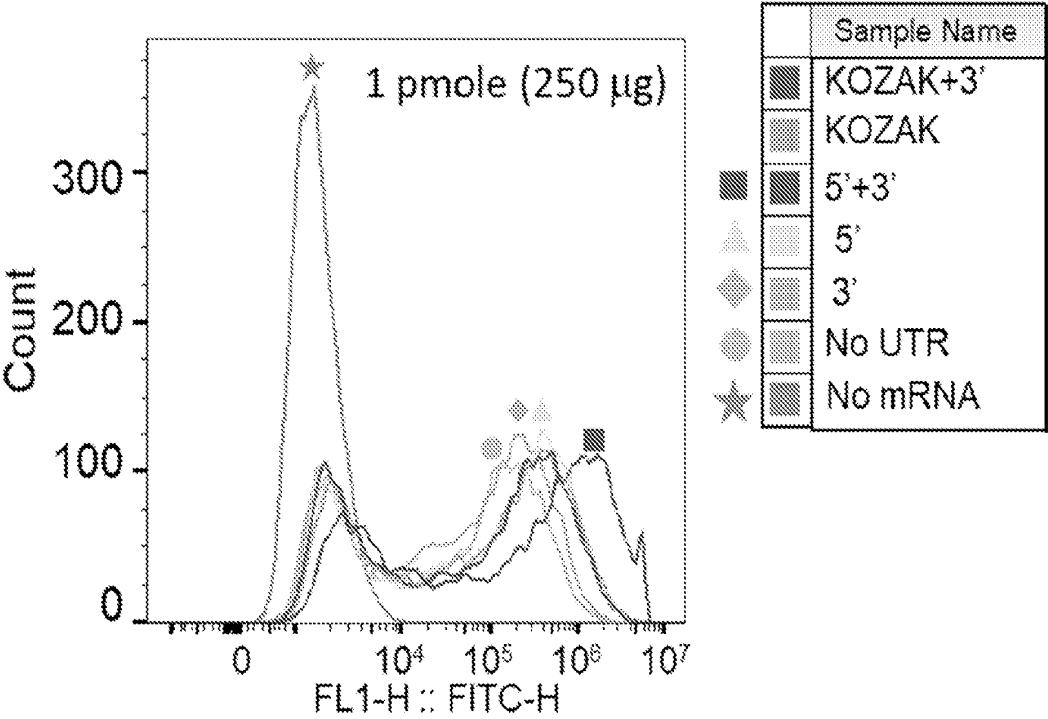


FIG. 7C

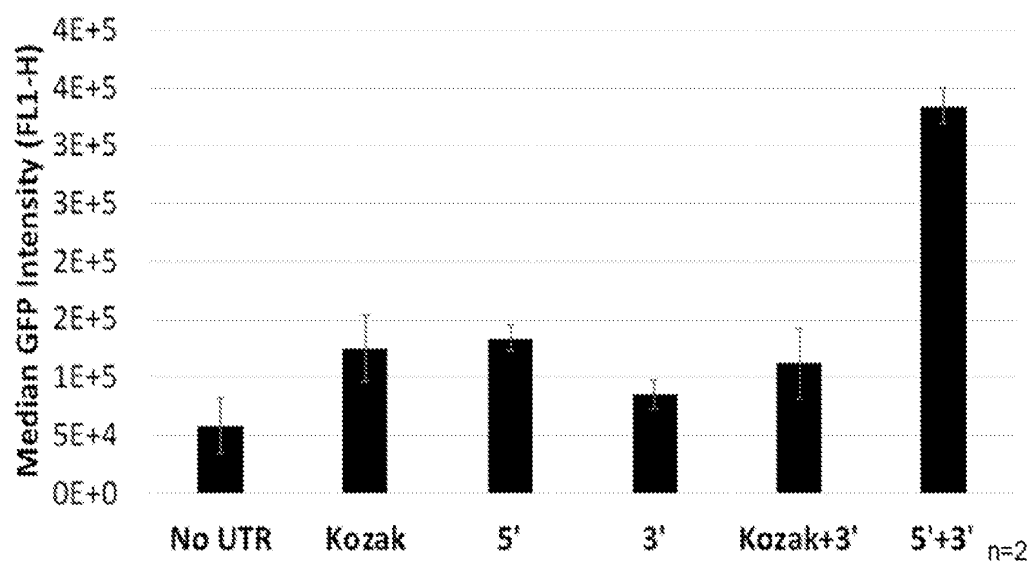


FIG. 8A

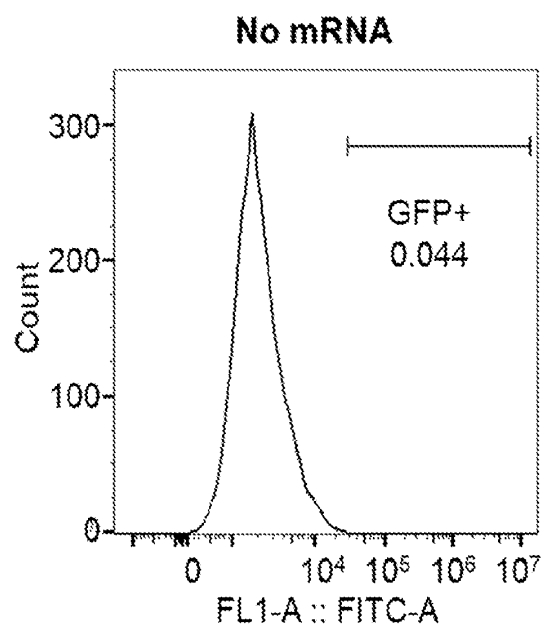
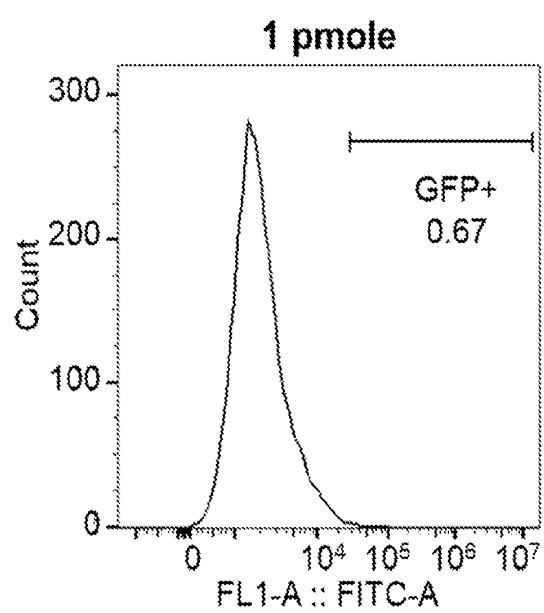


FIG. 8A (cont'd)

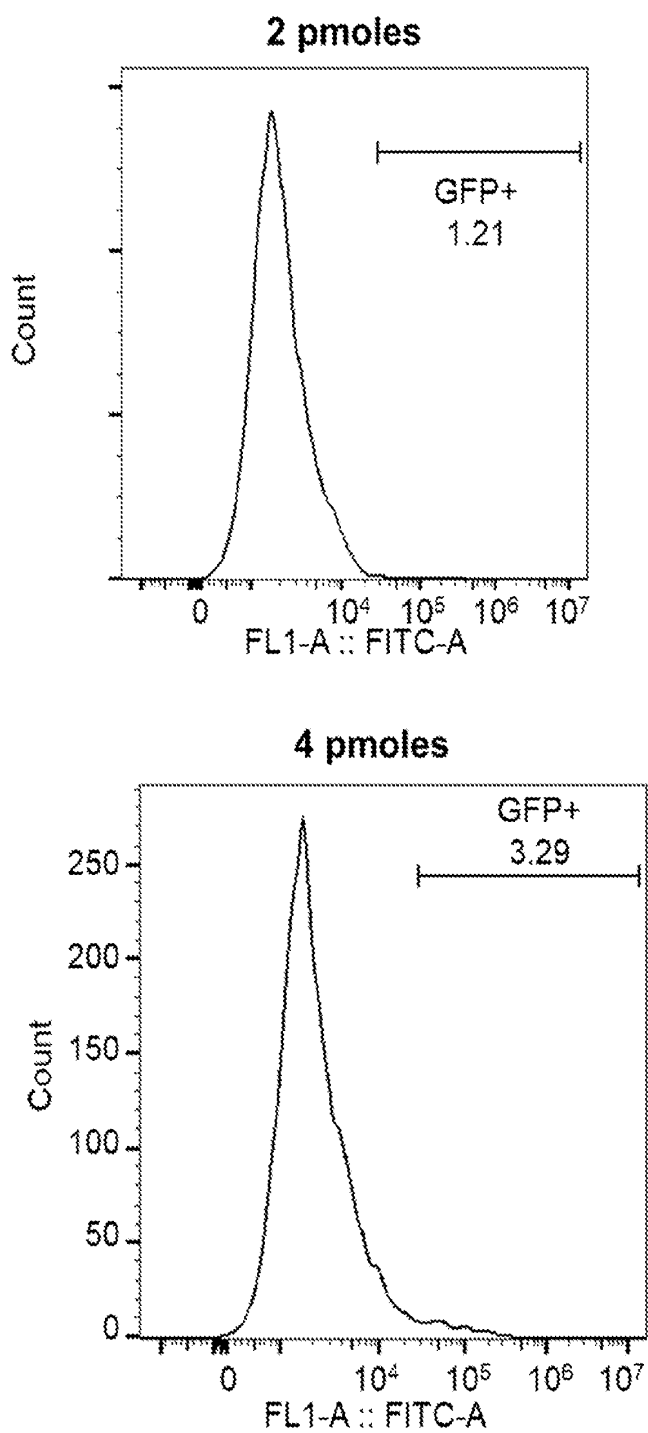


FIG. 8A (cont'd)

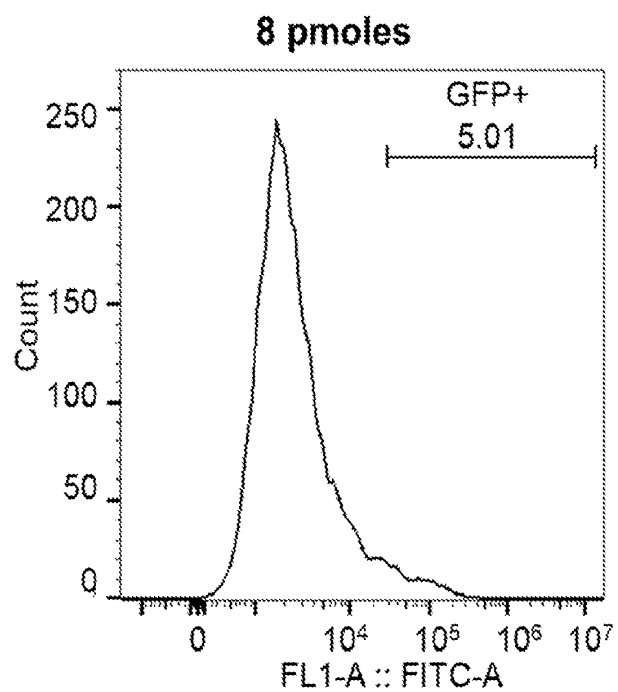
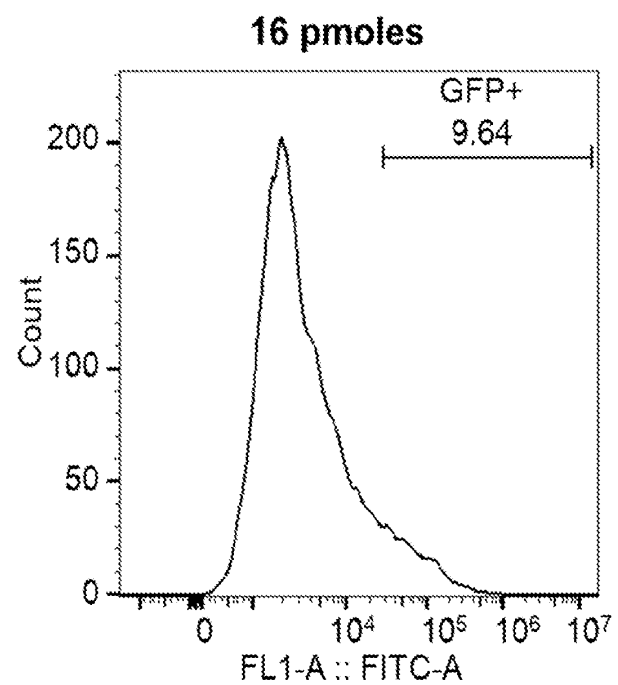


FIG. 8A (cont'd)

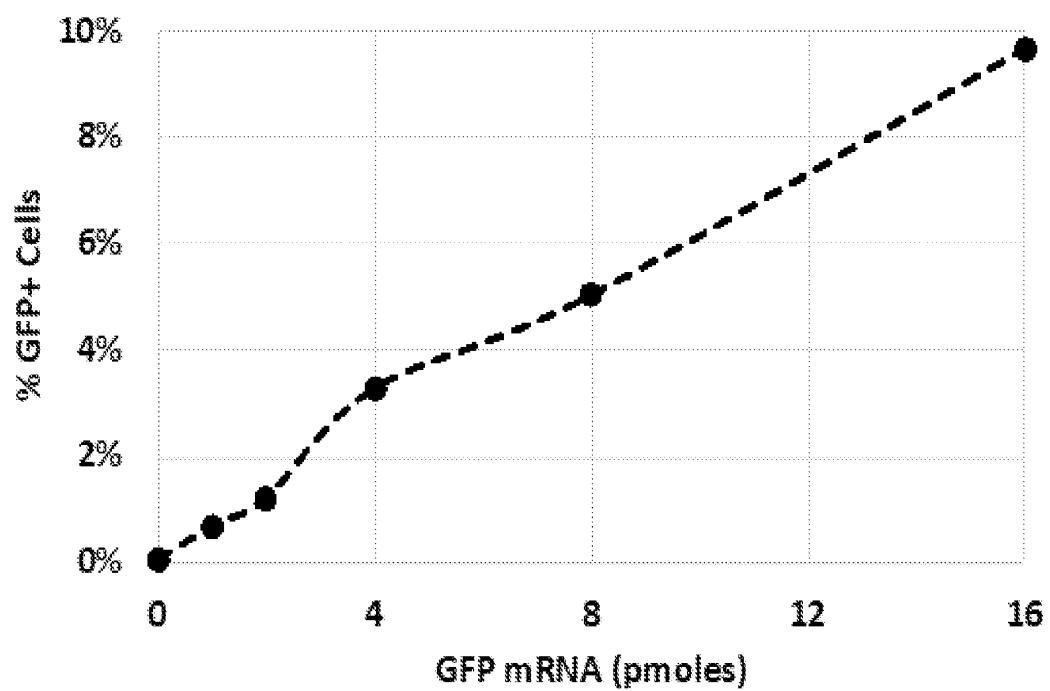


FIG. 8B

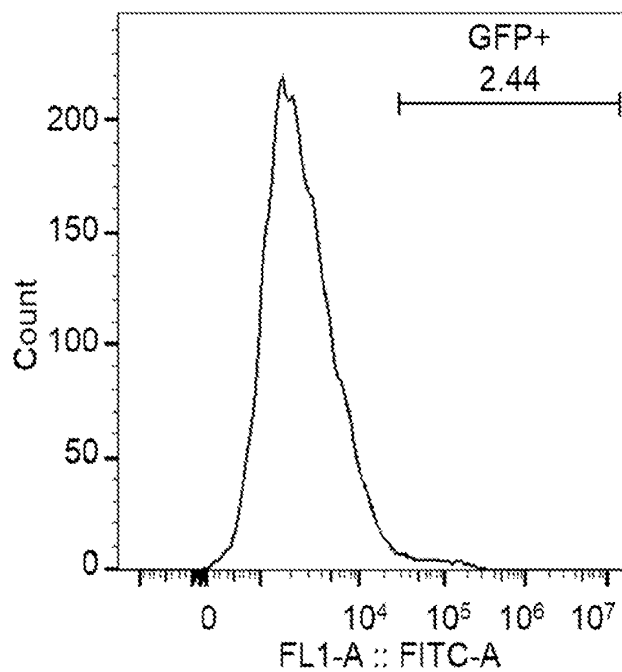
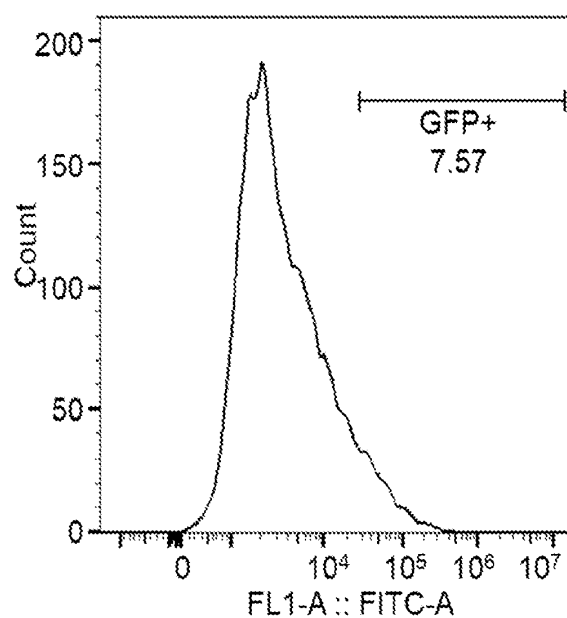
**No UTR****Kozak**

