

FIG. 1A

P2086 Non-lipidated Variant Nucleic Acid Sequences

>A04 Variant Nucleic Acid Sequence (SEQ ID NO: 1)
 TGCAGCAGCGGAGCGGCGGTGTGCGCGCGACATCGGCACGGGGCTTGCCGATGCACATAACTGCGCCGCTCGACC
 ATAAAGACAAAGGTTTGAAATCCCTGACATTGGAAGACTCCATTCCCAAAACGGAACACTGACCCCTGTGCGCACAAAGGTGC
 GGAAAAAACTTTCAAAGCCGGGACAAAGACAAACAGCCCTCAACACGGGCAAACTGAAGAACGACAAAAATCAGCCGCTTCGAC
 TTCGTGCAAAAAATCGAAGTGGACGGACAAACCATCACACTGGCAAGCGGCGAATTTCAAATATACAAACAGGACCACTCCG
 CCGTCGTTGCCCTACAGATTGAAAAAATCAACAACCCCGACAAAAATCGACAGCCCTGATAAAACCAACGCTCCTTCTTGTCTAG
 CGGTTTGGGCGGAGAACATACCGCCTTCAACCAACTGCCCGGCGACAAAGCCGAGTATCACGGCAAAAGCATTCAGCTCCGAC
 GATGCCGGGAAAACTGACCTATACCATAGATTTTGGCGCCAAACAGGGACACGCGCAAAATCGAAACACCTGAAAAACACCCG
 AGCAAAATGTCGAGCTTGCCGCGCCGAACTCAAAGCAGATGAAAAATCACACGCGTCATTTTGGCGACACGCGCTACGG
 CAGCGAAGAAAAAGGCACTTACCACCTCGCCCTTTTCGGCGACCGGCCCAAGAAATCGCCGGCTCGGCAACCCGTGAAGATA
 GGGGAAAAGGTTCACGAAATCGGCATCGCCGGCAACAGTAG

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>A05 Variant Nucleic Acid Sequence (SEQ ID NO: 2)
 TGCAGCAGCGGAAGCGGAGCGGCGGTGTGCGCGCGACATCGGCACAGGGCTTGCCGATGCACATAACTGCGCCGCG
 TCGACCATAAAGACAAAGGTTTGAAATCCCTGACATTGGAAGACTCCATTTCCTCAAAACGGAACACTGACCCCTGTGCGCAC
 AGGTGCGGAAAAAATTTCAAAGTGGCGACAAAGACAAACAGTCTCAATACAGGCAAAATGAAGAACGACAAAAATCAGCCGC
 TTCGACTTTGTGCAAAAAATCGAAGTGGACGGACAAACCATCACGCTGGCAAGCGCGAATTTCAAATATACAAACAGGACC
 ACTCCGCGGTGCTGCGCTACAGATTGAAAAAATCAACAACCCCGACAAAAATCGACAGCCCTGATAAAACCAACGCTCTCCT
 TGTACGCGGTTTGGCGGAGAACATACCGCCTTCAACCAACTGCCAGCGGCAAAAGCCGAGTATCAGGCAAAAGCATTCAGC
 TCCGACGATGCCGGCGGAAAACTGACCTATACCATAGATTTTGGCGCCAAACAGGGACACGCGCAAAATCGAAACCTGAAAA
 CACCCGAGCAGATGTCGAGCTTGCCCTCCGCGAATCAAAGCAGATGAAAAATCACACGCGTCATTTTGGCGACACGCG
 CTACGGCAGCGAAGAAAGGCACTTACCACCTCGCTCTTTTCGGCGACCGAGCCCAAGAAATCGCCGGCTCGGCAACCCGTG
 AAGATAAGGGAAAAAGGTTCACGAAATCGGCATCGCCGGCAACAGTAG

FIG. 1B

>A12 Variant Nucleic Acid Sequence (SEQ ID NO: 3)
 TGCAGACGGAGGCGGGTGTGCGCGCGACATCGCGCGGGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAAAAGTTTGCAGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
 AACTTATGGAAACGGCGACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTAGCCGCTTCGACTTTATCCGTCAAATC
 GAAGTGGACGGACAACCATCACGCTGGCAAGCGGGAATTTCAAATATACAAACAGAACCACTCCGCCGTCGTTGCCCTAC
 AGATTGAAAAAATCAACAACCCCGACAAAATCGACAGCCTGATAAACCAACGCTCCTTGTCTCAGCGGTTTGGCGGGAGA
 ACATACCGCCTTCAACCAACTGCCGTGACGGCAAAAGCCGAGTATCACGGCAAAAGCATTCAGCTCCGACGACCCGAAACGGCAGG
 CTGCACCTACTCCATTGATTTTACCAAAAAACAGGGTTACGGCAGAAATCGAACACCTGAAAAACGCCGAGCAGAAATGTCGAGC
 TTGCCCTCCGCCGAACCTCAAAGCAGATGAAAAATCACACGCCGTCAATTTGGCGGACACGCGCTACGGCGGCGAAGAAAAAGG
 CACTTACCACCTCGCCCTTTTTCGGCGACCGCGCCCAAGAAATCGCCGGCTCGGCAACCCGTGAAGATAAGGAAAAAGGTTTCAC
 GAAATCGGCATCGCCGGCAACAGTAG

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>A12-2 Variant Nucleic Acid Sequence (SEQ ID NO: 4)
 TGCAGCAGCGAGGGGGGTGTGCGCGCGACATTTGGTGGGGGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAAAAGTTTGCAGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
 AACTTATGGAAACGGCGACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTAGCCGCTTCGACTTTATCCGTCAAATC
 GAAGTGGACGGACAACCATCACGCTGGCAAGCGGGAATTTCAAATATACAAACAGAACCACTCCGCCGTCGTTGCCCTAC
 AGATTGAAAAAATCAACAACCCCGACAAAATCGACAGCCTGATAAACCAACGCTCCTTGTCTCAGCGGTTTGGCGGGAGA
 ACATACCGCCTTCAACCAACTGCCGTGACGGCAAAAGCCGAGTATCACGGCAAAAGCATTCAGCTCCGACGACCCGAAACGGCAGG
 CTGCACCTACTCCATTGATTTTACCAAAAAACAGGGTTACGGCAGAAATCGAACACCTGAAAAACGCCGAGCAGAAATGTCGAGC
 TTGCCCTCCGCCGAACCTCAAAGCAGATGAAAAATCACACGCCGTCAATTTGGCGGACACGCGCTACGGCGGCGAAGAAAAAGG
 CACTTACCACCTCGCCCTTTTTCGGCGACCGCGCCCAAGAAATCGCCGGCTCGGCAACCCGTGAAGATAAGGAAAAAGGTTTCAC
 GAAATCGGCATCGCCGGCAACAGTAG

FIG. 1C

>A22 Variant Nucleic Acid Sequence (SEQ ID NO: 5)
 TGCAGCAGCGGAGCGGGTGTGCGCGCGGACATCGGCGCGGGCTTGCCGATGCACATAACCGCACCGCTCGACCATAAAG
 ACAAAAAGTTTGACGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
 AACTTATGGAACCGGCACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGCTTCGACTTTATCCGTCAAATC
 GAAGTGACGGGCAGCTCATTTACCTTGGAGAGCGGAGAGTTCCAAATATACAAACAGGACCACTCCGCCGTCGTTGCCCTAC
 AGATTGAAAAAATCAACAACCCCGACAAAATCGACAGCCTGATAAAACCAACGCTCCTTCTGTGACGCGGTTTGGGTGGAGA
 ACATACCGCCTTCAACCAACTGCCCAGCGGCAAAAGCCGAGTATCACGGCAAAAGCATTCAGCTCCGACGATGCTGGCGGAAAA
 CTGACCTATACCATAGATTTGCGCGCAACACAGGACACGCAAAATCGAACACTTGAAAAACACCCGAGCAAAATGTCGAGC
 TTGCCCTCCGCCGAACCTCAAAGCAGATGAAAAATCACACGCCGTCAATTTGGCGGACACGCGCTACGGCGGCAAGAAAAAGG
 CACTTACCACCTCGCCCTTTTTCGGCGACCGCGCCCAAGAAATCGCCGGCTCGGCAACCCGTGAAGATAAGGAAAAAGGTTTCAC
 GAAATCGGCATCGCGCGCAACAGTAG

