

FIGURE 1

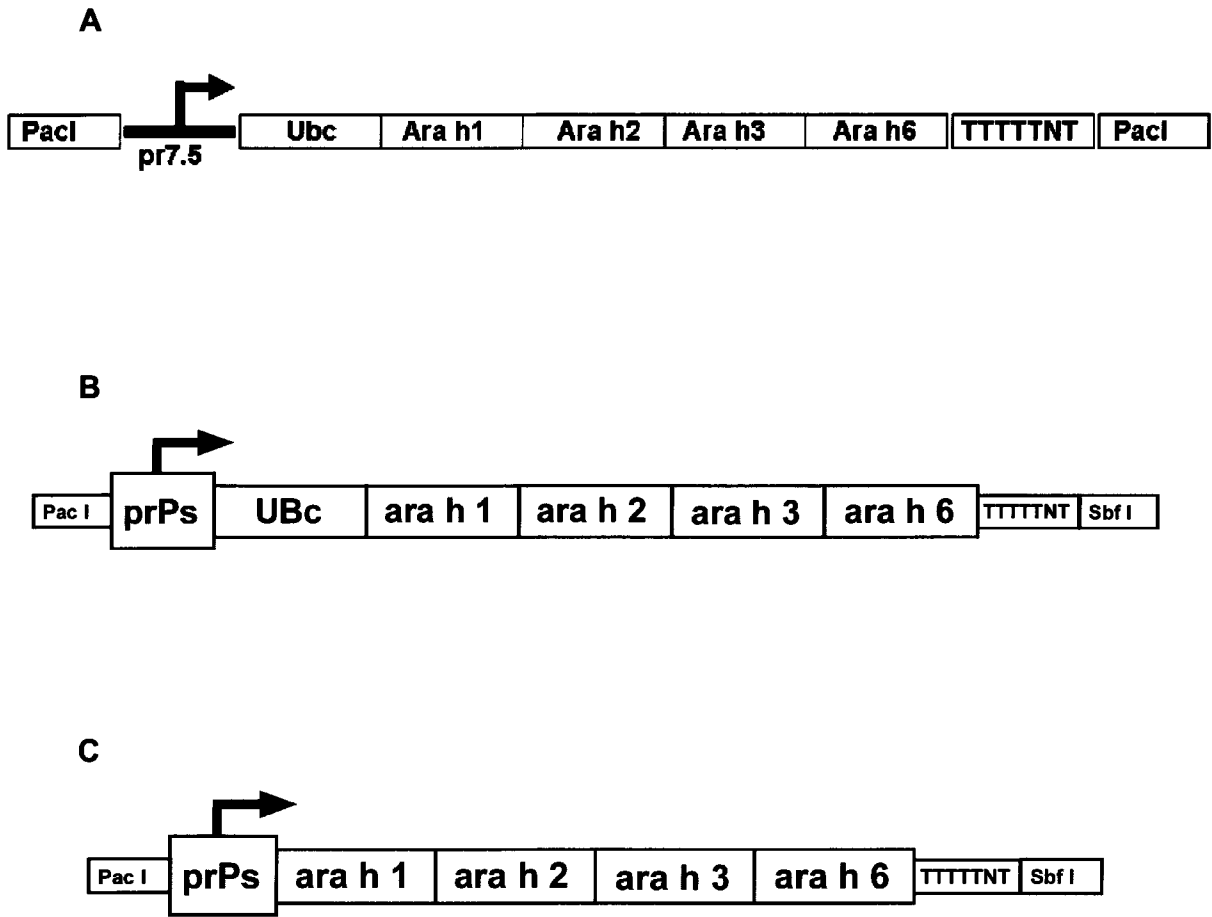


FIGURE 2

UBc.PHAVag Expression Cassette

LOCUS UBc.PHAVag expression cassette 4705 bp DNA linear SYN
 10-MAR-2014
 DEFINITION SCV-UBcPHAVag expression cassette
 ORGANISM Vaccinia Virus
 COMMENT Textco/File created by Gene Construction Kit (TextcoBioSoftware)
 FEATURES Location/Qualifiers
 misc_feature 9..52
 /label="prPs"
 /note="Vaccinia early/late promoter"
 CDS 53..4690
 /label="UBc.PHAV"
 /note="Protein coding sequence of the ubiquitinated peanut
 hypoallergy vaccine antigen"
 CDS 53..280
 /label="Ubc"
 /note="Ubiquitin C monomer. Terminal amino acid changed to
 "A"
 CDS 281..2155
 /label="ara h1"
 /note="protein coding sequence of ara h 1"
 CDS 2156..2668
 /label="ara h2"
 /note="Protein coding sequence of ara h 2"
 CDS 2669..4255
 /label="ara h3"
 /note="Protein coding sequence of ara h 3"
 CDS 4256..4690
 /label="ara h6"
 /note="Protein coding sequence of ara h 6"
 misc_feature 4691..4697
 /label="T5NT"
 /note="Pox virus early transcriptional stop sequence"
 ORIGIN
 1 TTAattaaca AAAAAATTGAA ATTTTATTTT TTTTTTTGG AATATAAATA AtATGCAGAT
 61 CTTTGTGAAA ACACTCACGG GAAAACTAT AACTCTTGAG GTGGAGCCCT CTGACACAAT
 121 CGAAATGTG AAAGCCAAGA TCCAAGATAA GGAAGGCATC CCTCCAGACC AGCAACGGCT
 181 CATCTTTGCG GGCAAACAAC TGGAGGATGG GCGCACTCTC AGTGATTACA ATATTCAAAA