FIG. 8B (cont'd)

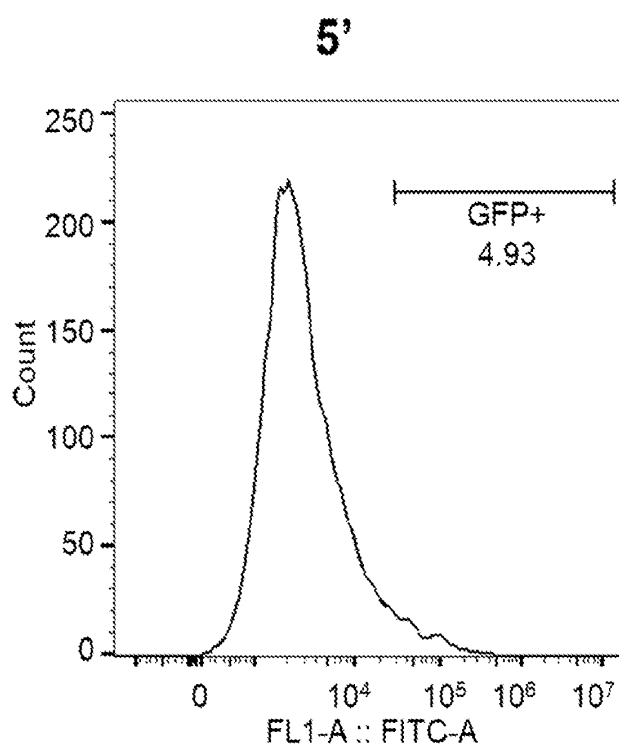
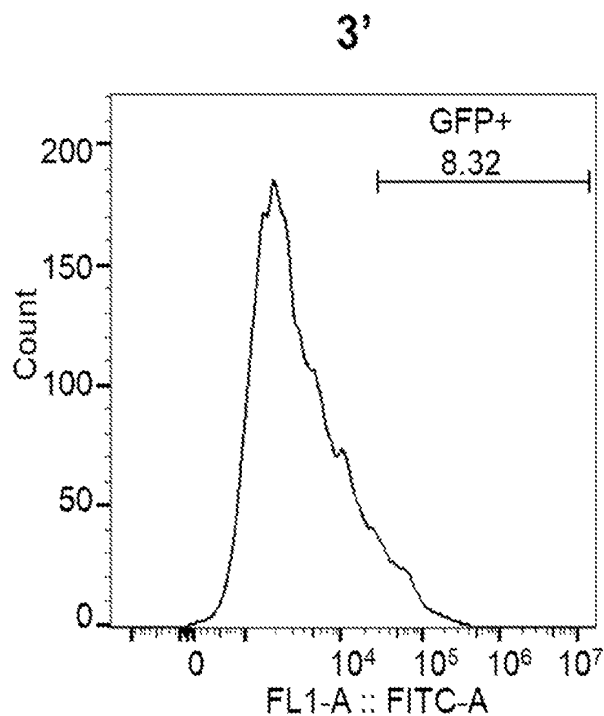


FIG. 8B (cont'd)

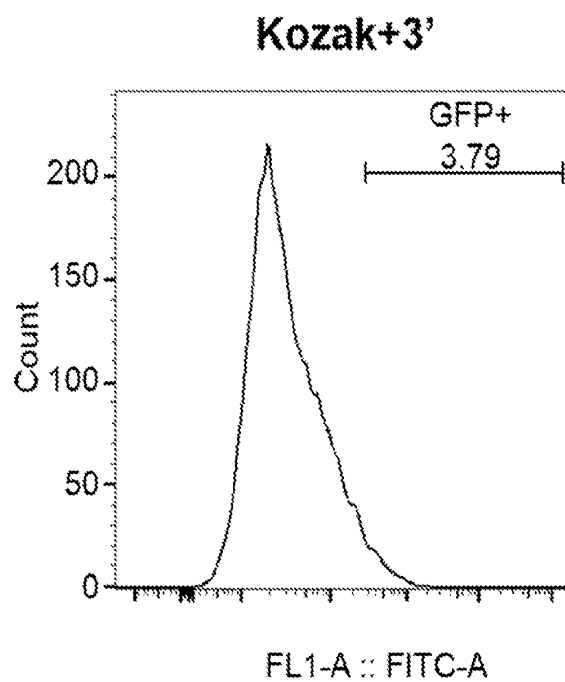
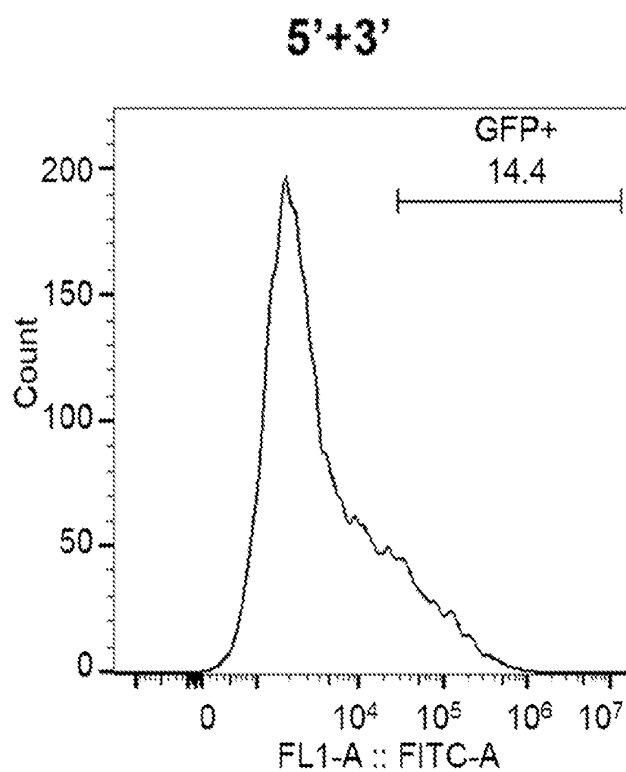


FIG. 8B (cont'd)

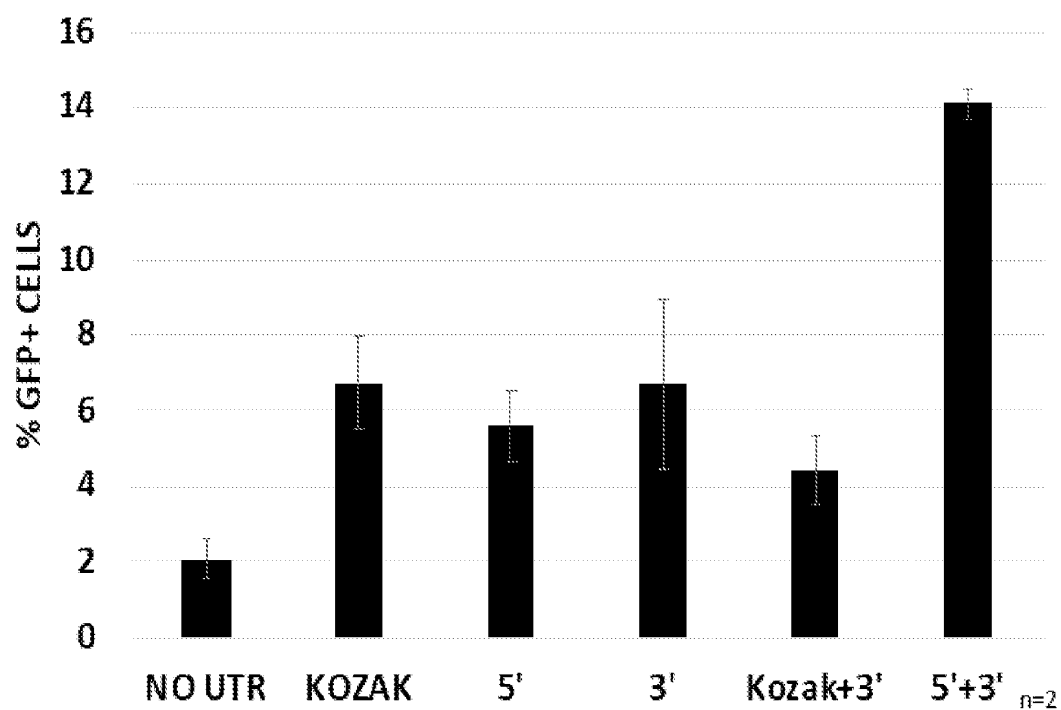


FIG. 9A

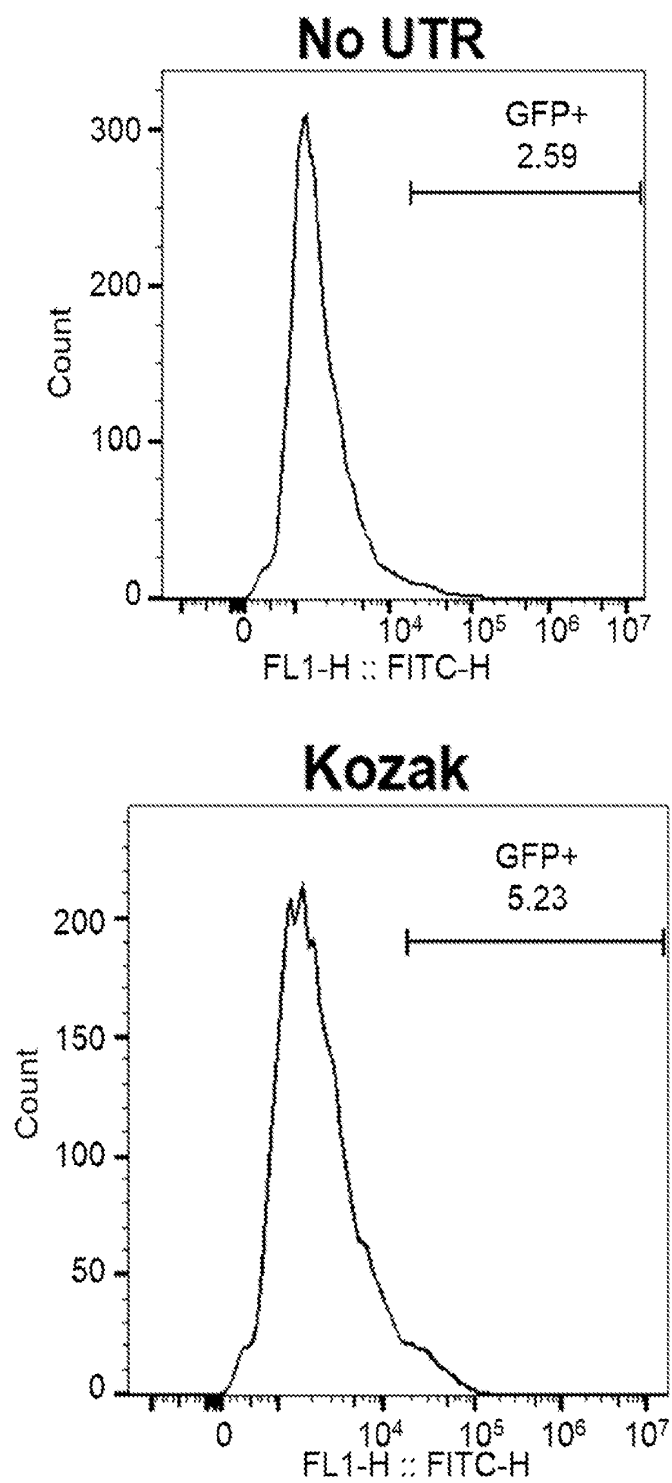


FIG. 9A (cont'd)

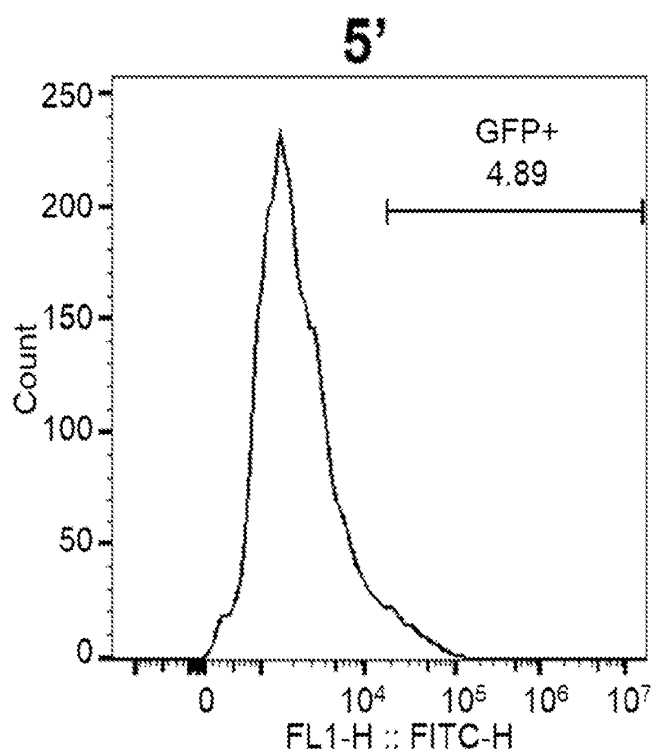
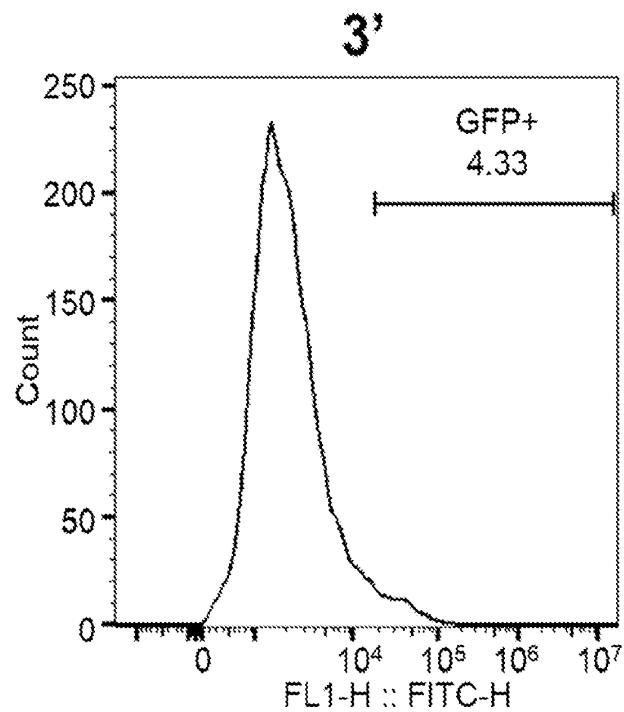