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>B02 Variant Nucleic Acid Sequence (SEQ ID NO: 6)
 TGCAGCAGCGGAGCGGGAAGCGGAGCGCGGTGTGCGCGCGGACATCGGCGCGGGCTTGCCGATGCACATAACCGCAC
 CGCTCGACCATAAAGACAAAGGTTTGAAATCCCTGACATTTGGAAGACTCCATTTCCCAAAACGGAACACTGACCCCTGTCCGC
 ACAAGGTGCGGAAAGAACTTTCAAAGCCGGGACAAAGACAAACAGTCTCAACACAGGCAAACTGAAGAACGACAAAAATCAGC
 CGCTTCGACTTTATCCGTCAAATCGAAGTGACGGGCGAGCTCATTTACCTTGGAGAGCGGAGAGTTCCAAGGTACAAACAAA
 GCCATTCCGCCCTTAACCGCCCTTCAGACCGAGCAAGTACAAGACTCGGAGCATTCGGGAAAGATGGTTGCGAAACGCCAGTT
 CAGAAATCGGCGACATAGTGGGCGAACAATACATCTTTTGACAAGCTTCCCAAAAGACGTCAATGCGGACATATCGCGGGACGGCG
 TTCGGTTCAGACGATGCCGGCGGAAAACTGACCTACACCATAGATTTGCGCGCCCAAGCAGGACACGCAAAATCGAACATTT
 TGAAATCGCCTGAACCTCAATGTTGACCTGCGCGCCGATATCAAGCCGGATGAAAAACACCATGCGCTCATCAGCGGTTTC
 CGTCCCTTTACAACCAAGCCGAGAAAGGCAGTTACTCTCTAGGCATCTTTTGGCGGGCAAGCCCAAGAAAGTTGCCGGCAGCGCG
 GAAGTGGAACCGCAACGGCATACGCCATATCGGTCTTTGCCCGCAAGCAATAA

FIG. 1D

>B03 Variant Nucleic Acid Sequence (SEQ ID NO: 7)
 TGCAGCAGCGGAGCGGGTGTCCGCCGACATCGCGCGGGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAAAAGTTTGCAGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
 AACTTATGGAAACGGCGACAGCCTTAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGTTTCGACTTTATCCGTCAAATC
 GAAGTGGACGGCAGCTCATTTACCTTGGAGAGCGGAGAGTTCCAAGTGTAACAACAAAGCCATTCCGCCTTAAACCGCCCTTC
 AGACCGAGCAAGAACAGATCCAGAGCATTCGGGAAAGATGGTTGCGAAACGCCGTTCAAATACTGGCGACATAGCGGGCGA
 ACATACATCTTTTGACAAAGCTTCCCAAAGACGTCAATGGCGACATATCGCGGGACGGCGTTTCGGTTCAGACGATGCCCGCGGA
 AAAGTACCTATACATATAGATTTTGTGCTGCCAAAACAGGACACGGCAAAATCGAACATTTGAAATCGCCGAACTCAATGTCTG
 AGCTTGCCACCGCCTATATCAAGCCGGATGAAAAACACCATGCGGTCAATCAGCGGTTCCGTCCTTTACAAATCAAGACGAGAA
 AGGCAGTTACTCCCTCGGTATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGGAAAGTGGAAACCCGCAACGGGCATA
 CACCATATCGGTCTTGCCGCCAAGCAATAA

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>B09 Variant Nucleic Acid Sequence (SEQ ID NO: 8)
 TGCAGCAGCGGAGGGCGGTGTCCGCCGACATCGGTGCGGGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAGGTTTGCAGTCTTTAACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
 AACTTATGGAAACGGCGACAGCCTTAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGTTTCGACTTTATCCGTCAAATC
 GAAGTGGACGGGAAGCTCATTTACCTTGGAGAGCGGAGAGTTCCAAGTGTAACAACAAAGCCATTCCGCCTTAAACCGCCCTTC
 AGACCGAGCAAGTACAAGACTCGGAGGATTCGGGAAAGATGGTTGCGAAACGCCAGTTCAGAATCGCGACATAGCGGGCGA
 ACATACATCTTTTGACAAAGCTTCCCAAAGCGGCAGTGCGACATATCGCGGGACGGCGTTTCGGTTCAGACGATGCTGGCGGA
 AAAGTACCTATACATATAGATTTGCGCGCCAAAGCAGGACACGGCAAAATCGAACATTTGAAATCGCCGAACTCAATGTCTG
 AGCTTGCCACCGCCTATATCAAGCCGGATGAAAAACGCCATGCGGTATCAGCGGTTCCGTCCTTTACAAACCAAGACGAGAA
 AGGCAGTTACTCCCTCGGTATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGGAAAGTGGAAACCCGCAACGGGCATA
 CACCATATCGGTCTTGCCGCCAAGCAGTAA

FIG. 1E

>B22 Variant Nucleic Acid Sequence (SEQ ID NO: 9)
 TGCAGCAGCGAGCGGGTGTGTCGCCGCCGACATCGCGCGGTGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAAAAGTTTGACGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAAGTGCGGAAAA
 AACTTATGGAAACGGCGACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGCTTCGACTTTATCCGTCAAATC
 GAAGTGGACGGGCAGCTCATTTACCTTGGAGAGCGGAGAGTTCCAAGTGTAACAACAAAGCCATTCCGCCTTAAACCGCCCTTC
 AGACCGAGCAAAGTACAAGATTCCGGAGCATTCAGGGAAGATGGTTGCGAAACGCCAGTTCAGAATCGCGGATATAGCGGGTGA
 ACATACATCTTTTGACAAAGCTTCCCGAAGCGCGGACGGCGACATATCGCGGGACGGCATTCGGTTCAGACGATGCCAGTGGA
 AAAGTACCTACACCATAGATTTCGCCGCCAAGCAGGACACGGCAAAATCGAAACATTTGAAATCGCCAGAACTCAATGTTG
 ACCTGGCCGCTCCGATATCAAGCCGGATAAAAAACGCCATGCCGTGTCATCAGCGGTTCCGTCTTTACAAACCAAGCCGAGAA
 AGGCAGTTACTCTCTAGGCATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGCAGAAAGTGGAACCCGCAACGGGCATA
 CGCCATATCGGTCTTGCCGCCAAGCAGTAA