 241 GGAATCTACA CTGCACCTGG TTCTTAGGCT GCGGGGAGCC CGAGGCAGAG TCAGCCCTCT
 301 GATGCTGCTG TTGGGGATCT TGTTTCTTGC ATCCGTTTCA GCCACACATG CCAAGTCCAG
 361 CCCATACCAG AAAAAGACCG AGAACCCTATG TGCTCAGCGG TGCCTCCAGT CATGTCAGCA
 421 GGAACCCGAT GACCTCAAGC AAAAGGCGTG TGAAAGCAGA TGTACGAAAC TGGAATACGA
 481 CCCCAGATGC GTGTACGATC CACGAGGCCA TACTGGCACC ACCAATCAAA GATCACCACC
 541 TGGCGAGCGA ACCAGGGGAC GACAGCCAGG GGATTACGAT GACGATAGAC GACAGCCTCG
 601 CCGGAAGAG GGTGGGCGCT GGGGTCCAGC CGGTCCCAGA GAGCGAGAAC GGGGAAGAGGA
 661 CTGGCGCCAA CCCCGGGAGG ACTGGCGCAG ACCTTCACAC CAGCAGCCCC GGGAAATACG
 721 CCCGAGGGG AGAGAGGGTG AACAGGAATG GGGAAACCCT GGCAGTCACG TCAGGGAAGA
 781 AACCAGCCGG AACAAACCCT TCTATTTCCC CTCCCGGAGG TTTAGCACTC GGTACGGGAA
 841 CCAAAACGGA CGCATTCGCG TACTTCAGAG ATTTGATCAA CGCTCACGGC AGTTCCAGAA
 901 CCTTCAAAAC CATCGGATTG TTCAGATCGA GGCCAAACCA AACACTTTGG TTCTGCCAAA
 961 ACATGCTGAT GCAGACAACA TACTGGTGAT ACAGCAGGGT CAAGCCACAG TGACAGTAGC
 1021 CAATGGGAAC AATCGCAAAT CATTCAATCT CGATGAGGGA CACGCACTGA GGATCCCTTC
 1081 TGGCTTTATC TCCTATATAC TGAATCGGCA CGACAATCAA AATCTCAGGG TTGCTAAGAT
 1141 CTCTATGCCA GTCAACACTC CGGGTCAGTT CGAGGATTTC TTTCCCGCGT CCTCACGGGA
 1201 CCAGTCTAGT TATCTTCAAG GATTCAAGCAG AAACACCTTG GAAGCGGCCT TTAACGCCGA
 1261 GTTTAACGAG ATCAGGCGGG TGCTTCTCGA GGAGAACGCT GCGGGGAAC AGGAGGAGAG
 1321 AGGCCAACGG CGGTGGTCTA CCAGGTCCAG TGAGAACAAT GAGGGCGTGA TCGTCAAGGT

FIGURE 2 (CONTINUED)