FIG. 9A (cont'd)

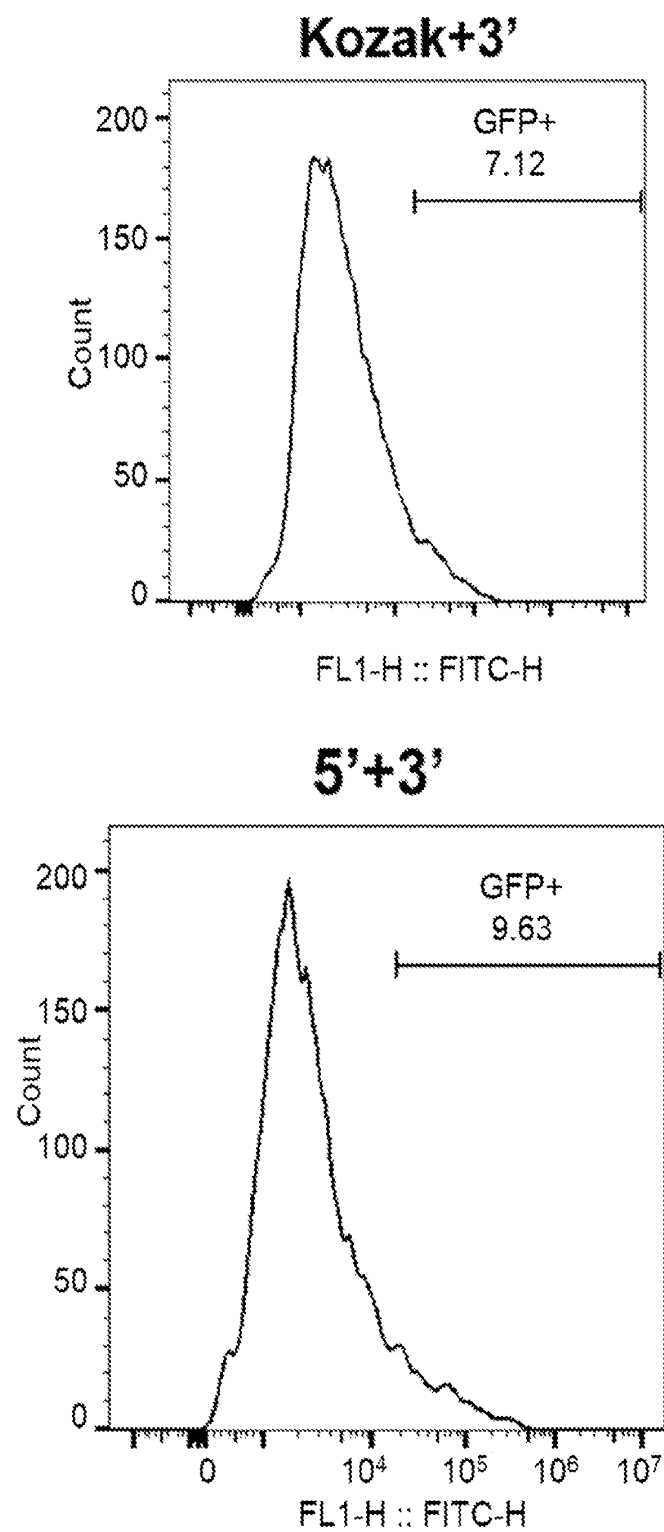


FIG. 9B

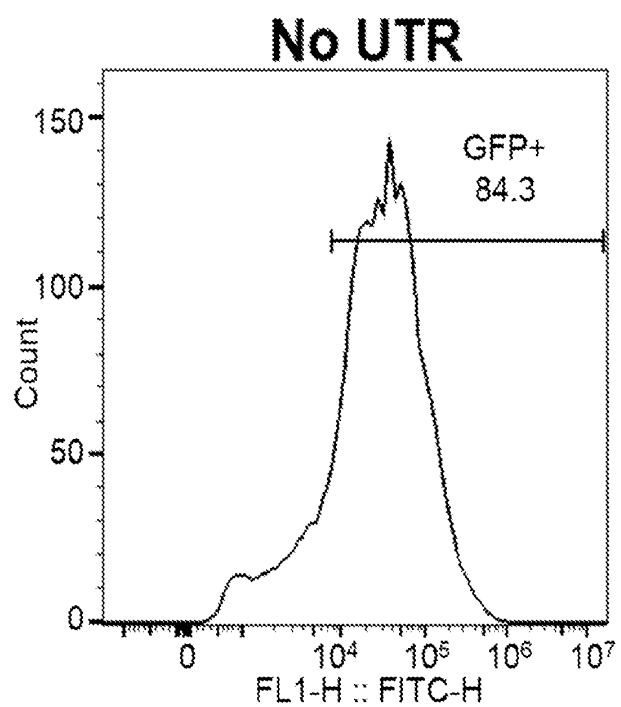
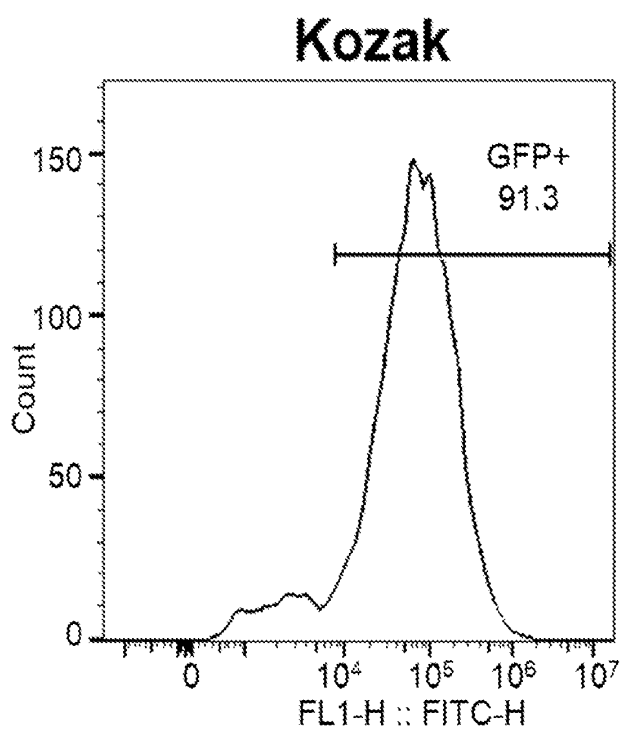


FIG. 9B (cont'd)

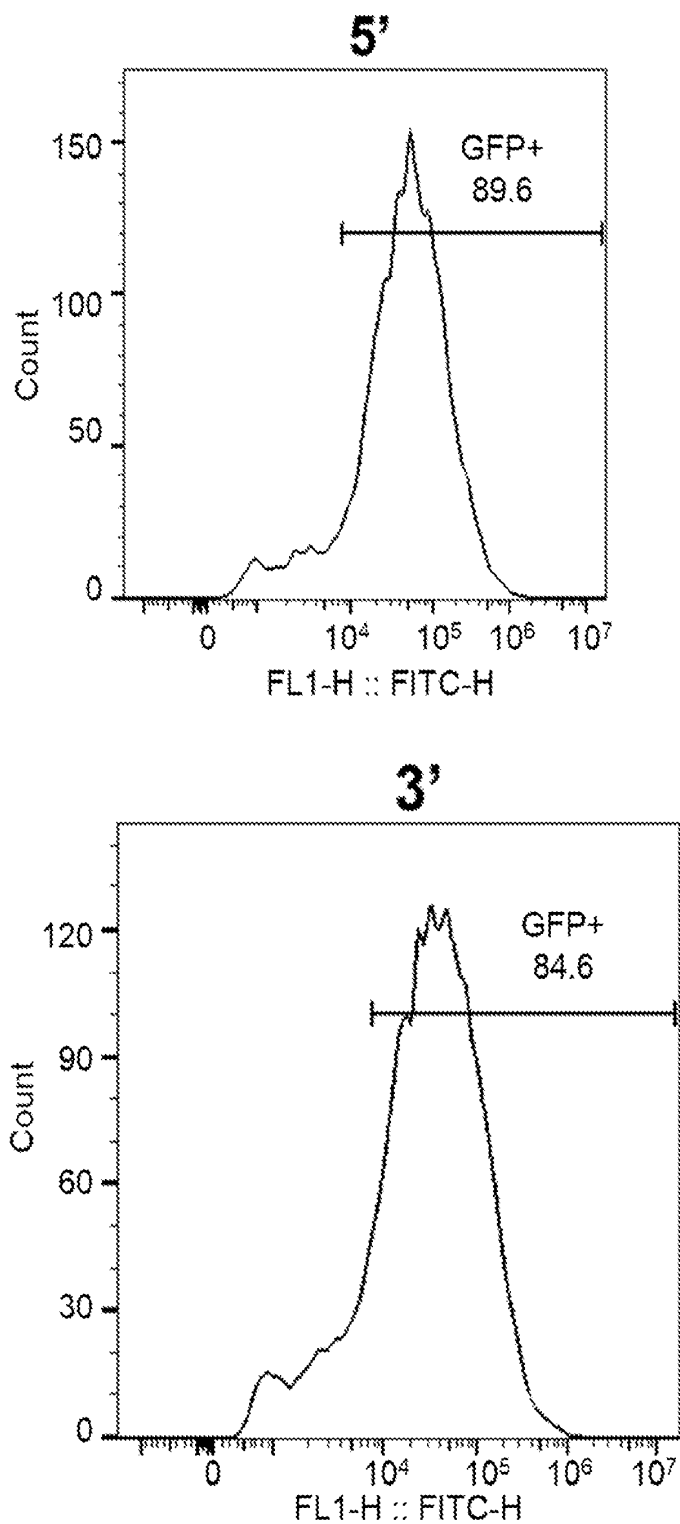


FIG. 9B (cont'd)