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>B24 Variant Nucleic Acid Sequence (SEQ ID NO: 10)
 TGCAGCAGCGAGGGGTGGTGTGTCGCCGCCGACATCGGTGCGGGGCTTGCCGATGCACCTAACCGCACCGCTCGACCATAAAG
 ACAAGGTTTGACGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAAGTGCGGAAAA
 AACTTATGGAAACGGTGACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGTTTCGACTTTATCCGCCAAATC
 GAAGTGGACGGGCAGCTCATTTACCTTGGAGAGTGGAGAGTTCCAAGTATACAAACAAAGCCATTCCGCCTTAAACCGCCCTTC
 AGACCGAGCAAATACAAGATTCCGGAGCATTCGGGAAGATGGTTGCGAAACGCCAGTTCAGAATCGCGGACATAGCGGGCGA
 ACATACATCTTTTGACAAAGCTTCCCGAAGCGCGGACGGCGACATATCGCGGGACGGCGTTCCGGTTCAGACGATGCCGGCGGA
 AAAGTACCTACACCATAGATTTCGCCGCCAAGCAGGGAACGGCAAAATCGAAACATTTGAAATCGCCAGAACTCAATGTCG
 ACCTGGCCGCGCGGATATCAAGCCGGATGAAAACGCCATGCCGTGTCATCAGCGGTTCCGTCTTTACAAACCAAGCCGAGAA
 AGGCAGTTACTCCCTCGGTATCTTTGGCGGGAAAGCCAGGAAAGTTGCCGGCAGCGCGGAAAGTGAAAACCCGTAAACGGGCATA
 CGCCATATCGGCCTTGCCGCCAAGCAATAA

FIG. 1F

>B44 Variant Nucleic Acid Sequence (SEQ ID NO: 11)
TGCAGCAGCGGAGCGGGAAGCGGAGCGGGGTGTGCGCGCCGACATCGGCGGGGGCTTGCCGATGCACATAACCGCAC
CGCTCGACCATAAAGACAAAGGTTTGAAATCCCTGACATTGGAAGACTCCATTTCCCAAAACGGAACACTGACCCGTGTCGGC
ACAAGGTGCGGAAAGAACTTTCAAAGCCGGCGACAAAGACAACAGTCTCAACACAGGCAAACTGAAGAACGACAAAAATCAGC
CGCTTCGACTTTATCCGTCAAATCGAAGTGGACGGGAGCTCATTAACCTTGGAGAGCGGAGAGTTCCAAAGTGTACAAACAAA
GCCATTCGGCCTTAACCGCCCTTCAGACCGAGCAAGTACAAGACTCGGAGCATTCGGGAAAGATGGTTGCCGAAACGCCAGTT
CAGAAATCGGCGACATAGTGGGCGAACAATACATCTTTTGGCAAGCTTCCCAAGACGTCAATGGCGACATATCGCGGGACGGCG
TTCGGTTCAGACGATGCCGGCGGAAACTGACCTACACATAGATTTCGCCGCCAAGCAGGACACGGCAAAATCGAACATT
TGAAATCGCCAGAACTCAATGTTGACCTGGCCGCCGATATCAAGCCGGATGAAAAACACCATGCCGTCAATCAGCGGTTTC
CGTCCCTTTACAACCAAGCCGAGAAAGGCAGTTACTCTCTAGGCATCTTTGGCGGGCAAGCCCAAGGAAAGTTGCCGGCAGCGCG
GAAGTGGAACCGCAACGGCATACGCCATATCGGTCTTGCCGCCAAGCAATAA

FIG. 2A

P2086 Non-lipidated Variant Amino Acid Sequences

>A04 Variant Amino Acid Sequence (SEQ ID NO: 12)
CSSGGGGGVAADIGTGLADALTAPLDHKDKGLKSLTLEDSIPQNGTILTLAQGAECTFKAGDKDNSLNTGKLKNDKISRFD
FVQKIEVDGQTITLASGEFQIYKQDHSVAVVALQIEKINNPDKIDSLINQRSFLVSGLGEHTAFNQLPGDKAEYHGKAFSSD
DAGGKLTYTIDFAAKQGHGKIEHLKTPEQNVELAAAEKKADEKSHAVILGDTRYGSEEKGTYHLALFGDRAQEIAGSATVKI
GEKVHEIGIAGKQ

>A05 Variant Amino Acid Sequence (SEQ ID NO: 13)
CSSGSGSGGGVAADIGTGLADALTAPLDHKDKGLKSLTLEDSISQNGTILTLAQGAECTFKVGDKDNSLNTGKLKNDKISR
FDFVQKIEVDGQTITLASGEFQIYKQDHSVAVVALQIEKINNPDKIDSLINQRSFLVSGLGEHTAFNQLPSGKAEYHGKAFS
SDDAGGKLTYTIDFAAKQGHGKIEHLKTPEQNVELASAEKKADEKSHAVILGDTRYGSEEKGTYHLALFGDRAQEIAGSATV
KIREKVHEIGIAGKQ

>A12 Variant Amino Acid Sequence (SEQ ID NO: 14)
CSSGGGGVAAADIGAGLADALTAPLDHKDKSLQSLTLDQSVRKNEKCLKAAQGAECTYGNNGDSLNTGKLKNDKVS RFD FIRQI
EVDGQTITLASGEFQIYKQNHSAVVALQIEKINNPDKIDSLINQRSFLVSGLGEHTAFNQLPDGKAEYHGKAFSSDDPNGR
LHYSIDFTKKQGYRIEHLKTPEQNVELASAEKKADEKSHAVILGDTRYGGEKGTYHLALFGDRAQEIAGSATVKIREKVH
EIGIAGKQ

>A22 Variant Amino Acid Sequence (SEQ ID NO: 15)
CSSGGGGVAAADIGAGLADALTAPLDHKDKSLQSLTLDQSVRKNEKCLKAAQGAECTYGNNGDSLNTGKLKNDKVS RFD FIRQI
EVDGQLITLESGEFQIYKQDHSVAVVALQIEKINNPDKIDSLINQRSFLVSGLGEHTAFNQLPSGKAEYHGKAFSSDDAGGK
LTYTIDFAAKQGHGKIEHLKTPEQNVELASAEKKADEKSHAVILGDTRYGGEKGTYHLALFGDRAQEIAGSATVKIREKVH
EIGIAGKQ

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FIG. 2B

>B02 Variant Amino Acid Sequence (SEQ ID NO: 16)
 CSSGGGGGVAADIGAGLADALTAPLDHKDKGLSLTLEDSISQNGTLTLSAQGAERTFKAGDKDNLNTGKLKNDKIS
 RFDFIQIEVDGQLITLESGEFQVYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIVGEHTSFDKLPKDVMATYRGTA
 FGSDDAGGKLTYYTIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDEKHHAVISGSVLYNQAEKGSYSLSGIFGGQAQAEVAGSA
 EVETANGIRHIGLAAKQ

>B03 Variant Amino Acid Sequence (SEQ ID NO: 17)
 CSSGGGGVAAADIGAGLADALTAPLDHKDKSLQSLTLDQSVRKNEKLKLAQAQGAEKTYGNGDSLNTGKLKNDKVSRRFDFIRQI
 EVDGQLITLESGEFQVYKQSHSALTALQTEQEQQDPEHSGKMVAKRFRKIGDIAGEHTSFDKLPKDVMATYRGTAFGSDDAGG
 KLTYYTIDFAAKQGHGKIEHLKSPELNVELATAYIKPDEKHHAVISGSVLYNQDEKGSYSLSGIFGGQAQAEVAGSAEVEETANGI
 HHIGLAAKQ

>B09 Variant Amino Acid Sequence (SEQ ID NO: 18)
 CSSGGGGVAAADIGAGLADALTAPLDHKDKGLQSLTLDQSVRKNEKLKLAQAQGAEKTYGNGDSLNTGKLKNDKVSRRFDFIRQI
 EVDGKLITLESGEFQVYKQSHSALTALQTEQVQDSEDSGKMVAKRQFRIGDIAGEHTSFDKLPKGSATYRGTAFGSDDAGG
 KLTYYTIDFAAKQGHGKIEHLKSPELNVELATAYIKPDEKRRHAVISGSVLYNQDEKGSYSLSGIFGGQAQAEVAGSAEVEETANGI
 HHIGLAAKQ