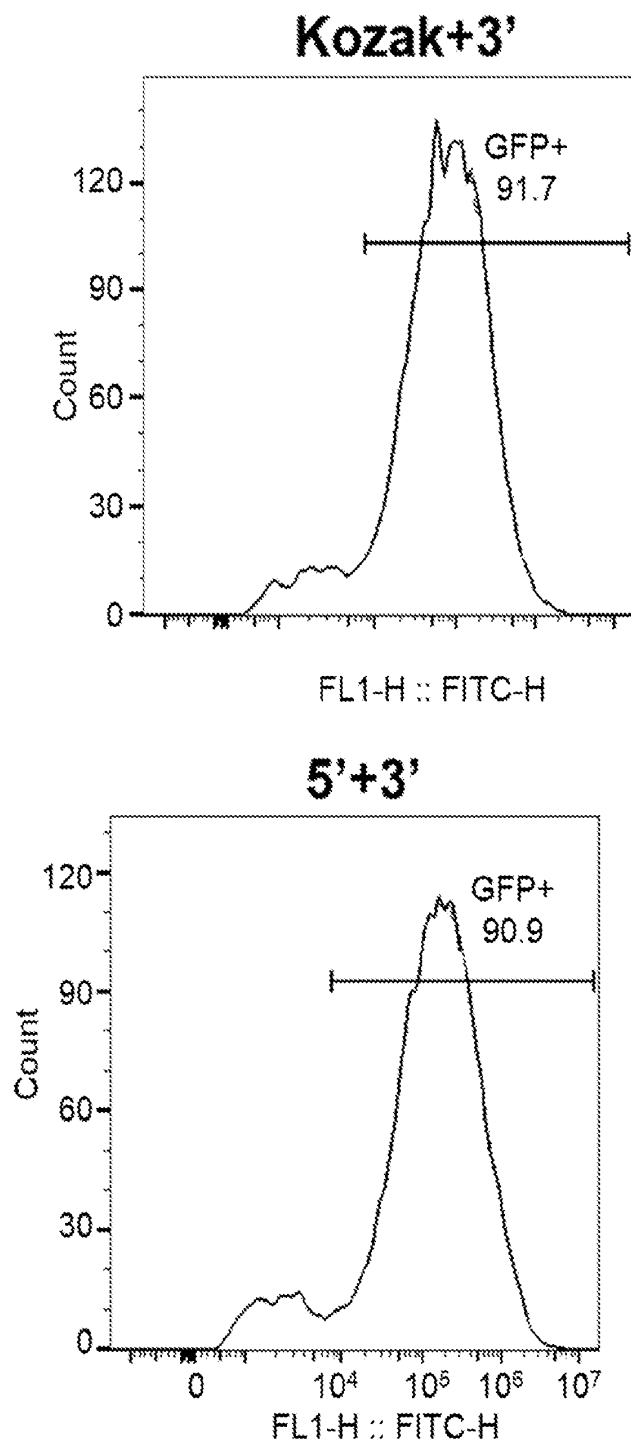


FIG. 9C

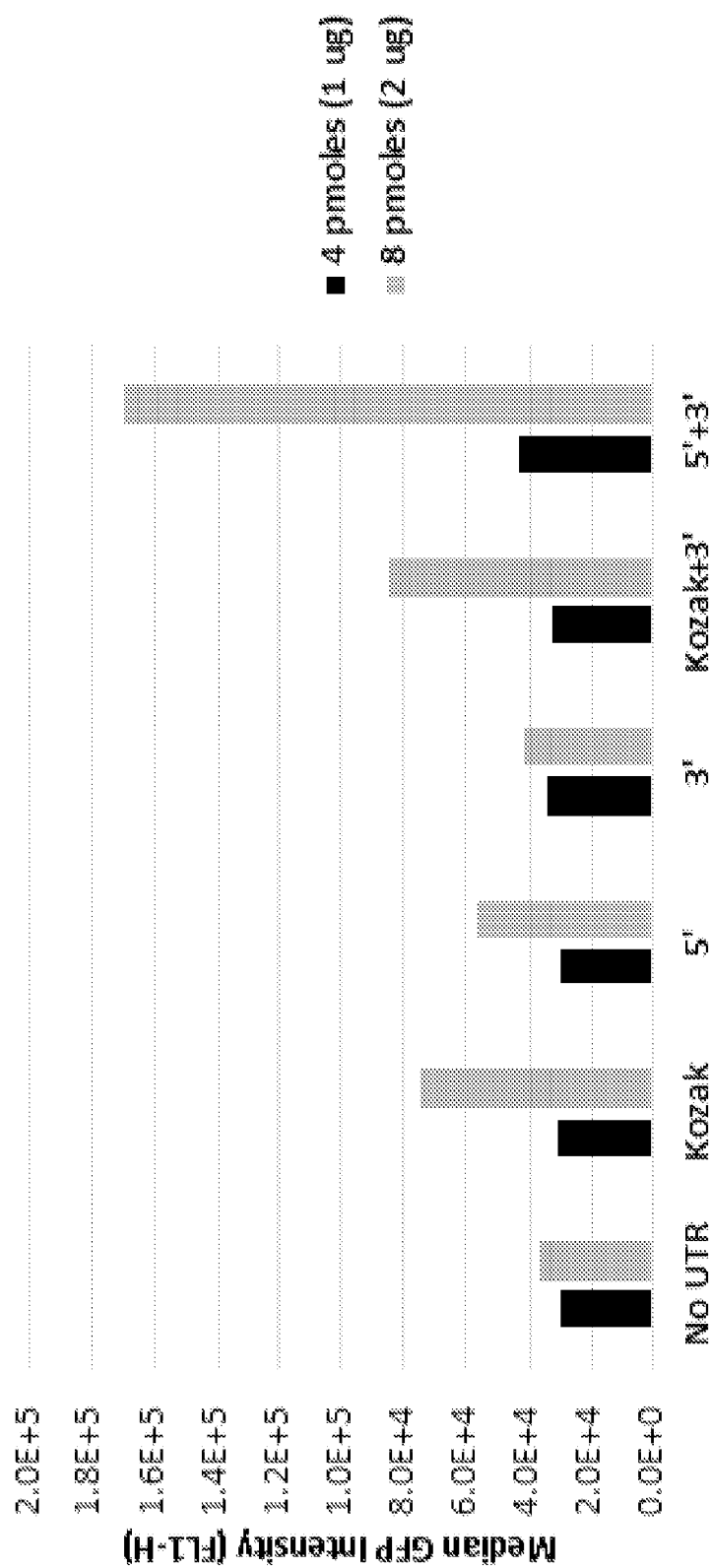


FIG. 10A

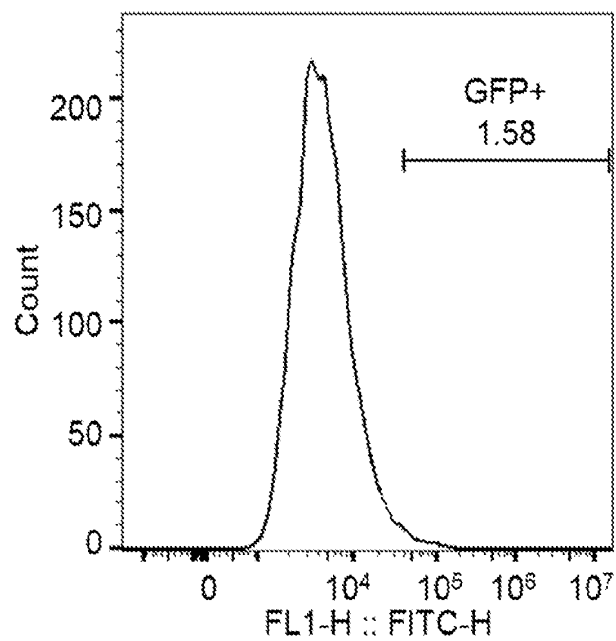
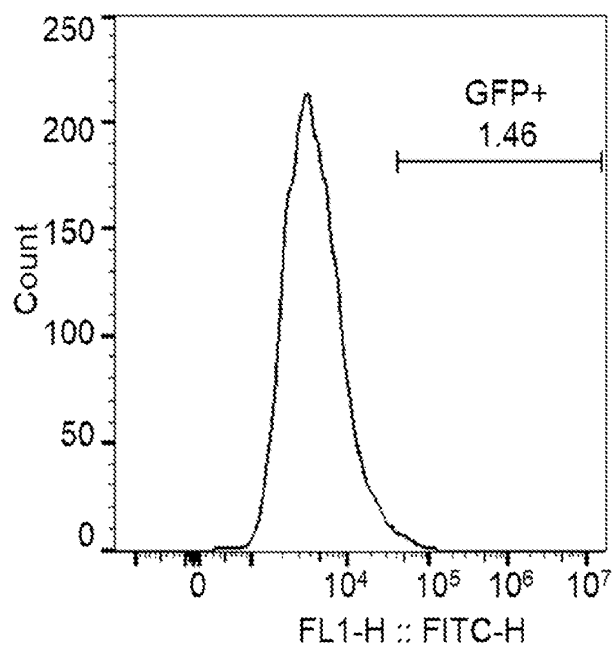
**No UTR****Kozak**

FIG. 10A (cont'd)

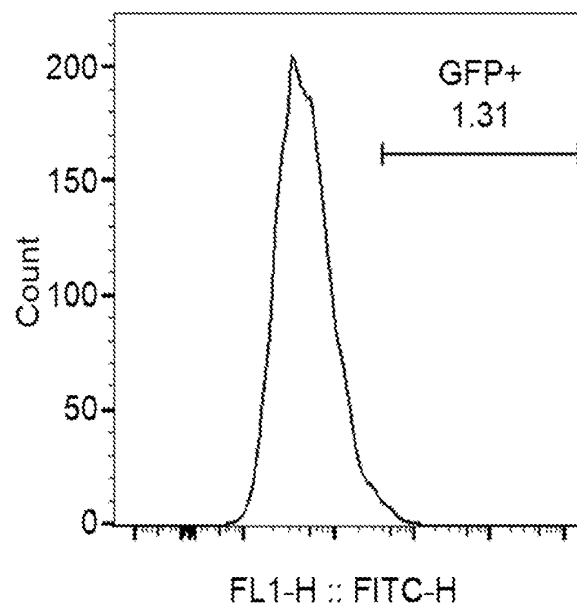
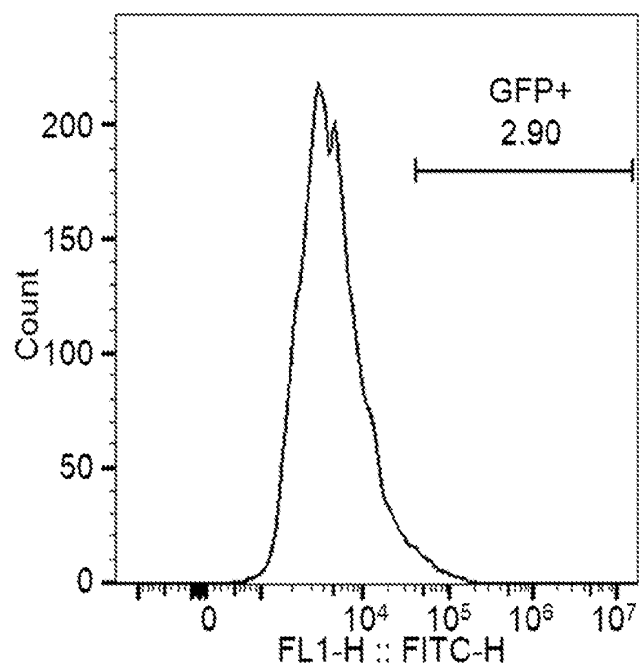
**5'****3'**

FIG. 10A (cont'd)

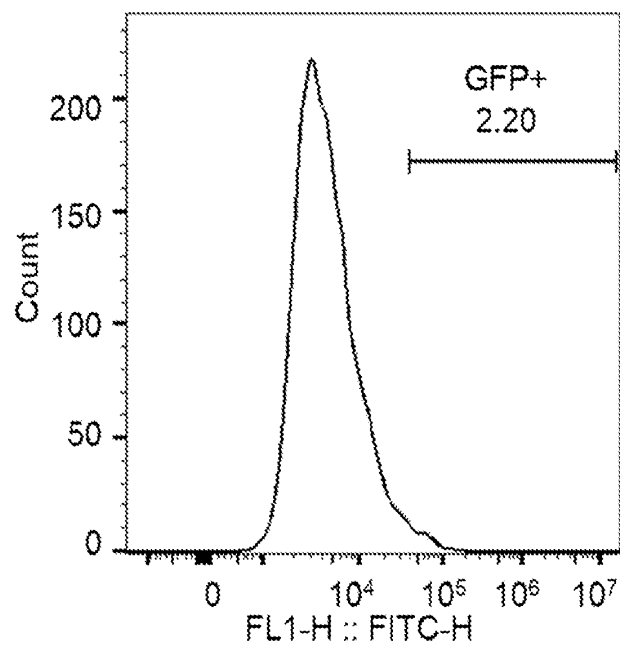
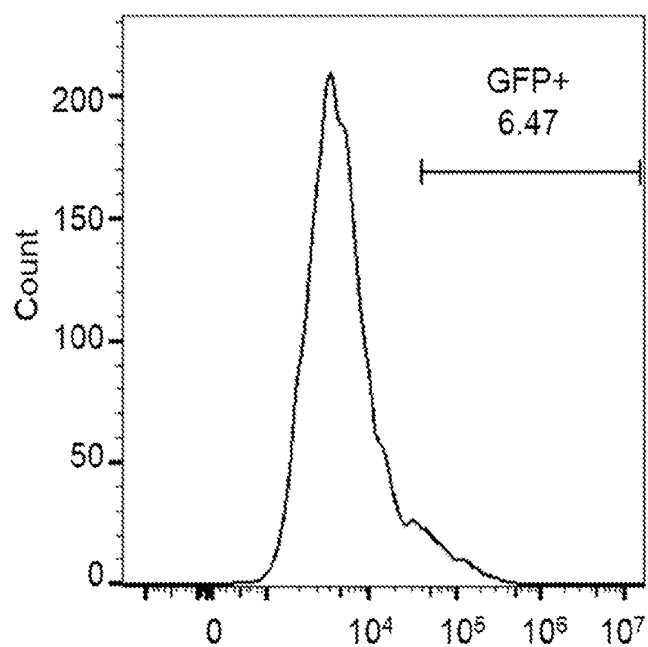
**Kozak+3'****5'+3'**

FIG. 10B

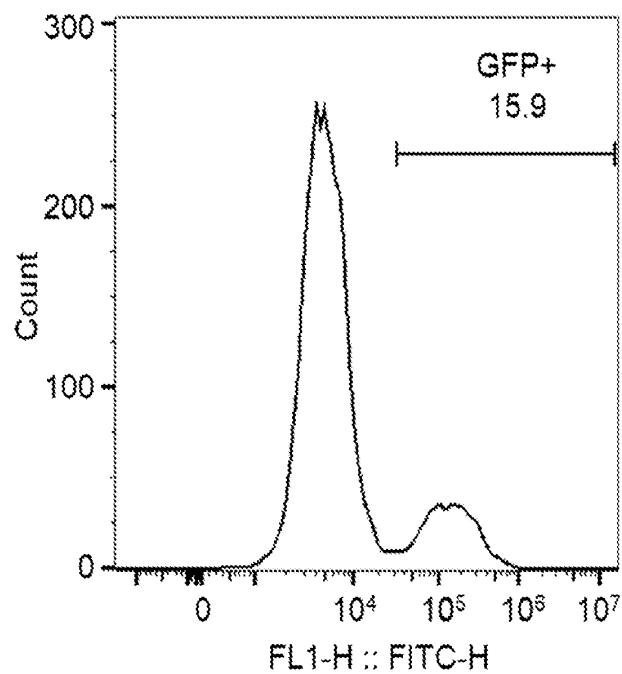
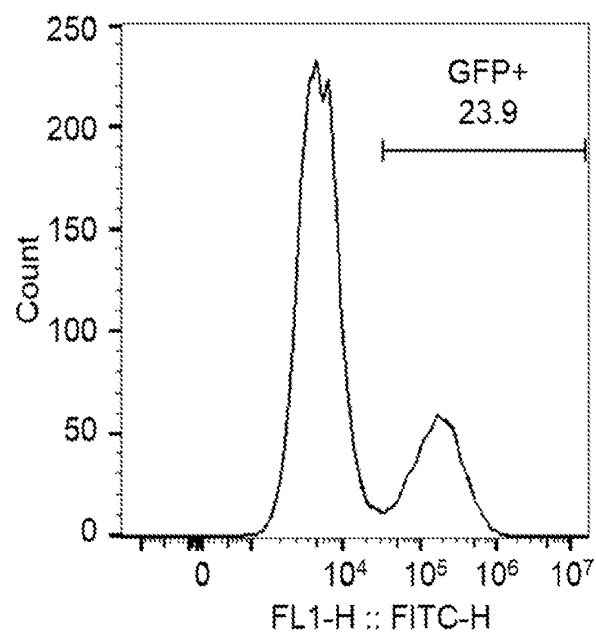
**No UTR****Kozak**

FIG. 10B (cont'd)

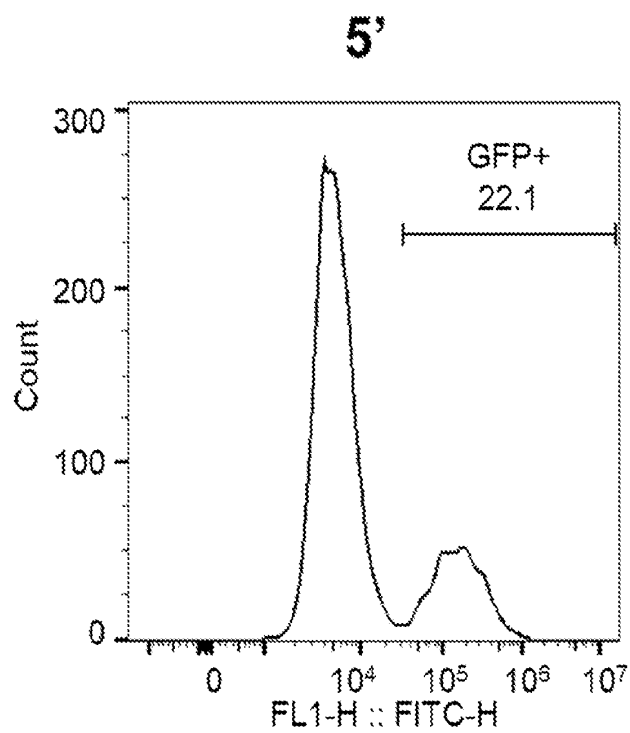
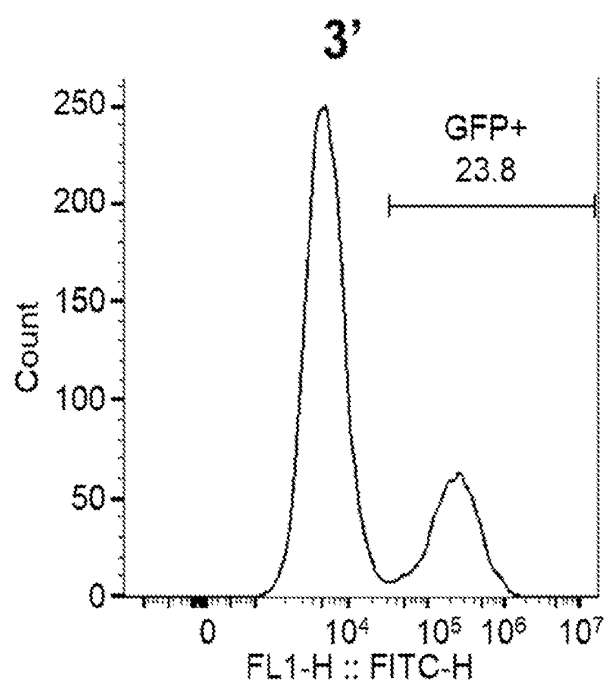


FIG. 10B (cont'd)