>B22 Variant Amino Acid Sequence (SEQ ID NO: 19)
 CSSGGGGVAAADIGAVLADALTAPLDHKDKSLQSLTLDQSVRKNEKLKLAQAQGAEKTYGNGDSLNTGKLKNDKVSRRFDFIRQI
 EVDGQLITLESGEFQVYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIAGEHTSFDKLPPEGGRATYRGTAFGSDDASG
 KLTYYTIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDKRRHAVISGSVLYNQAEKGSYSLSGIFGGQAQAEVAGSAEVEETANGI
 RHIGLAAKQ

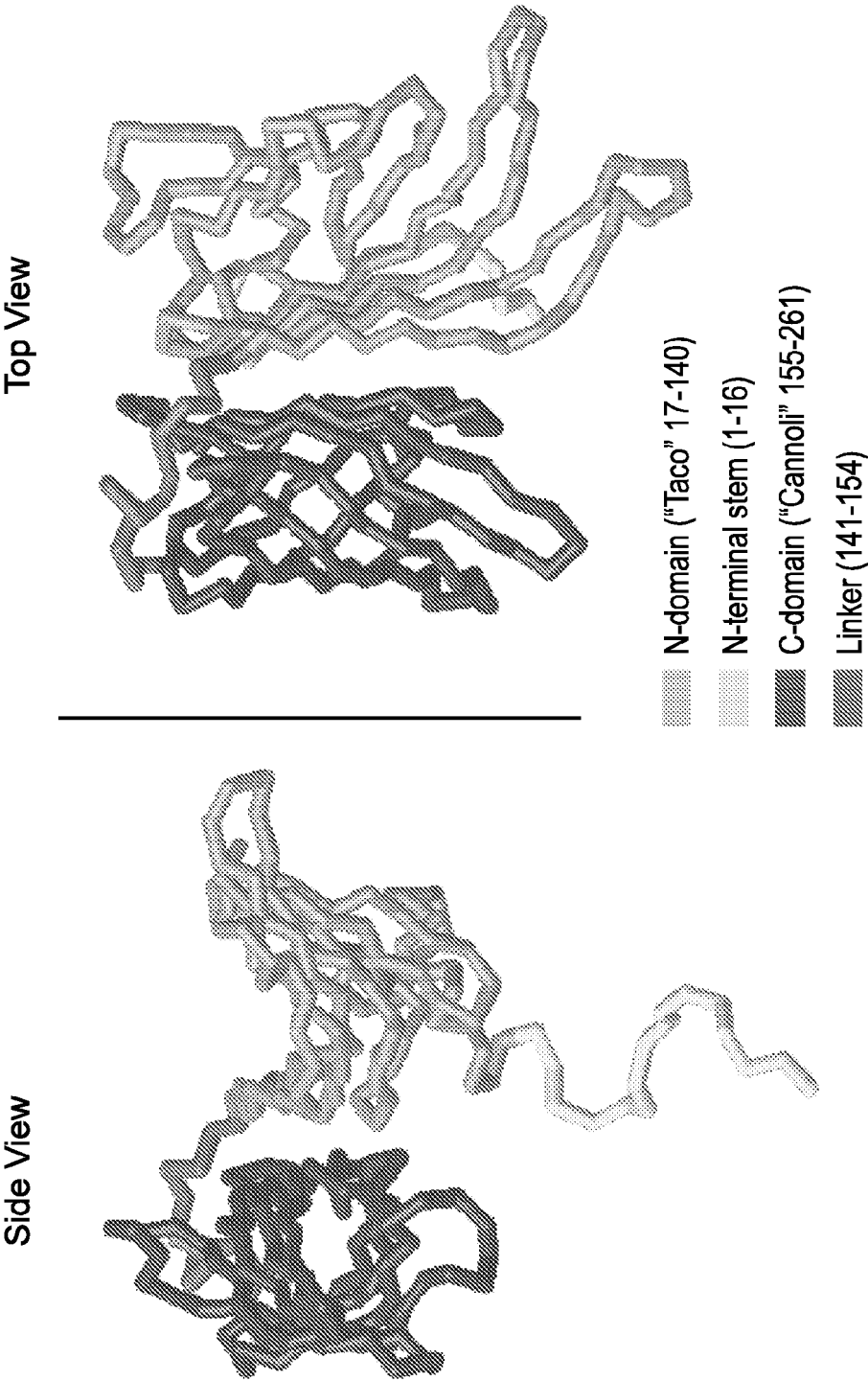
FIG. 2C

>B24 Variant Amino Acid Sequence (SEQ ID NO: 20)
CSSGGGVAADIGAGLADALTAPLDHKDKGLQSLTLDQSVRKNEKLLAAQGAEKTYNGDSLNTGKLKNDKVSRRFDFIRQI
EVDGQLITLESGEFQVYKQSHSALTAFQTEQIQDSEHSGKMVAKRQFRIGDIAGEHTSFDKLP EGGRATYRGTAFGSDDAGG
KLTYTIDFAAKQGNKGKIEHLKSPELNVDLAAADIKPDGKRHAVISGSVLYNQAEKGSYSLGIFGGKAQEVAGSAEVTVNGI
RHIGLAAKQ

>B44 Variant Amino Acid Sequence (SEQ ID NO: 21)
CSSGGGGGVAADIGAGLADALTAPLDHKDKGLKSLTLEDSSIQNGTTLTSAQGAERTFKAGDKDNSLNTGKLKNDKIS
RFDFIRQIEVDGQLITLESGEFQVYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIVGEHTSFGKLPKDVMTYRGTA
FGSDDAGGKLTYYTIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDEKHHAVISGSVLYNQAEKGSYSLGIFGGQAQEVAGSA
EVTANGIRHIGLAAKQ

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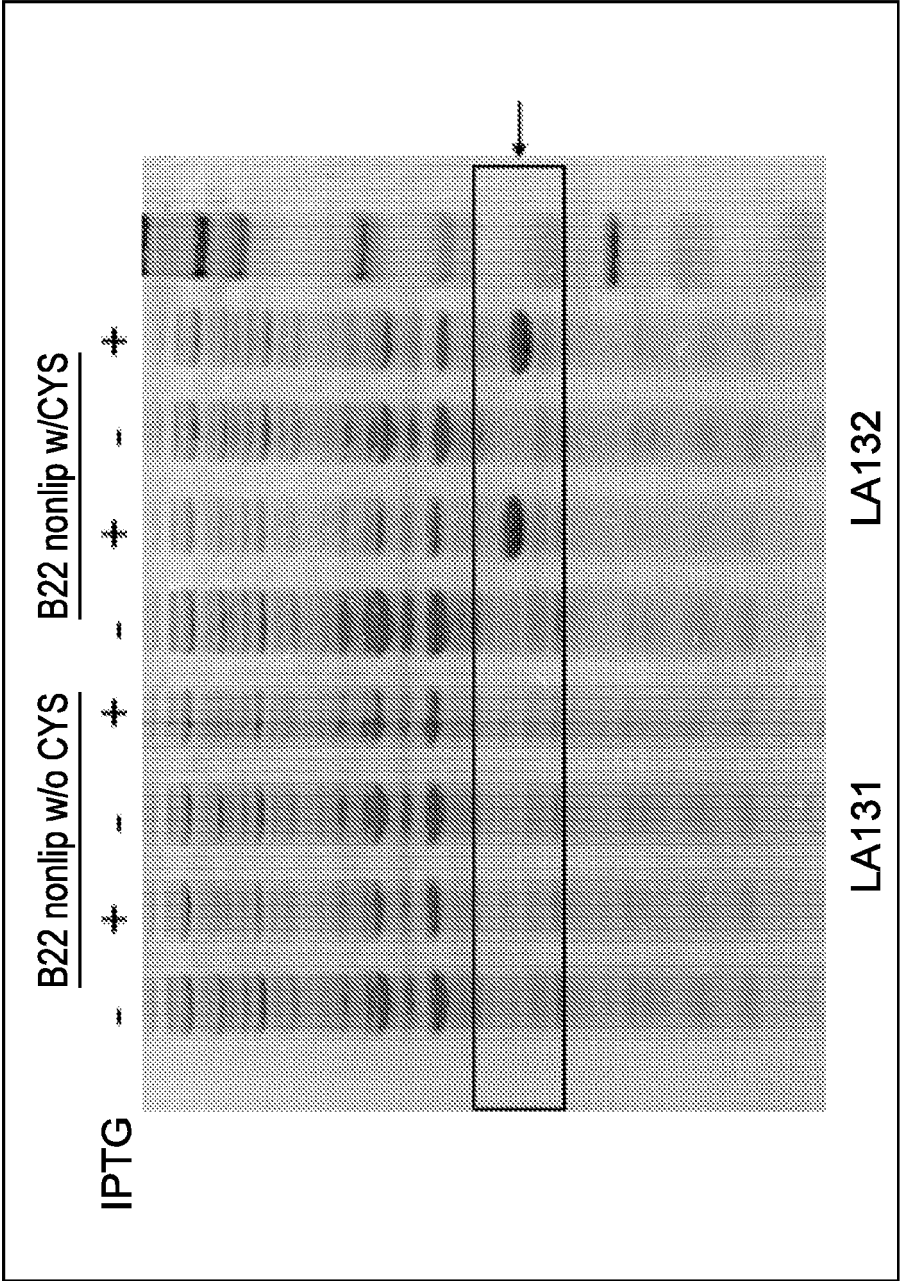
FIG. 3