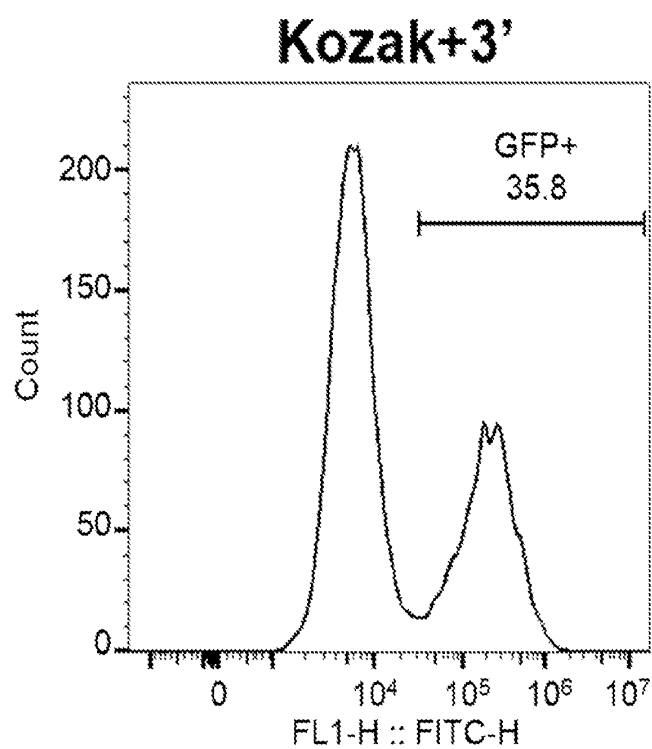
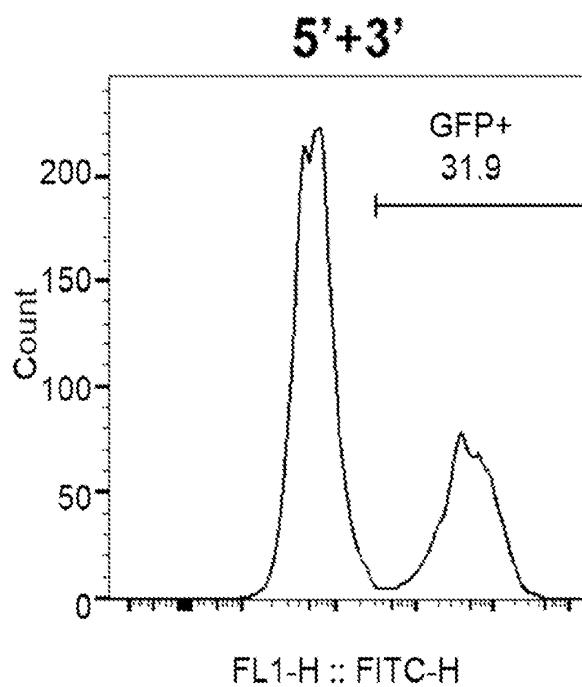


FIG. 10C

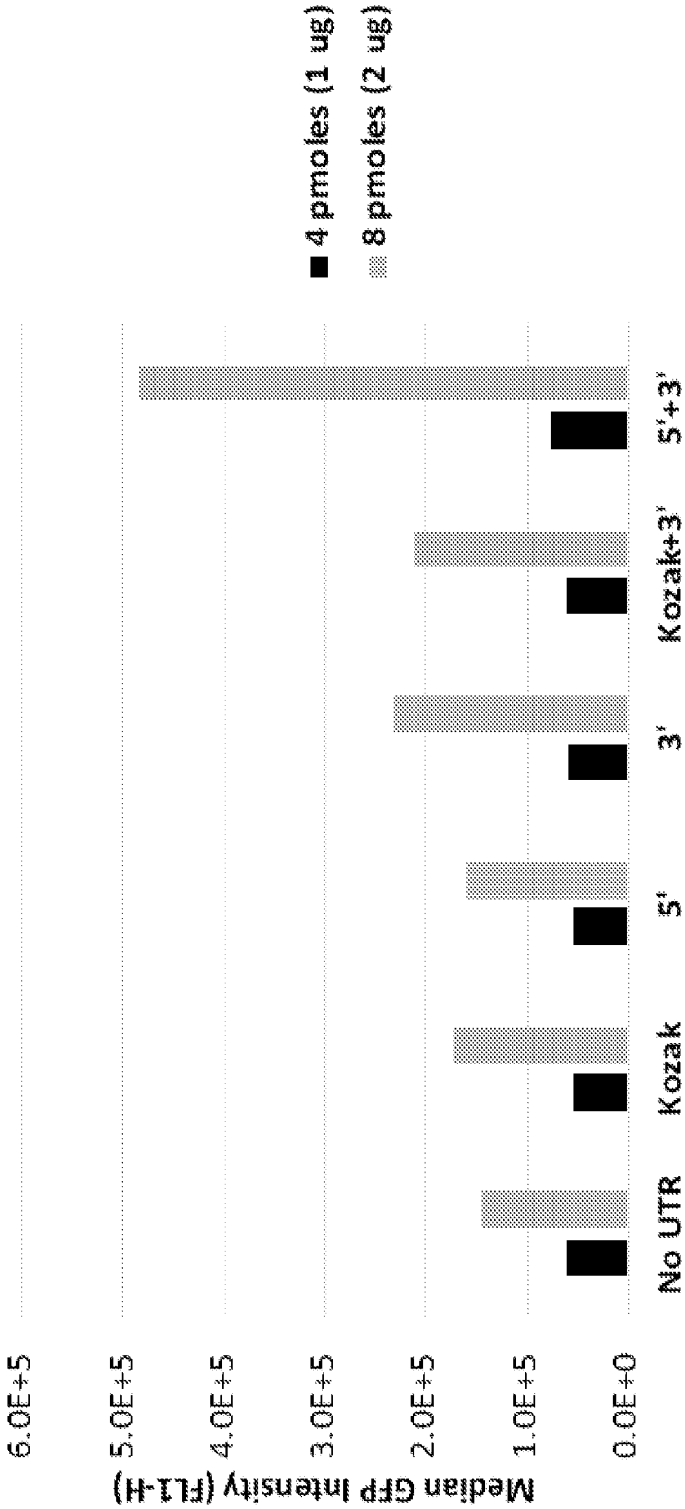


FIG. 11A

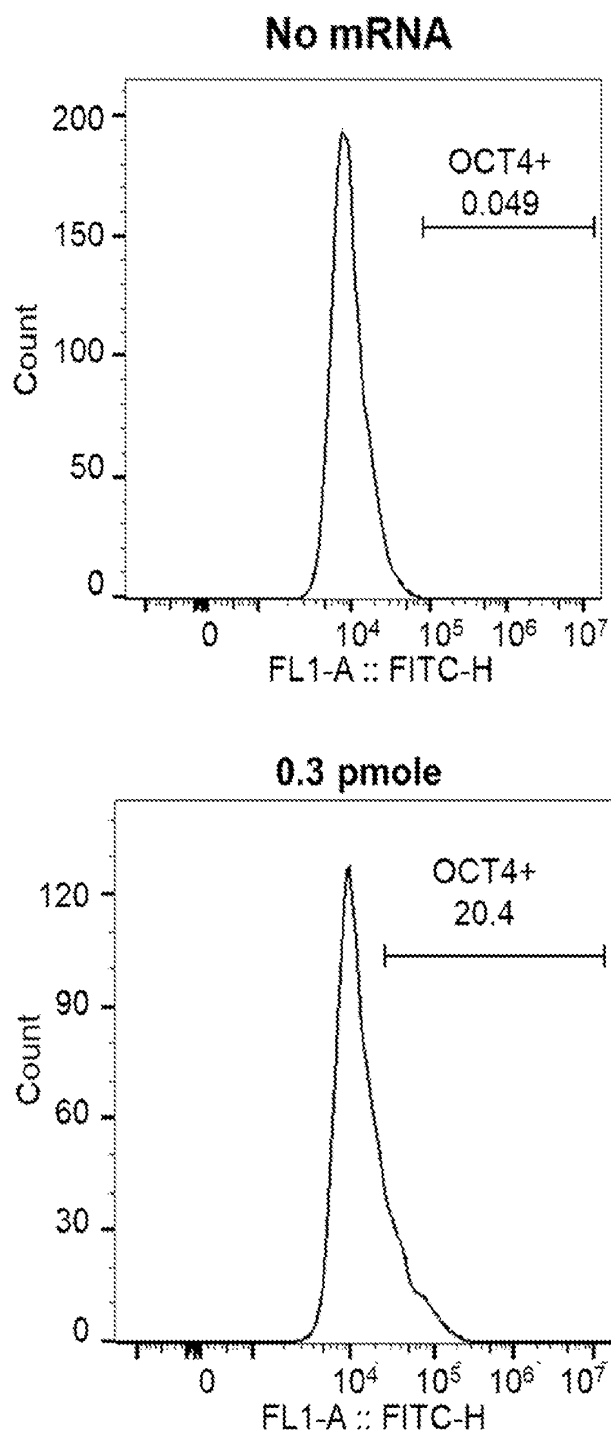


FIG. 11A (cont'd)

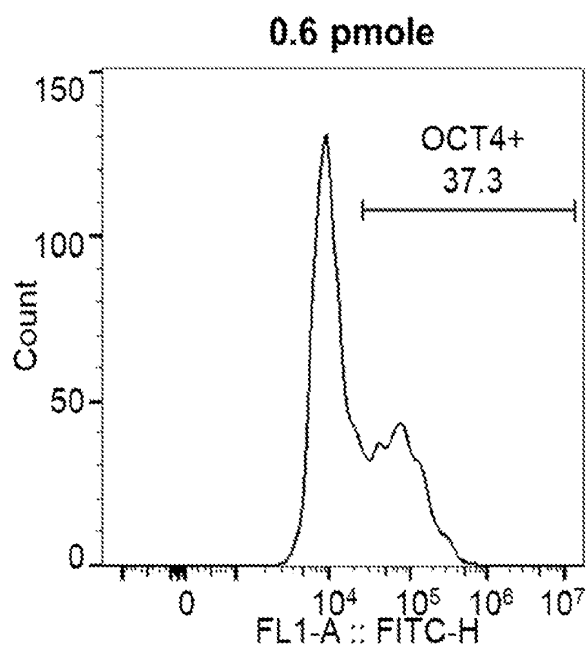
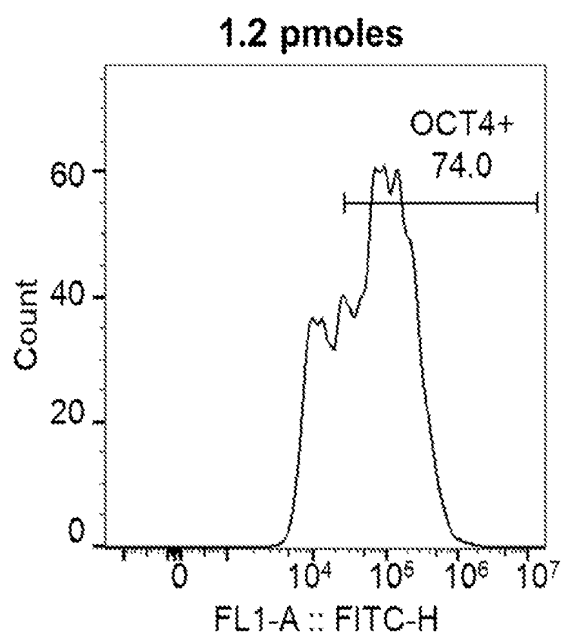


FIG. 11A (cont'd)

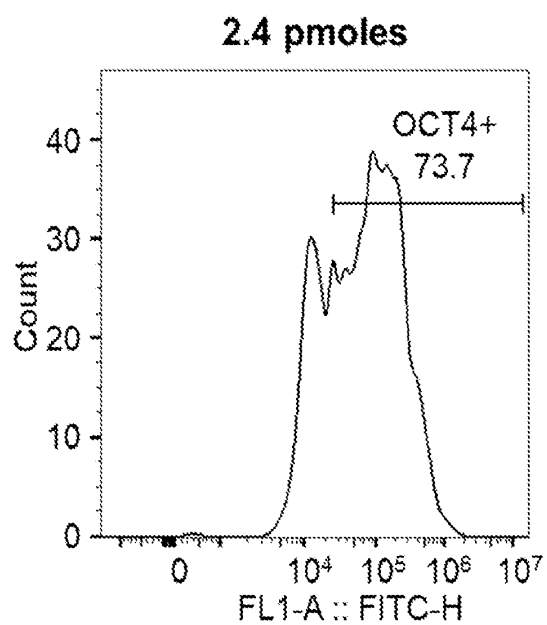
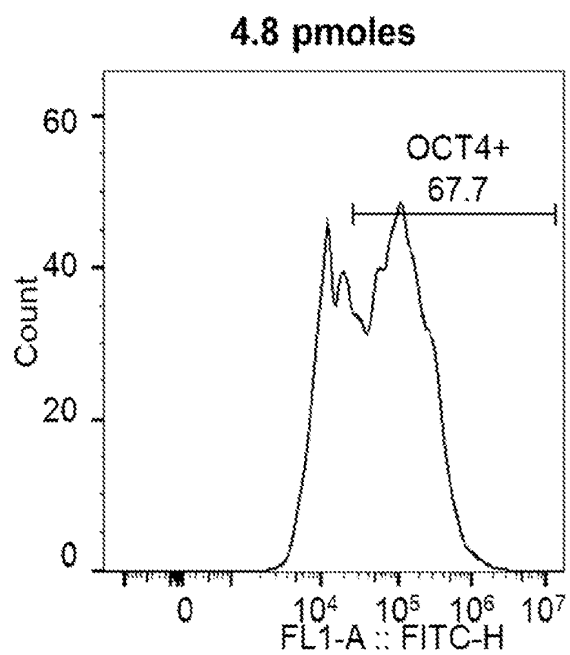


FIG. 11A (cont'd)