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FIG. 4

Removal of N-terminal Cys Results in Loss of Expression in *E. coli*



Similar results were obtained for the CYS-minus A22 construct.

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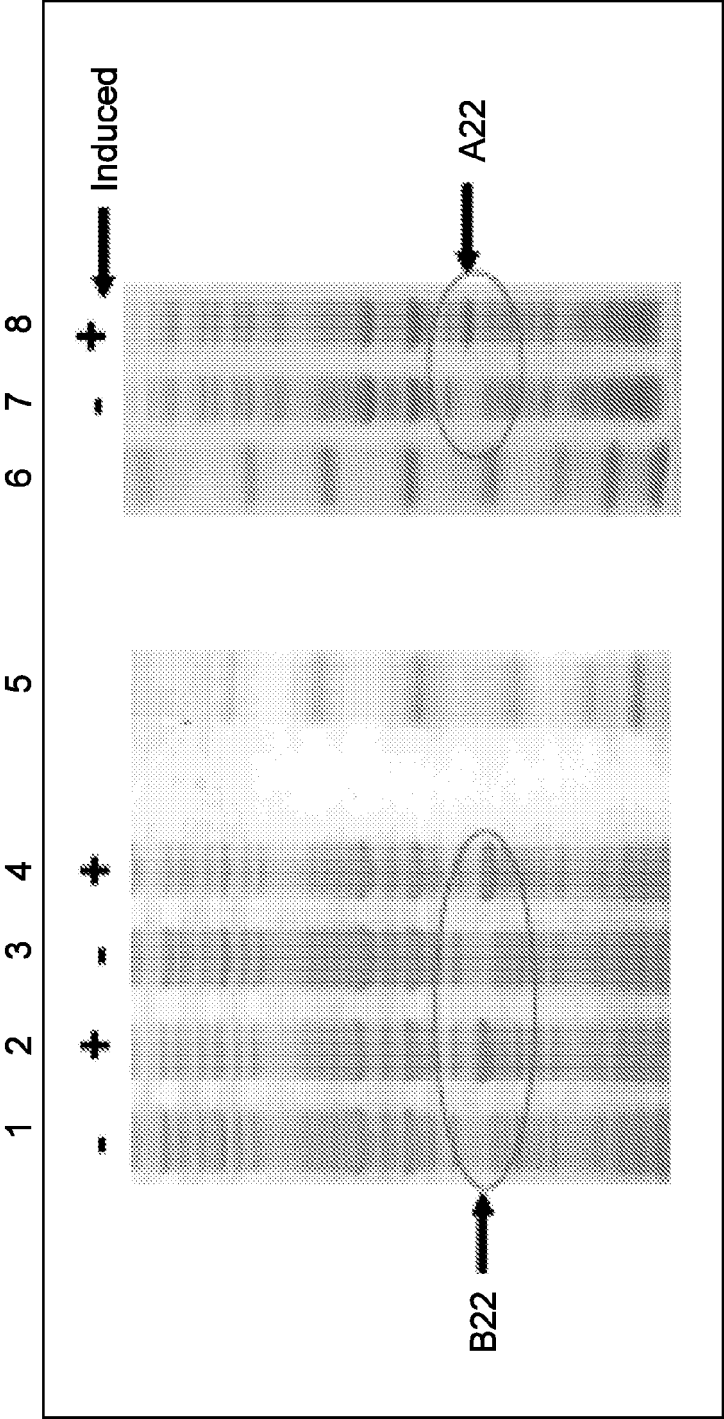
FIG. 5**Effect of Gly/Ser Stalk Length on Non-lipidated ORF2086 Variant Expression**

Protein Variant	Coomassie Expression w/o N-term Cys	Extra Gly/Ser?
B01 CSSGGGSGGGVTADIGTGLADALTAP	Yes	Yes (+5)
B44 CSSGGGSGGGVAAADIGAGLADALTAP	Yes	Yes (+5)
A05 CSSGGGSGGGVAAADIGTGLADALTAP	Yes	Yes (+4)
A22 CSSGGGVAADIGAGLADALTAP	No*	No
B22 CSSGGGVAADIGAVLADALTAP	No*	No
A19 CSSGGGVAADIGAGLADALTAP	No*	No

*Yes if add back N-term Cys

FIG. 7

Codon Optimization Increases Expression of Non-lipidated B22 and A22 Variants



N-terminal B09 Gly codon changes applied to B22 and A22

FIG. 8A

> SEQ ID NO: 43

AGCTCTGGAGGTGGAGGAAGCGGGGGCGGTGGAGTTGCAGCAGACATTTGGAGCAGGATTAGCAGATGCACCTGACGGCACCGT
TGGATCATAAAGACAAAGGCTTGAAATCGCTTACCTTAGAAGATTCTATTTACAAAAATGGCACCCCTTACCTTGTCCGGCGCA
AGCGCTGAACGTACTTTTAAAGCCGGTGACAAAGATAATAGCTTAAATACAGGTAAACTCAAAAATGATAAAAATCTCGCGT
TTTGATTTTCATTCTGTCAAATCGAAGTAGATGGCCAACTTATTACATTTAGAAAAGCGGTGAATTTCCAAAGTATATAACAATCCC
ATTACAGCACTTACAGCATTGCAAAACCGAACAGGTCCAAAGACTCAGAACATTTCCGGCAAAAATGGTAGCTAAACGTCAATTCCG
CATCGGTGACATTGTCGGTGAACATACAAAGCTTCGGAAAAATTACCAAAAAGATGTGATGGCGACCTATCGCGGTACGGCATTT
GGATCAGATGATGCAGGCGGTAAATTAACTTATACAAATTGACTTTGCAGCAAAAACAAGGACATGGCAAAAATTGAACATTTAA
AATCTCCCGAACTTAACGTAGATCTCGCAGCAGCAGATATAAAACCAGATGAAAAACACCCACGCAATTCAGGTTTCAGT
TTTATACAATCAGGCAGAAAAAGGTTTCGTACTCTTTAGGTATTTTGGCGGGCAAGCTCAAGAAAGTTGCAGGTAGCGCAGAA
GTAGAAACGGCAAAATGGCATTCGTCACATTTGGTTAGCGGCAACAATAA

> SEQ ID NO: 44

SSGGGSGGGGVAADIGAGLADALTAPLDHKDKGLKSLTLEDSISQNGTTLTSAQGAERTFKAGDKDNSLNTGKLKNDKISR
FDFIRQIEVDGQLITLESGEFQYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIVGEHTSFGKLPKDVMTYRGTA
GSDDAGGKLTYYTIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDEKHHAVISGSVLYNQAEKGSYSLGIFGGQAQEVAGSAE
VETANGIRHIGLAAKQ.