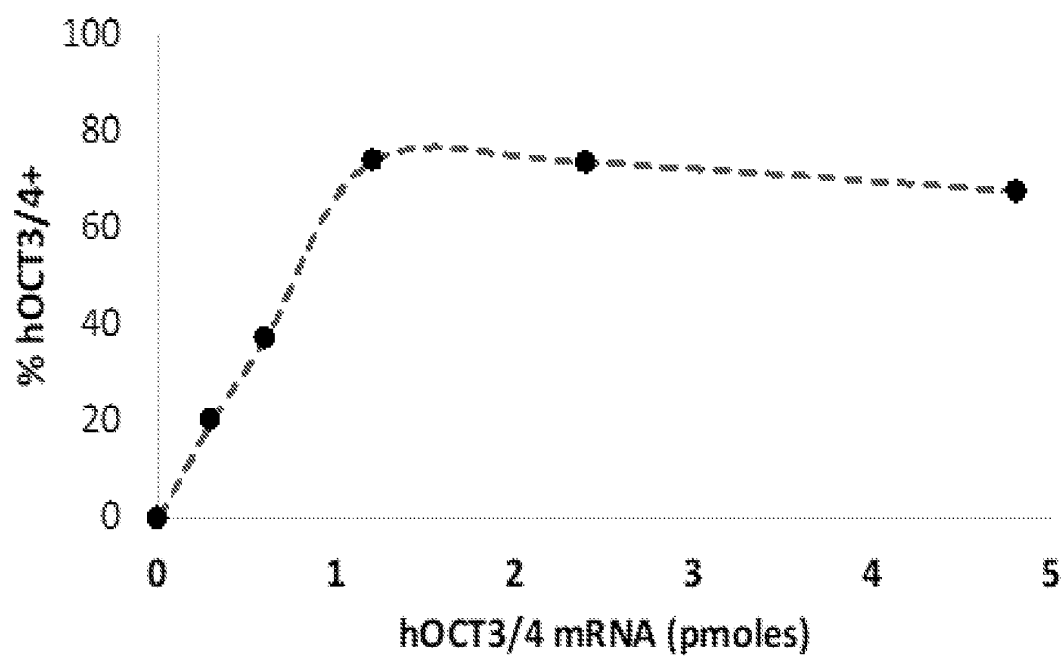


FIG. 11B

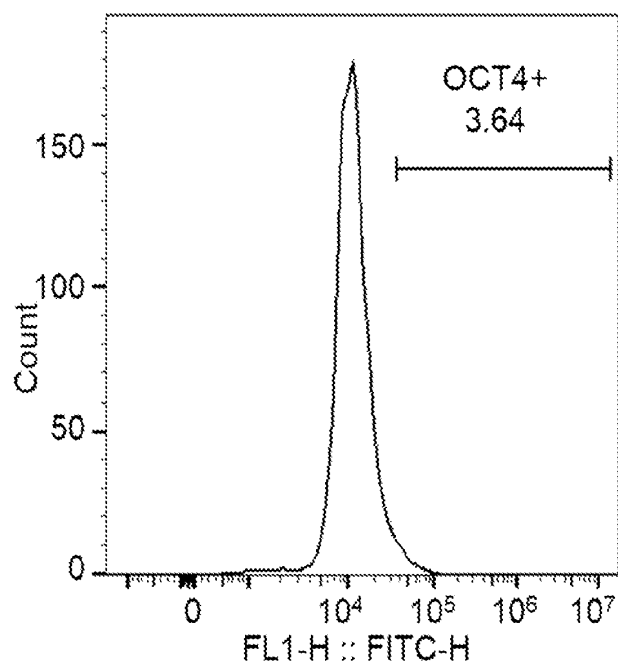
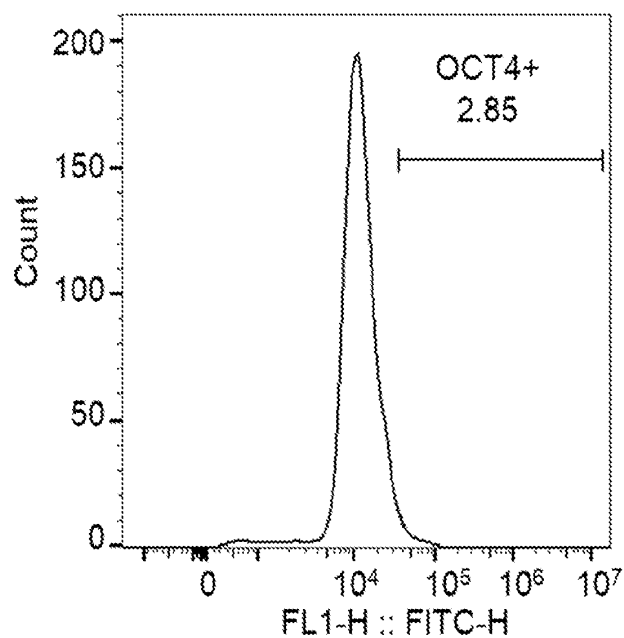
**No UTR****Kozak**

FIG. 11B (cont'd)

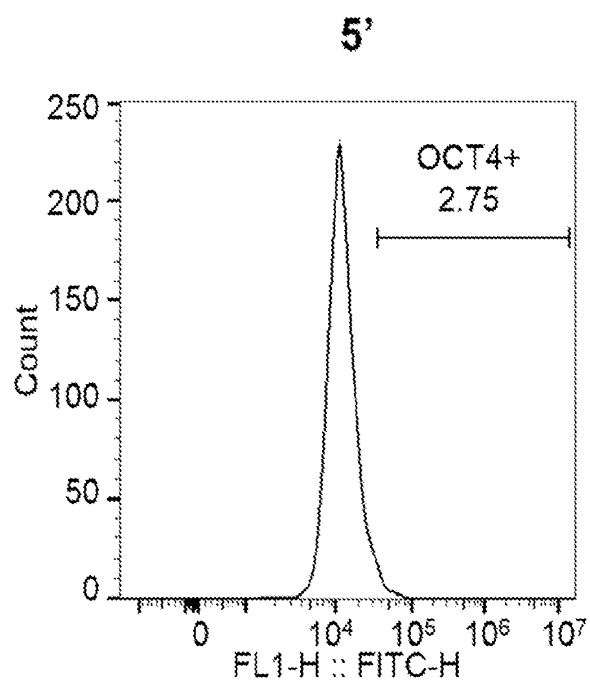
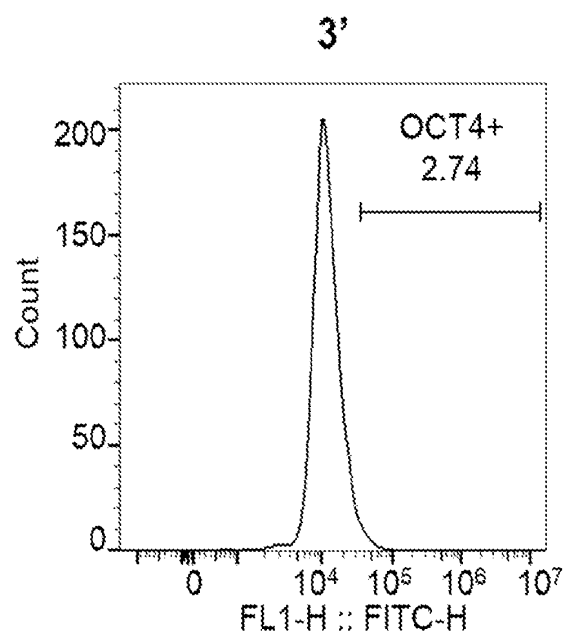


FIG. 11B (cont'd)

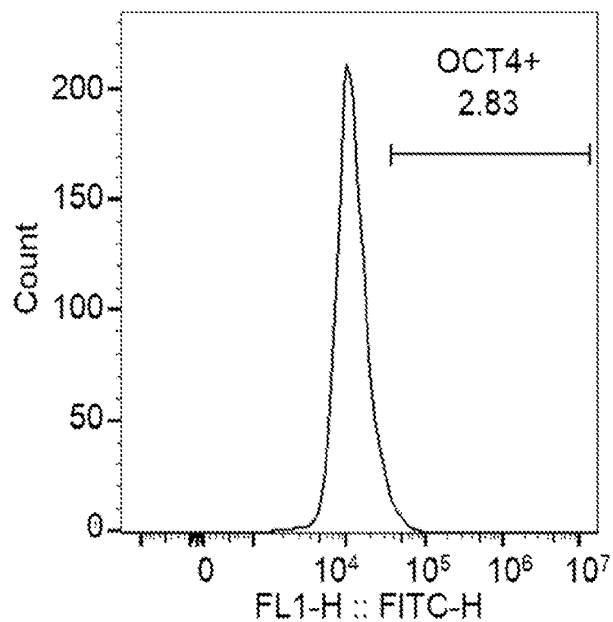
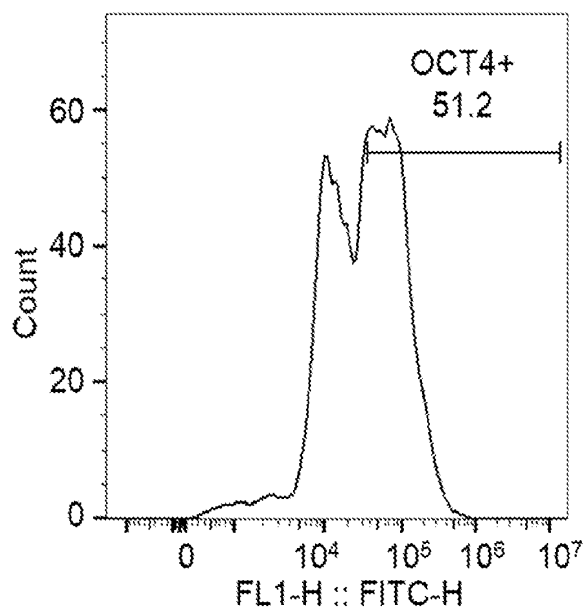
**Kozak+3'****5'+3'**

FIG. 11B (cont'd)

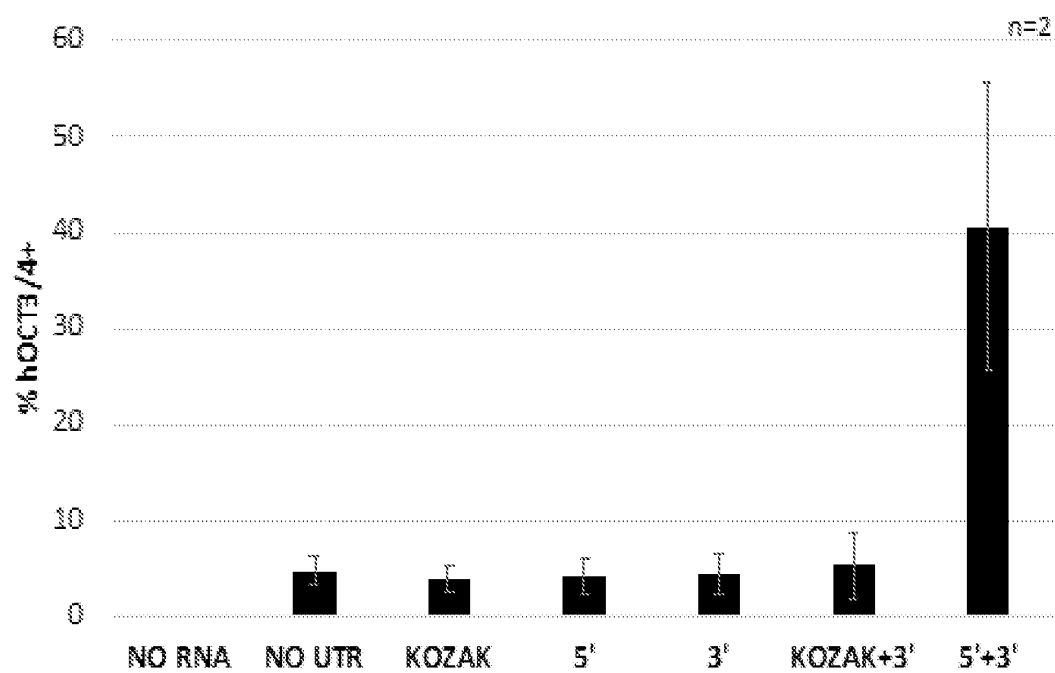


FIG. 12A

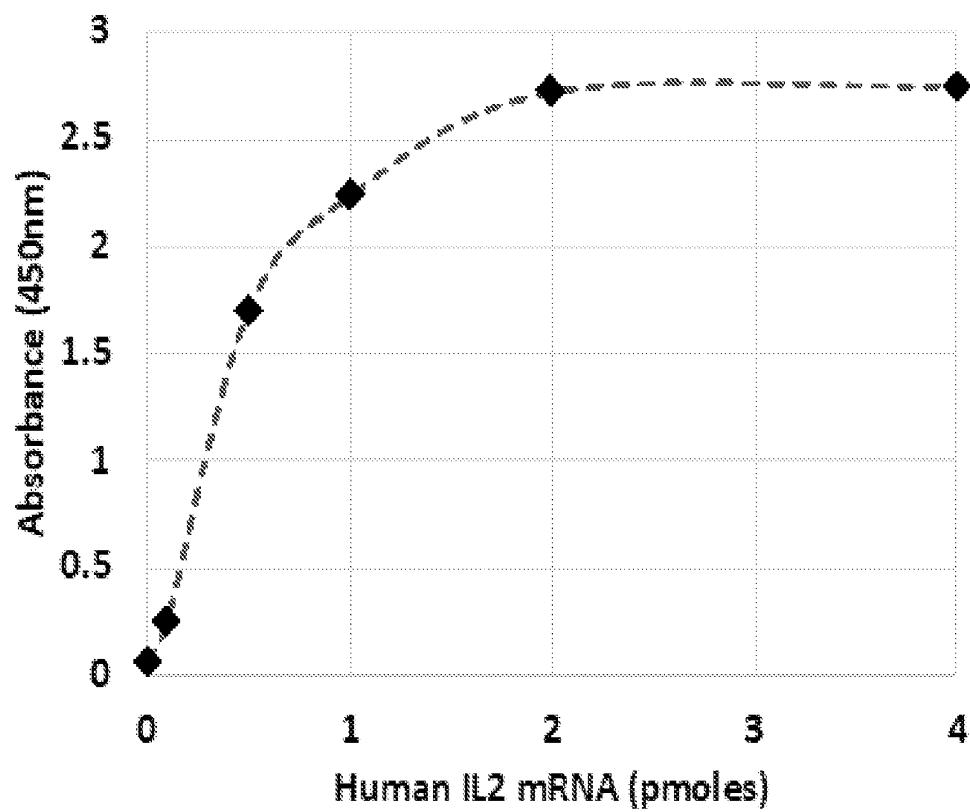


FIG. 12B

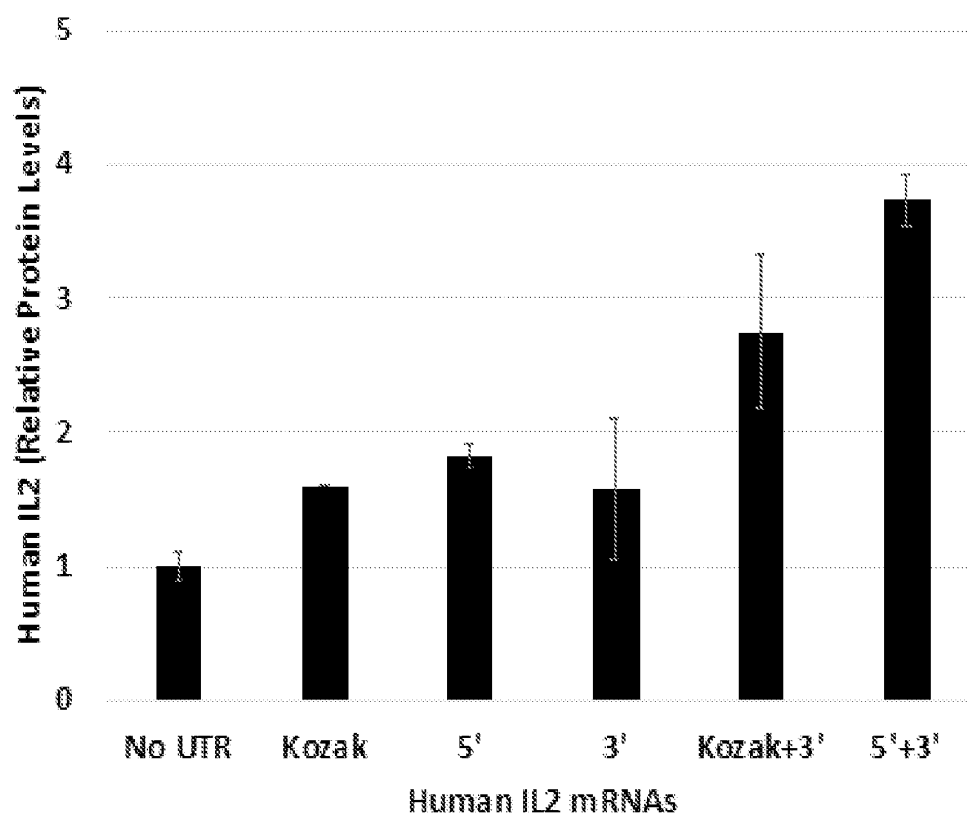


FIG 13A

|         |                                     |               |
|---------|-------------------------------------|---------------|
| 3'UTR-A | stop-UGCAUACCUCUAACGGUCUUGAGG-PolyA | SEQ ID NO: 10 |
| 3'UTR-B | stop-UGCAUAGGAGUAACGGUCUUCUCC-PolyA | SEQ ID NO: 11 |
| 3'UTR-C | stop-UGCAAAGGAGUAACGGUCUUCUCC-PolyA | SEQ ID NO: 12 |

FIG 13B

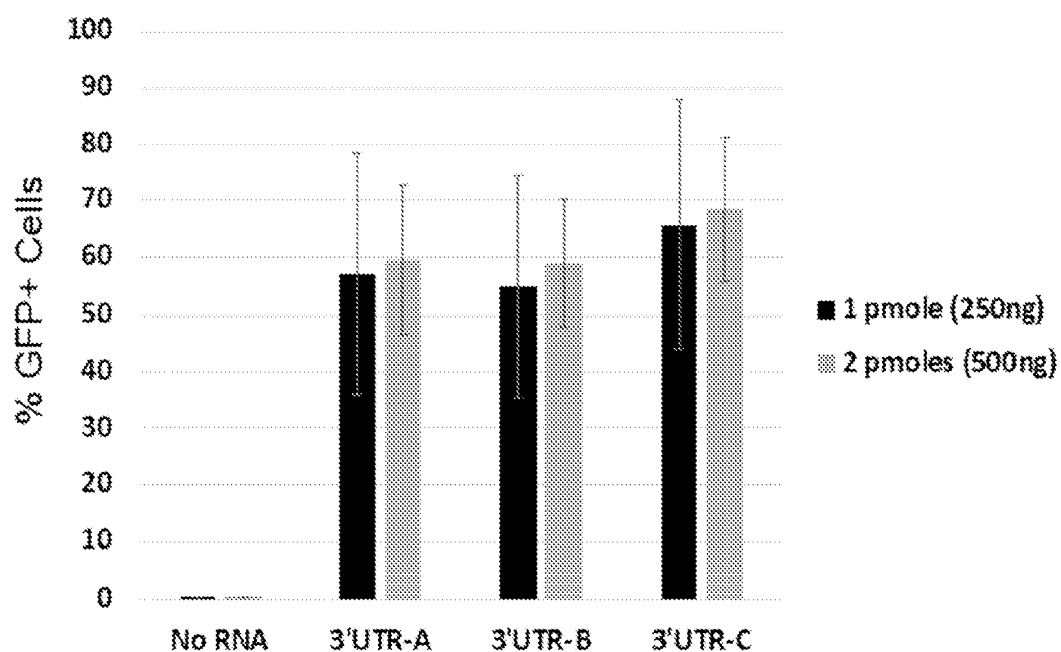


FIG 13C

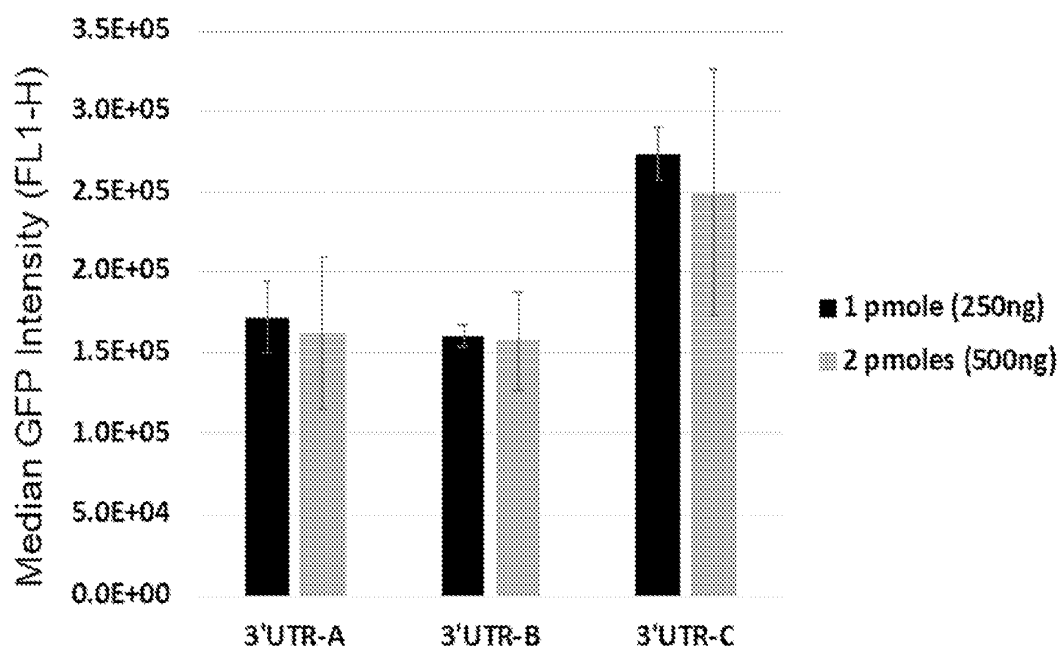


FIG. 14

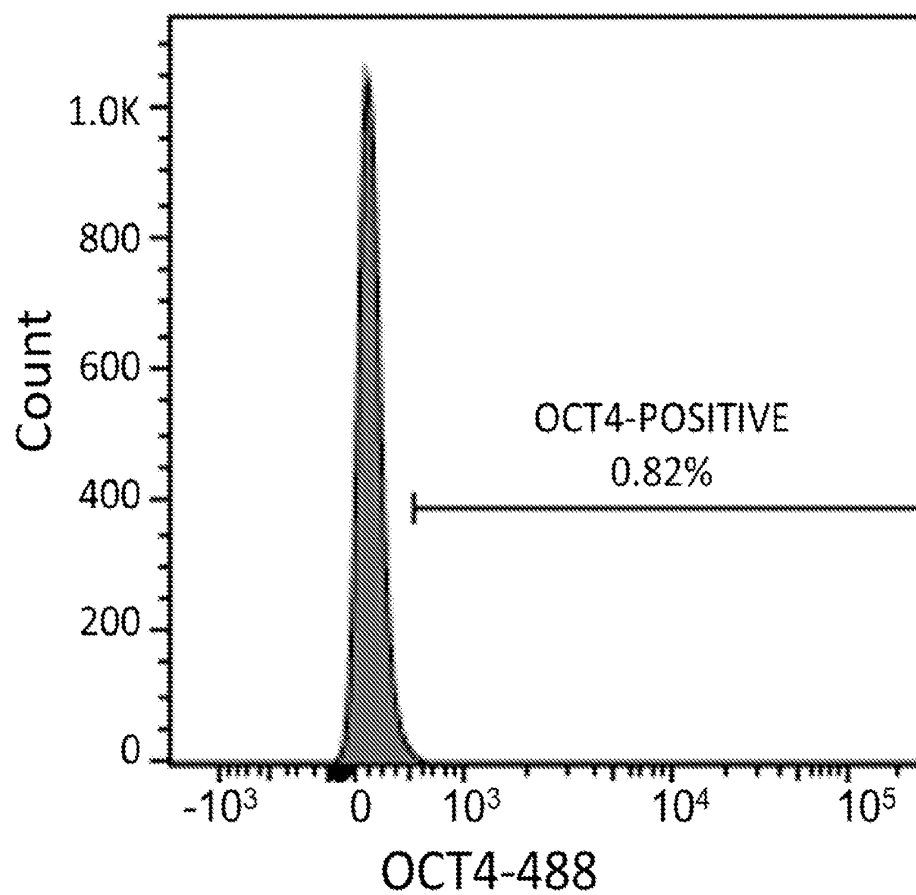
**0 ng Oct4 mRNA**

FIG. 14 (cont'd)

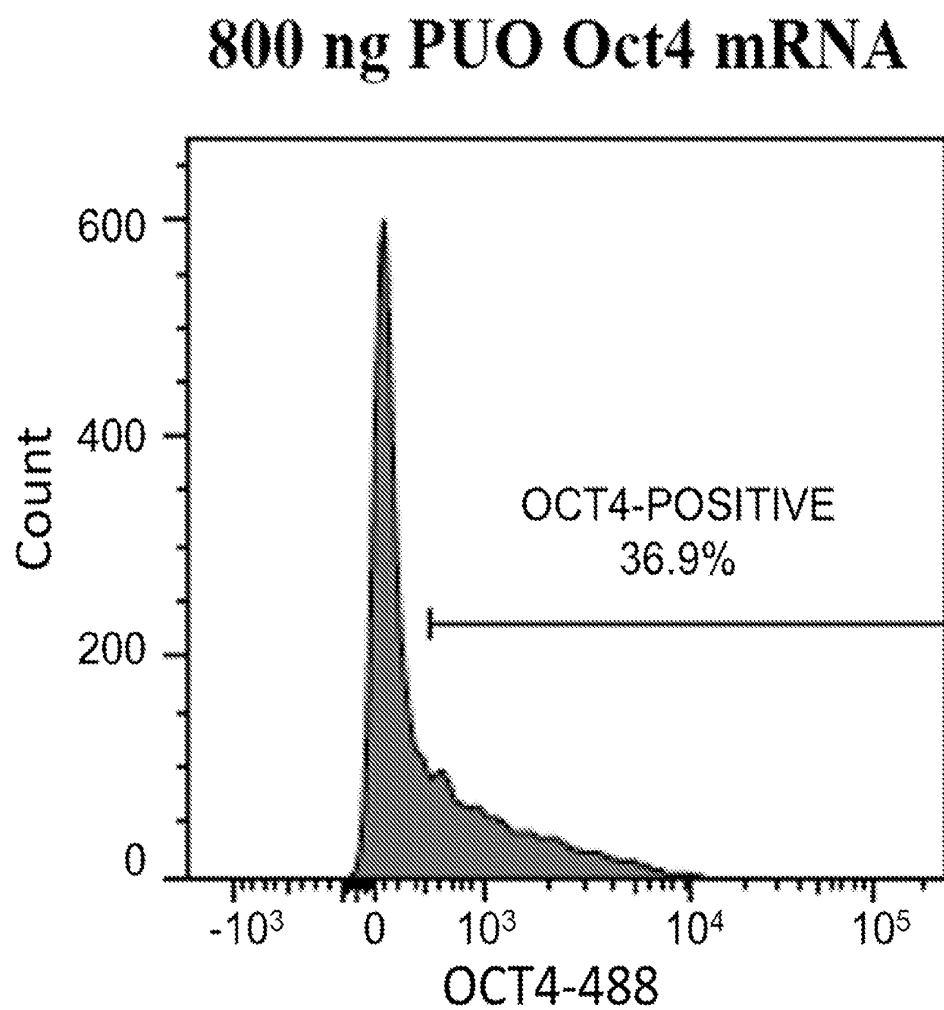


FIG. 14 (cont'd)

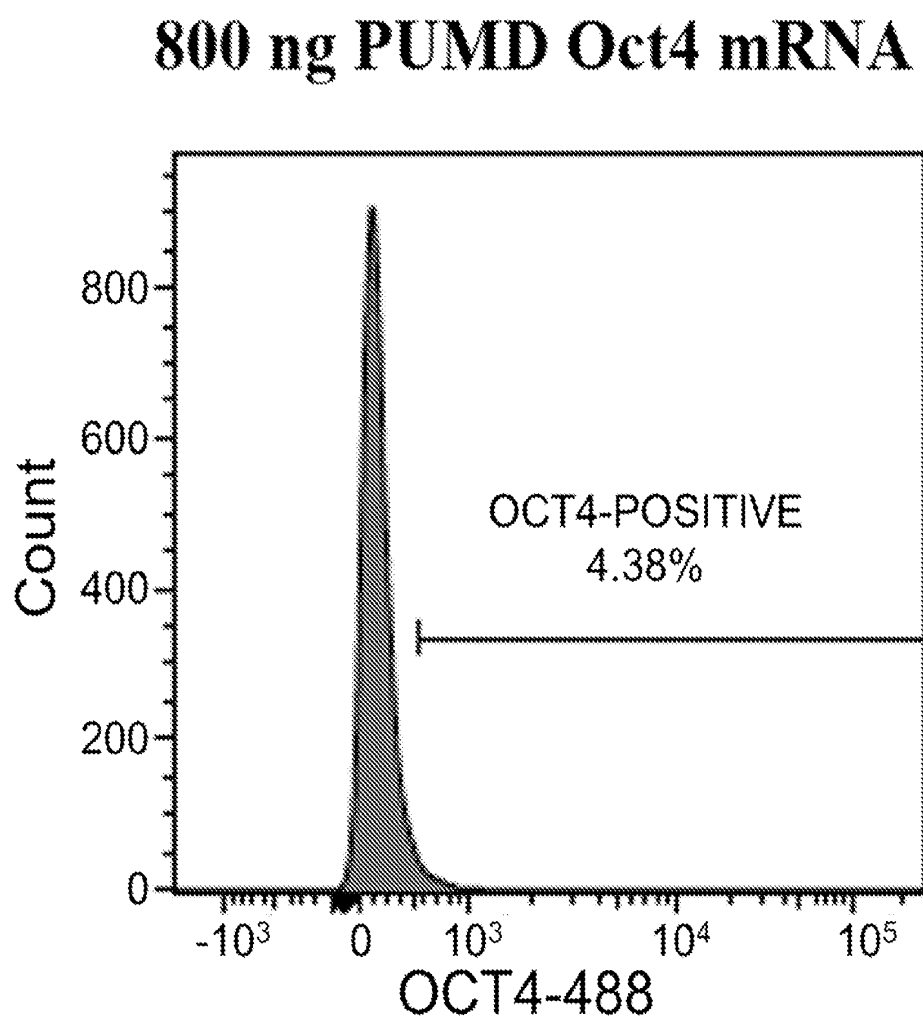


FIG. 14 (cont'd)