FIG. 8B**> SEQ ID NO: 51**

AGCAGCGGAGCGCGGAAGCGGAGCGCGGGTGTCCGCCCGGACATCGGCGCGGGGCTTGCCGATGCACATAACCGCACCGC
 TCGACCATAAAGACAAAGTTTGAAATCCCTGACATTGGAAGACTCCATTTCCCAAAACGGAACACTGACCCCTGTGCGCACACA
 AGGTGCGGAAGAAGCTTCAAGCGCGGACAAAGACAAACAGTCTCAACACAGGCAAACTGAAGAACGACAAAATCAGCCGC
 TTCGACTTTATCCGTCAAATCGAAGTGGACGGGAGCTCATTAACCTTGAGAGCGGAGAGTTCCAAGTGTACAAACAAGCC
 ATTCCGCCCTTAACCGCCCTTCAGACCGAGCAAGTACAAGACTCGGAGCATTCGCGGAAGATGGTTGCCGAAACGCCAGTTTCAG
 AATCGCGACATAGTGGCGAACATACATCTTTTGGCAAGCTTCCCAAAGACGTCAATGGCGACATATCGCGGACGCGCTTC
 GGTTCAGACGATGCCGGCGGAAACTGACCTACACCATAGATTTCGCCGCCAAGCAGGACACGGCAAAATCGAACATTTGA
 AATCGCCAGAACTCAATGTTGACCTGGCCGCCCGGATATCAAGCCGGATGAAAAACACCATGCCGTCTCAGCGGTTCCGT
 CCTTTACAACCAAGCCGAGAAAGGCAGTTACTCTCTAGGCATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGCGGAA
 GTGGAACCGCAACGGCATACGCCATATCGGTCTTTGCCGCCAAGCAATAA

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> SEQ ID NO: 45

AGCTCTGGAGGTGGAGGAAGCGGGGCGGTGGAGTTGCAGCAGACATTGGAGCAGGATTAGCAGATGCACGTGACGGCACCGT
 TGGATCATAAAGACAAAGGCTTGCAAGTCGCTTACCTTAGATCAGTCTGTGTCAGGAAAAATGAGAAACTTAAAGTTGGCGCGGCA
 AGCGCTGAAAAAACTTATGGAAAACGGTGACAGCTTAAATACAGGTAAACTCAAAAAATGATAAAAGTCTCGCGTTTGTATTC
 ATTCTCAAATCGAAGTAGATGGCAAGCTTATTACATTAGAAAACGGTGAATTCCAAGTATATAAACAAATCCCATTCAGCAC
 TTACAGCATTGCAAAACCGAACAGGTCCAAGACTCAGAAAGATTCCGGCAAAATGGTAGCTAAACGTCAATTCCGCATCGGTGA
 CATTCGGGTGAACATACAAGCTTCGACAAAATTACCAAAAGGCGGCGAGTCGACCTATCGCGGTACGGCATTTGGATCAGAT
 GATGAGGCGGTAAATTAACTTATACAATTGACTTTGCAGCAAAACAAGGACATGGCAAAATTTGAACATTTAAAATCTCCCG
 AACTTAACGTAGAGCTCGCAACCGCATATATTAAACCATGAAAAACGCCACGCAGTCAATTCAGGTTTCAGTTTATACAA
 TCAGGACGAAAAAGGTTCTGTAATCTTTAGGTAATTTTGGCGGGCAAGCTCAAGAAAGTTGCAGGTAGCGCAGAAAGTAGAAACG
 GCAATGGCATTCACCACATTGGGTAGCGCGAAACAATAA

FIG. 8C

>SEQ ID NO: 50

SSGGGSGGGVAAADIGAGLADALTAPLDHKDKGLQLSLTDQSVRKNEKCLKLAAQGAEKTYGNGDSLNTGKLKNDKVSREF
FIRQIEVDGKLITLESGEFQYKQSHSALTALQTEQVQDSEDSGKMVAKRQFRIGDIAGEHTSFDKLPKGGSATYRGTAFG
SDDAGGKLTYTIDFAAKQGHGKIEHLKSPELNVELATAYIKPDEKRHAVISGSVLYNQDEKGSYSLGIFGGQAQEVAGSAE
VETANGIHHIGLAAKQ

> SEQ ID NO: 46

AGCTCTGGAGGTGGAGGAGTTGCAGCAGACATTTGAGCAGGATTAGCAGATGCACGTGACGGCACCGTTGGATCATAAAGAC
AAAGGCTTGCAGTCGCTTACCTTAGATCAGTCTGTCAAGGAAAAATGAGAAACTTAAGTTGGCGGCGCAAGCGCTGAAAAA
ACTTATGGAAACGGTGACAGCTTAAATACAGGTAAACTCAAAAATGATAAAGTCTCGCGTTTGTGATTTCAATTCGTCAAATC
GAAGTAGATGGCAAGCTTATTACATTAGAAAAGCGGTGAATTTCCAAGTATATAAACAAATCCCATTCAGCACCTTACAGCATTTG
CAAAACCGAACAGGTCCAAAGACTCAGAAAGATTCCGGCAAAAATGGTAGCTAAACGTCAATTCGCGCATCGGTGACATTTGCGGGT
GAACATACAAGCTTCGACAAAATTACCAAAAAGCGGCAGTGGACCTATTCGCGGTACGGCATTTGGATCAGATGATGCAGGC
GGTAAATTAACTTATACAATTGACTTTGCAGCAAAACAAGGACATGGCAAAATTGAACATTTAAAATCTCCGAACTTAAC
GTAGAGCTCGCAACCGCATATATTAAACCATGAAAAACGCCACGCAGTCAATTCAGGTTCAAGTTTTATACAAATCAGGAC
GAAAAAGGTTTCGTACTCTTTTAGGTAATTTTGGCGGGCAAGCTCAAGAAGTTGCAGGTAGCGCAGAAAGTAGAAAAACGGCAAAAT
GGCATTCACCACATTTGGTTAGCGGCGAAACAATAA

FIG. 8D**>SEQ ID NO: 47**

AGCAGCGGGGGGGTGGAGTTGCAGCAGACATTTGGAGCAGGATTAGCAGATGCACCTGACGGCACCGTTGGATCATAAAGACA
 AAGGCTTGCAAGTCGCTTACCTTAGATCAGTCTGTCAAGAAAAATGAGAAACTTAAAGTTGGCGGCGCAAGGCGCTGAAAAAAC
 TTATGGAAACGGTGACAGCTTAAATACAGGTAACCTCAAAAAATGATAAAGTCTCGCGTTTGGATTTCATTCGTCAAATCGAA
 GTAGATGGCAAGCTTATTACATTTAGAAAGCGGTGAATTCCAAGTATATAAACAAATCCCATTCAGCACCTTACAGCATTTGCAAA
 CCGAACAGGTCCTCAAGACTCAGAAAGATTTCCGGCAAAATGGTAGCTAAACGTCAATTTCCGCATCGGTGACATTTGCCGGTGAACA
 TACAAGCTTCGACAAATTACCAAAAGCGGCAGTCGACCTATCGCGGTACGGCATTTGGATCAGATGATGCAGGCGGTAAA
 TTAACCTTATACAAATTGACTTTGCAGCAAAACAAAGGACATGGCAAAATTAACATTTAAAAATCTCCCGAACCTTAACGTAGAGC
 TCGCAACCGCATATATTAAACAGATGAAAAACGCCACGCAGTCA TTTCAAGTTTCAGTTTATACAATCAGGACGAAAAAGG
 TTTCGTACTCTTTAGGTATTTTGGCGGGCAAGCTCAAGAAAGTTGCAGGTAGCGCAGAAAGTAGAAACGGCAAAATGGCATTCAC
 CACATTTGGTTAGCGGCGAAACAATAA