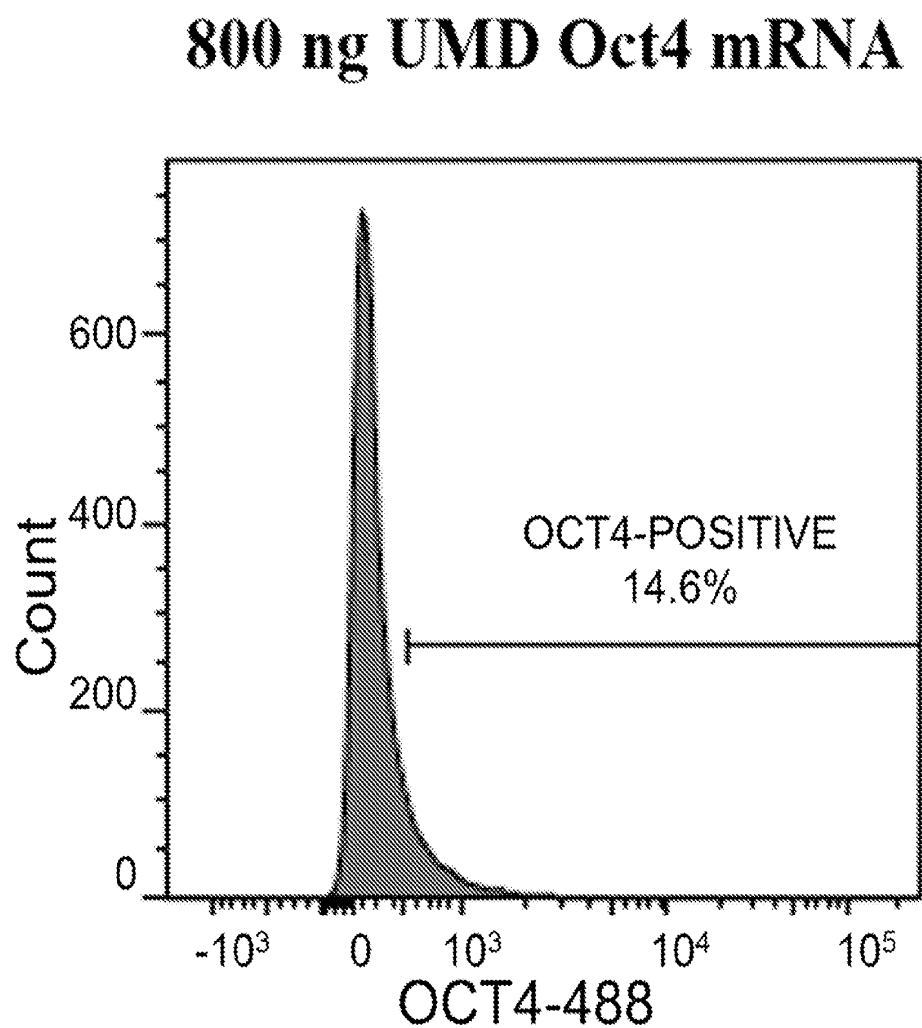
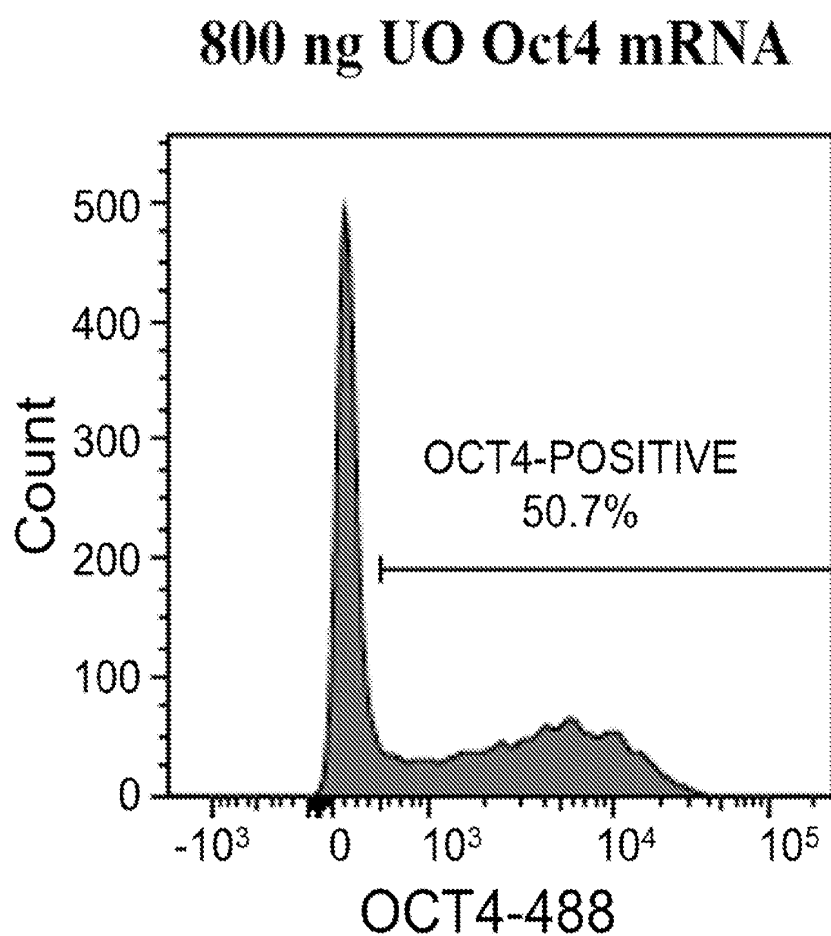


FIG. 14 (cont'd)



| Sample                | % Oct4 Positive Cells |
|-----------------------|-----------------------|
| 0 ng Oct4 mRNA        | 0.82                  |
| 800 ng PUO Oct4 mRNA  | <b>36.9</b>           |
| 800 ng PUMD Oct4 mRNA | <b>4.38</b>           |
| 800 ng UMD Oct4 mRNA  | <b>14.6</b>           |
| 800 ng UO Oct4 mRNA   | <b>50.7</b>           |

FIG. 15

UTRs underlined & polyA tails bolded

EGFP

GACTCCTAATACGACTCACTATAGGGAGACATACTCAGCCACCATGGTGAGCAAGGGCGA  
GGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCC  
ACAAGTTCAGCGTGTCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTG  
AAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCACCCTCGTGACCACCCTG  
ACCTACGGCGTGAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGGACTTCTTC  
AAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGC  
AACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGA  
GCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACA  
ACTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGA  
ACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGACGCTCGCCGACCACTACCAGC  
AGAACACCCCATCGGCGACGGCCCCGTGCTGCTGCCGACAACCACTACCTGAGCACC  
CAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGCGCGATCATATGGTCTGCTGGAGTTC  
GTGACCGCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAATGCATACCTCTA  
ACGGTCTTGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA** (SEQ ID  
NO: 55)

EGFP

GGGAGACAUACUCAGCCACCAUGGUGAGCAAGGGCGAGGAGCUGUUCACCGGGGUGGU  
GCCCAUCCUGGUCGAGCUGGACGGCGACGUAAACGGCCACAAGUUCAGCGUGUCCGGC  
GAGGGCGAGGGCGAUGCCACCUACGGCAAGCUGACCCUGAAGUUAUCUGCACCACCG  
GCAAGCUGCCCGUGCCUGGCCACCCUCGUGACCACCCUGACCUACGGCGUGCAGUG  
CUUCAGCCGCUACCCCGACCACAUGAAGCAGCAGACUUCUUAAGUCCGCCAUGCCCG  
AAGGCUACGUCCAGGAGCGCACCAUCUUCUUAAGGACGACGGCAACUACAAGACCCGC  
GCCGAGGUGAAGUUCGAGGGCGACACCCUGGUGAACCGCAUCGAGCUGAAGGGCAUCG  
ACUUAAGGAGGACGGCAACAUCUUGGGGCACAAGCUGGAGUACAACUACAACAGCCAC  
AACGUCUAUAUCAUGGCCGACAAGCAGAAGAACGGCAUCAAGGUGAACUUAAGAUCG  
CCACAACAUCGAGGACGGCAGCGUGCAGCUCGCCGACCACUACCAGCAGAACACCCCA  
UCGGCGACGGCCCCGUGCUGCUGCCCGACAACCACUACCUGAGCACCCAGUCCGCCCU  
GAGCAAAGACCCCAACGAGAAGCGCGAUCACAUGGUCCUGCUGGAGUUCGUGACCGCC  
GCCGGGAUCACUCUCGGCAUGGACGAGCUGUACAAGUAAUGCAUACCUCUAACGGUCU  
UGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA** (SEQ ID NO: 56)

FIG. 15 (cont'd)

UTRs underlined &amp; polyA tails bolded

OCT4

GACTCCTAATACGACTCACTATAGGGAGACATACTCAGCCACCATGGCGGGACACCTGGC  
TTCGGATTTTCGCTTCTCGCCCCCTCCAGGTGGTGGAGGTGATGGGCCAGGGGGGCCGG  
AGCCGGGCTGGGTGATCCTCGGACCTGGCTAAGCTTCCAAGGCCCTCCTGGAGGGCCA  
GGAATCGGGCCGGGGTTGGGCCAGGCTCTGAGGTGTGGGGGATTCCCCCATGCCCCC  
CGCCGTATGAGTTCTGTGGGGGGATGGCGTACTGTGGGCCCCAGGTTGGAGTGGGGCTA  
GTGCCCCAAGGCGGCTTGGAGACCTCTCAGCCTGAGGGCGAAGCAGGAGTCGGGGTGA  
GAGCAACTCCGATGGGGCCTCCCCGGAGCCCTGCACCGTCACCCCTGGTGCCGTGAAGC  
TGGAGAAGGAGAAGCTGGAGCAAAACCCGGAGGAGTCCCAGGACATCAAAGCTCTGCAG  
AAAGAACTCGAGCAATTTGCCAAGCTCCTGAAGCAGAAGAGGATCACCTGGGATATACAC  
AGGCCGATGTGGGGCTCACCTGGGGTTCTATTTGGGAAGGTATTCAGCCAAACGACCA  
TCTGCCGCTTTGAGGCTCTGCAGCTTAGCTTCAAGAACATGTGTAAGCTGCGGCCCTTGCT  
GCAGAAGTGGGTGGAGGAAGCTGACAACAATGAAAATCTTCAGGAGATATGCAAAGCAGA  
AACCCTCGTGACGGCCCGAAAGAGAAAAGCGAACCAGTATCGAGAACCGAGTGAGAGGCA  
ACCTGGAGAATTTGTTCTGCAGTGCCCGAAACCCACACTGCAGCAGATCAGCCACATCG  
CCCAGCAGCTTGGGCTCGAGAAGGATGTGGTCCGAGTGTGGTTCTGTAACCGGCGCCAG  
AAGGGCAAGCGATCAAGCAGCGACTATGCACAACGAGAGGATTTTGAGGCTGCTGGGTCT  
CCTTTCTCAGGGGGGACCAAGTGTCTTTCTCTGGCCCCAGGGCCCCATTTTGGTACCCCA  
GGCTATGGGAGCCCTCACTTCACTGCACTGTACTCCTCGGTCCCTTTCCCTGAGGGGGAA  
GCCTTTCCCCCTGTCTCCGTCAACACTCTGGGCTCTCCCATGCATTCAAACCTGATGCATAC  
CTCTAACGGTCTTGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA**  
(SEQ ID NO: 57)

OCT4

GGGAGACAUACUCAGCCACCAUGGCGGGACACCUGGCUUCGGAUUUCGCCUUCUGGCC  
CCUCCAGGUGGUGGAGGUGAUGGGCCAGGGGGGCCGAGCCGGGCUUGGUUGAUCC  
UCGGACCUGGCUAAGCUUCCAAGGCCCUCCUGGAGGGCCAGGAUUCGGGCCGGGGGU  
UGGGCCAGGCUUCUGAGGUGUGGGGGAUUCCCCCAUGCCCCCGCCGUAUGAGUUCUG  
UGGGGGGAUGGCGUACUGUGGGCCCCAGGUUGGAGUGGGGCUAGUGCCCCAAGGCGG  
CUUGGAGACCUCUCAGCCUGAGGGCGAAGCAGGAGUCGGGGUGGAGAGCAACUCCGAU  
GGGGCCUCCCCGGAGCCUGCACCGUCACCCUGGUGCCGUGAAGCUGGAGAAGGAGA  
AGCUGGAGCAAAACCCGGAGGAGUCCAGGACAUCAAAGCUCUGCAGAAAGAACUCGAG  
CAAUUUGCCAAGCUCCUGAAGCAGAAGAGGAUACCCUGGGAUUAACACAGGCCGAUGU  
GGGGCUCACCCUGGGGGUUCUAUUUGGGAAGGAUUCAGCCAAACGACCAUCUGCCGC  
UUUGAGGCUCUGCAGCUUAGCUUCAAGAACAUGUGUAAGCUGCGGCCCUUGCUGCAGA  
AGUGGGUGGAGGAAGCUGACAACAUGAAAAUCUUCAGGAGAUUAUGCAAAGCAGAAACC  
CUCGUGCAGGCCCGAAAGAGAAAGCGAACCAGUAUCGAGAACCGAGUGAGAGGCAACCU  
GGAGAAUUUGUCCUGCAGUGCCCCGAAACCCACACUGCAGCAGAUACGCCACAUCGCC  
AGCAGCUUGGGCUCGAGAAGGAUGUGGUCCGAGUGUGGUUCUGUAACCGGCGCCAGAA  
GGGCAAGCGAUCAAGCAGCGACUAUGCACAACGAGAGGAUUUUGAGGCUCUGGGUCU  
CCUUUCUCAGGGGGACCAUGUCCUUUCCUCUGGCCCCAGGGCCCCAUUUUGGUACCC  
CAGGCUAUGGGAGCCCUACUUCACUGCACUGUACUCCUCGGUCCCUUCCCUGAGGG  
GGAAGCCUUUCCCCCUGUCUCCGUCACCACUCUGGGCUCUCCCAUGCAUUCAAACUGA  
UGCAUACCUCUAACGGUCUUGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA**  
**AAAAAA** (SEQ ID NO: 58)

FIG. 15 (cont'd)

UTRs underlined & polyA tails bolded

IL2 Complete DNA Sequence (with Riboz UTRs and PolyA tail)

GACTCCTAATACGACTCACTATAGGGAGACATACTCAGCCACCATGTACAGGATGCAACTC  
CTGTCTTGCAATTGCACTAAGTCTTGCACTTGTCAAAACAGTGCACCTACTTCAAGTTCTAC  
AAAGAAAACACAGCTACAACCTGGAGCATTTACTGCTGGATTTACAGATGATTTTGAATGGAA  
TTAATAATTACAAGAATCCCAAACCTCACCAGGATGCTCACATTTAAGTTTTACATGCCCAAG  
AAGGCCACAGAACTGAAACATCTTCAGTGTCTAGAAGAAGAAGCTCAAACCTCTGGAGGAAG  
TGCTAAATTTAGCTCAAAGCAAAAACCTTTCACTTAAGACCCAGGGACTTAATCAGCAATATC  
AACGTAATAGTTCTGGAACCTAAAGGGATCTGAAACAACATTCATGTGTGAATATGCTGATGA  
GACAGCAACCATTTGTAGAATTTCTGAACAGATGGATTACCTTTTGTCAAAGCATCATCTCAA  
CACTGACTTGATGCATACCTCTAACGGTCTTGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAA**  
**AAAAAAAAAAAAAAAA** (SEQ ID NO: 59)

Complete RNA Sequence (with Riboz UTRs and PolyA tail)

GGGAGACAUACUCAGCCACCAUGUACAGGAUGCAACUCCUGUCUUGCAUUGCACUAAGU  
CUUGCACUUGUCACAAACAGUGCACCUACUUAAGUUCUACAAAGAAAACACAGCUACAA  
CUGGAGCAUUUACUGCUGGAUUUACAGAUGAUUUUGAAUGGAAUUAUAAUUACAAGAA  
UCCCAAACUCACCAGGAUGCUCACAUUUUAGUUUUACAUGCCCAAGAAGGCCACAGAAC  
UGAAACAUCUUCAGUGUCUAGAAGAAGAACUCAAACCUUGGAGGAAGUGCUAAAUUUA  
GCUCAAGCAAAAACUUUCACUUAAGACCCAGGGACUUAUUCAGCAAUAUCAACGUAAUA  
GUUCUGGAACUAAAGGGAUCUGAAACAACAUUCAUGUGUGAAUAUGCUGAUGAGACAGC  
AACCAUUGUAGAAUUUCUGAACAGAUUGGAUUACCUUUUGUCAAGCAUCAUCUCAACAC  
UGACUUGAUGCAUACCUCUACCGGUCUUGAGG**AAAAAAAAAAAAAAAAAAAAAAAAAAAA**  
**AAAAAAAAAAAAAAAA** (SEQ ID NO: 60)