18/24

>SEQ ID NO: 48

AGCAGCGGAGGGGGGGTGTGCGCCGCCGACATCGGTGCGGGGCTTGCCGATGCACATAACCGCACCGCTCGACCCATAAAGACA
 AAGGTTTGCAAGTCTTTAAACACTGGATCAGTCCGTCAAGAAAAACGAGAAACTGAAGCTGGCGGCACAAAGGTGCGGAAAAAAC
 TTATGGAAACGGCGACAGCCTTAATACGGGCAAAATTGAAGAACGACAAGGTACGCCGCTTCGACTTTATCCGTCAAATCGAA
 GTGGACGGGAAGCTCATTTACCTTTGGAGAGCGGAGAGTTCCAAGTGTACAAACAAAGCCATTCGGCCTTAAACCGCCCTTCAGA
 CCGAGCAAGTACAAGACTCGGAGGATTTCCGGGAAGATGGTTGCGAAACGCCAGTTTCAGAATCGGCGACATAGCGGGCGAAACA
 TACATCTTTTGACAAAGCTTCCCAAAGCGGCAGTCGACATATCGCGGACGGCGTTTCGGTTCAGACGATGCTGGCGGAAAA
 CTGACCTATACTATAGATTTGCGCCGCCAAGCAGGGACACGGCAAAATCGAACATTTGAAATCGCCCGAACTCAATGTCGAGC
 TTGCCACCGCCCTATATCAAGCCGGATGAAAAACGCCATGCCGTTATCAGCGGTTCCGTCTTTACAACCAAGACGAGAAAGG
 CAGTTACTCCCTCGGTATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGGGAAGTGGAACCGCAACCGCATACAC
 CATATCGGCTCTTGCCCGCCCAAGCAGTAA

19/24

FIG. 8E**>SEQ ID NO: 49**

SSGGGVAADIGAGLADALTAPLDHKDKGLQSLTLDQSVRKNEKLKLAQAQAEKTYGNGDSLNTGKLKNDKVSFRDFIRQIE
 VDGLITLESGEFQYKQSHSALTALQTEQVQDSEDSGKMVAKRQFRIGDIAGEHTSFDKLPKGGSATYRGTAFGSD
 DAGGKLTYTIDFAAKQGHGKIEHLKSPELNVELATAYIKPDEKRHAVISGSVLYNQDEKGSYSLGIFGGQAQEVAGSAEVEVET
 ANGIHHIGLAAKQ

>SEQ ID NO: 54

AGCAGCGGAAGCGGAAGCGGAGCGGGGGTGTGCGCGCCGACATCGGCACAGGGCTTGCCGATGCACATAACTGCGCCGCTCG
 ACCATAAAGACAAAGGTTTGAAATCCCTGACATTGGAAGACTCCATTTCCTCAAAACGGAACACTGACCCCTGTGCGCACAAAG
 TGCAGAAAACCTTTCAAAGTCGGCGACAAAAGACAAACAGTCTCAATACAGGCAAAATTGAAGAACGACAAAATCAGCCGCTTC
 GACTTTGTGCAAAAATCGAAGTGGACGGACAAACCATCACGCTGGCAAGCGCGGAAATTCAAATATACAAACAGGACCACT
 CCGCCGTCGTTGCCCTACAGATTGAAAAAATCAACAACCCCGACAAAATCGACAGCCTGATAAAACCAACGCTCCTTCCTTGT
 CAGCGGTTTGGCGGAGAACATACCGCCTTCAACCAACTGCCAGCGCAAAAGCCGAGTATCACGGCAAAAGCATTCAGCTCC
 GACGATGCCGGGGAAAACTGACCTATACCATAGATTTTGGCGCCAAACAGGGACACGGCAAAATCGAAACACCTGAAAAACAC
 CCGAGCAGAAATGTCGAGCTTGCCCTCCGCCGAACTCAAAGCAGATGAAAAATCACACGCCGTCAATTTGGGCGACACGCGCTA
 CGGCAGCGAAGAAAAGGCACCTTACCACCTCGCTCTTTTCGGCGACCGAGCCCAAGAAATCGCCGGCTCGGCAACCCGTGAAG
 ATAAGGGAAGGTTTCAACGAAATCGGCATCGCCGGCAAAACAGTAG

>SEQ ID NO: 55

SSGSGGGGVAADIGTGLADALTAPLDHKDKGLKSLTLEDSISQNGTLTLSAQGAETFKVGDKDNSLNTGKLKNDKISR
 DQVQKIEVDGQTTITLASGEFFQYKQDHSVAVVALQIEKINNPDKIDSLINQRSFLVSLGGEHTAFNQLPSGKAEYHGKAFSS
 DDAGGKLTYTIDFAAKQGHGKIEHLKTPEQNVELASAEELKADEKSHAVILGDRYSGEEKGTYHLALFGDRAQEIAGSATVK
 IREKVHEIGIAGKQ.

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FIG. 8F

> SEQ ID NO: 57

SSGGSGGGGTADIGTGLADALTAPLDHKDKGLKSLTLEDSISQNGTLTLSAQGAEKTYNGDSLNTGKLNKDKVSRFDF
IRQIEVDGQLITLESGEFQYKQSHSALTALQTEQEQDPEHSEKMWAKRRFRIGDIAGEHTSFDKLPKDVMATYRGTAFGSD
DAGGKLTYTIDFAAKQGHGKIEHLKSPELNVDLAVAYIKPDEKHHAVISGSVLYNQDEKGSYSLGIFGEKAQEVAGSAEVE
ANGIHHIGLAAKQ

> GenBank AY330406 (SEQ ID NO: 58)

CSSGGSGGGGTADIGTGLADALTAPLDHKDKGLKSLTLEDSISQNGTLTLSAQGAEKTYNGDSLNTGKLNKDKVSRFD
FIRQIEVDGQLITLESGEFQYKQSHSALTALQTEQEQDPEHSEKMWAKRRFRIGDIAGEHTSFDKLPKDVMATYRGTAFGS
DDAGGKLTYTIDFAAKQGHGKIEHLKSPELNVDLAVAYIKPDEKHHAVISGSVLYNQDEKGSYSLGIFGEKAQEVAGSAEVE
TANGIHHIGLAAKQ

>GenBank FJ184191 (SEQ ID NO: 59)

CSSGGGGAADIGAGLADALTAPLDHKDKGLQSLILDQSVRKNEKLKLAQGAEKTYNGDSLNTGKLNKDKVSRFDFIRQI
EVDGQLITLESGEFQYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIAGEHTSFDKLPPEGGRATYRGTAFSDDAGG
KLIYTIIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDEKHHAVISGSVLYNQAEKGSYSLGIFGGKAQEVAGSAEVKTVNGI
RHIGLAAKQ

> GenBank AY330385 (SEQ ID NO: 60)

CSSGGGGAADIGAGLADALTAPLDHKDKSLQSLTLDQSVRKNEKLKLAQGAEKTYNGDSLNTGKLNKDKVSRFDFIRQI
EVDGQLITLESGEFQYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIAGEHTSFDKLPPEGGRATYRGTAFGSDDASG
KLTYTIDFAAKQGHGKIEHLKSPELNVDLAAADIKPDKKRHAVISGSVLYNQAEKGSYSLGIFGGQAQEVAGSAEVE
RHIGLAAKQ

FIG. 8G

> SEQ ID NO: 61

GGCAGCAGCGGAGCGCGGTGTCCGCCGCCGACATCGCGCGCGGTGCTTGCCGATGCACCTAACCCGACCGCTCGACCATAAAG
ACAAAAAGTTTGACGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
AACTTATGGAACGCGCAGCCCTCAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGCTTCGACTTTATCCGTCAAATC
GAAGTGGACGGGCAGCTCATTTACCTTGAGAGCGGAGAGTTCCAAGTGTAACAACAAAGCCATTCCGCCCTTAACCGCCCTTC
AGACCGAGCAAGTACAAGATTTCGGAGCATTCAGGGAAGATGGTTGCGAAACGCCAGTTCAGAAATCGGCGATATAGCGGGTGA
ACATACATCTTTTGACAAAGCTTCCCGAAGCGCGGCGGACATATCGCGGACGGCATTCGGTTCAGACGATGCCAGTGGA
AAACTGACCTACACCATAGATTTCGCCGCCAAGCAGGACACGGCAAAATCGAAATCGCCAGAACTCAATGTTG
ACCTGGCCGCTCCGATATCAAGCCGGATAAAAAACGCCATGCCGTCA TCAGCGGTTCCGTCCTTTACAAACCAAGCCGAGAA
AGGCAGTTACTCTCTAGGCATCTTTGGCGGGCAAGCCAGGAAAGTTGCCGGCAGCGCAGAAAGTGGAACCCGCAACCGGCATA
CGCCATATCGGTCTTGCCGCCAAGCAGTAA

> SEQ ID NO: 62

GSSGGGVAADIGAVLADALTAPLDHKDKSLQSLTLDQSVRKNEKLKLAQAQAEKTYNGDSLNTGKLKNDKVSFRDFIRQI
EVDGQLITLESGEFQYKQSHSALTALQTEQVQDSEHSGKMVAKRQFRIGDIAGEHTSFDKLP EGGRATYRGTAFGSDDASG
KLTYTIDFAAKQGHGKIEHLKSPELNVDLAASDIKPKKRHAVISGSVLYNQAEKGSYSLSLIGFGGQAQEVAGSAEVEETANGI
RHIGLAAKQ

FIG. 8H

> SEQ ID NO: 63

GGCAGCAGCGGAGCGGGGTGTCGCCGCCGACATCGCGCGGGGGCTTGCCGATGCACCTAACCCGACCGCTCGACCATAAAG
ACAAAAAGTTTGACGTCTTTGACGCTGGATCAGTCCGTGAGGAAAAACGAGAAACTGAAAGCTGGCGGCACAAGGTGCGGAAAA
AACTTATGGAACGGCGACAGCCTCAATACGGGCAAAATTGAAGAACGACAAGGTGAGCCGCTTCGACTTTATCCGTCAAATC
GAAGTGACGGGCAGCTCATTTACCTTGAGAGCGGAGAGTTCCAAATATACAAACAGGACCACTCCGCCGTCGTTGCCCTAC
AGATTGAAAAAATCAACAACCCCGACAAAATCGACAGCCTGATAAACCAACGCTCCTTGTCTCAGCGGTTTGGGTGGAGA
ACATACCGCCTTCAACCAACTGCCCAGCGGCAAAAGCCGAGTATCACGGCAAAAGCATTTCAGCTCCGACGATGCTGGCGGAAAA
CTGACCTATACCATAGATTTCGCCGCCAAACAGGACACGGCAAAATCGAACACTTGAAAAACACCCGAGCAAAATGTCGAGC
TTGCCTCCGCGGAACTCAAAGCAGATGAAAAATCACACGCCGTCATTTGGGCGACACGCGCTACGGCGCGGAAAGG
CACTTACCACCTCGCCCTTTTCGGCGACCGCCCAAGAAATCGCCGGCTCGGCAACCGTGAAGATAAGGGAAGGTTTCAC
GAAATCGGCATCGCCGGCAACAGTAA

> SEQ ID NO: 64

GSSGGGVAADIGAGLADALTAPLDHKDKSLQSLTLDQSVRKNEKLKLAQAQAEKTYNGDSLNTGKLKNDKVSFRDFIRQI
EVDGQLITLESGEFFQIYKQDHSVVVALQIEKINNPDKIDSLINQRSFLVSLGGEHTAFNQLPSGKAEYHGKAFSSDDAGGK
LTYTIDFAAKQGHGKIEHLKTPEQNVELASAEIKADEKSHAVILGDTRYGGEEKGTYYHLALFGDRAQEIAGSATVKIREKVH
EIGIAGKQ

FIG. 9A

1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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FIG. 9B

A05	(121)	INNPKIDSLINQRSFLVSGLGGEHTAFNQLPSG-KAEYHGKAFSSDDAGGKLT	121	180
A12	(114)	INNPKIDSLINQRSFLVSGLGGEHTAFNQLPDG-KAEYHGKAFSSDDPNGRLLHYSIDFT		
A22	(114)	INNPKIDSLINQRSFLVSGLGGEHTAFNQLPSG-KAEYHGKAFSSDDAGGKLT		
A62	(114)	VQDSEDSGMVAKRQFRIGDIAGEHTSFDDKLPGGSAIYRGTAFFGSDDAGGKLT		
B09	(114)	VQDSEDSGMVAKRQFRIGDIAGEHTSFDDKLPGGSAIYRGTAFFGSDDAGGKLT		
B24	(114)	IQDSEHSGGMVAKRQFRIGDIAGEHTSFDDKLPEGGRATYRGTAFFGSDDAGGKLT		
Consensus	(121)	INNSDKSGSLINQRSFRISGIAGEHTAFNQLP GGKATYRGTAFFSSDDAGGKLT		
A05	(180)	AKQGHGKIEHLKTPEQNVELASAEELKADEKSHAVILGDTRYGSEEEKGT	181	240
A12	(173)	KKQGYGRIEHLKTPEQNVELASAEELKADEKSHAVILGDTRYGGEEEKGT		
A22	(173)	AKQGHGKIEHLKTPEQNVELASAEELKADEKSHAVILGDTRYGGEEEKGT		
A62	(174)	AKQGHGKIEHLKTPEQNVELASAEELKADEKSHAVILGDTRYGGEEEKGT		
B09	(174)	AKQGHGKIEHLKSPELNVELATAATIKPDEKRRHAVISGSVLNQDEKGSYS		
B24	(174)	AKQGNKGIEHLKSPELNVDLAADIKPDCGKRHAVISGSVLNQAEKGSYS		
Consensus	(181)	AKQGHGKIEHLKTPEQNVELASAEELKADEKSHAVILGDTRYGGEEEKGT		
A05	(240)	IAGSATVKIREKVHEIGIACKQ	241	262
A12	(233)	IAGSATVKIREKVHEIGIACKQ		
A22	(233)	IAGSATVKIREKVHEIGIACKQ		
A62	(234)	IAGSATVKIREKVHEIGIACKQ		
B09	(234)	MAGSAEVEETANGIHHIGIAAKQ		
B24	(234)	MAGSAEVKTVNGIRHIGIAAKQ		
Consensus	(241)	IAGSATVKIREKVHEIGIACKQ		
		(SEQ ID NO: 13)		
		(SEQ ID NO: 14)		
		(SEQ ID NO: 15)		
		(SEQ ID NO: 70)		
		(SEQ ID NO: 18)		
		(SEQ ID NO: 20)		
		(SEQ ID NO: 78)		