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1381 ATCTAAGGAG CATGTCGAGG AACTGACCAA ACATGCAAAG TCCGTTTCCA AGAAAGGCTC
1441 CGAGGAGGAA GGGGACATTA CGAATCCGAT CAACCTTCGG GAGGGCGAGC CGGATCTGTC
1501 AAATAACTTT GAAAACTCT TCGAAGTCAA GCCCACAAA AAGAATCCGC AGTTGCAAGA
1561 TCTGGACATG ATGCTCACGT GTGTCGAGAT TAAGGAAGGA GCACTGATGT TGCCCTCACTT
1621 TAACTCCAAA GCCATGGTGA TAGTCGTAGT AAACAAAGGA ACCGGCAATC TGGAGTTGGT
1681 GGCTGTCCGA AAGGAACAAC AGCAAAGAGG GCGGAGGGAA GAAGAGGAAG ATGAGGACGA
1741 GGAGGAGGAG GGATCAAACC GGGAGGTACG CCGATACACA GCGAGGCTGA AAGAGGGAGA
1801 CGTGTTTATC ATGCCGGCAG CACATCCTGT CGCTATCAAC GCCTCTAGCG AGCTCCATTT
1861 GCTGGGGTTC GGGATCAATG CGGAGAACAA TCATCGCATT TTCCTGGCAG GCGACAAGGA
1921 CAACGTTATT GACCAAATTG AGAAGCAAGC CAAGGACCTG GCCTTCCCTG GATCAGGTGA
1981 ACAGGTCGAG AAGCTCATCA AAAACCAGAA GGAATCCAC TTTGTATCTG CCAGACCACA
2041 GTCACAGTCC CAGAGCCCTT CTAGTCCCGA GAAGGAGAGC CCCGAAAAGG AAGATCAAGA
2101 GGAGGAGAAC CAGGGTGGA AGGGCCCACT GCTTTCCATT CTCAAAGCCT TCAATGCTAA
2161 GCTGACAATA TTGGTGGCAC TGGCACTGTT CCTTCTTGCT GCACACGCGT CAGCCCGGCA
2221 GCAGTGGGAA TTGCAGGGCG ATCGAAGGTG TCAGTCACAG CTGGAGAGGG CGAACCCTCCG
2281 GCCTTGTAAG CAGCACCTGA TGCAGAAGAT TCAGCGGGAC GAGGATTCTT ACGGGCGAGA
2341 TCCTTACAGT CCTCCCAAG ATCCATATAG CCCGCTCAA GACCCAGATC GCAGGAGCCC
2401 ATATAGCCCC AGCCCTATG ATCGAAGAGG TGCCGGAAGC AGCCAGCATC AGGAAAGGTG
2461 CTGCAATGAG CTGAACGAGT TCGAGAACAA CCAGAGATGT ATGTGCGAGG CTCTGCAGCA
2521 GATTATGGAA AATCAATCTG ACCGGCTGCA GGGACGGCAG CAGGAGCAGC AGTTCAAAAG
2581 GGAGCTCCGC AACCTTCCAC AGCAGTGGCG TTTGCGCGCA CCTCAGCGCT GCGACTTGGA
2641 GGTGGAAAGC GGAGGTAGAG ACAGATACGC GAAGCTGCTG GAACTCAGCT TCTGTTTCTG
2701 TTTCTGGTA CTCGGCGCTT CATCAATATC TTTTAGGCAG CAGCCAGAGG AAAATGCCTG
2761 CCAGTTCCAA CGGCTGAACG CTCAGCGACC AGACAATAGG ATCGAATCAG AAGGTGGATA
2821 CATCGAGACT TGGAAACCGA ATAACCAGGA GTTCGAATGT GCAGGCGTGG CACTGTCTCG
2881 CCTTGTTCTC CGACGCAATG CGCTCAGGCG CCCATTCTAT TCCAATGCAT CCAAGAAAT
2941 CTTTATCCAA CAGGGCAGAG GGTACTTCGG GCTGATCTTT CCCGGCTGTC CCCGGCACTA
3001 TGAGGAACCC CACACACAGG GCAGAAGGAG CCAGAGCCAG CGGCCTCCCC GGAGATTGCA
3061 AGGGGAGGAT CAGAGCCAGC AGCAGAGAGA TTCTCATCAG AAAGTACATA GGTTCGATGA
3121 GGGTGACCTG ATAGCTGTGC CAACCGGTGT TGCTTTTGG TTGTATAATG ACCACGACAC
3181 AGACGTGGTG GCTGTGTCTC TGACCGATAC AAACAACAAT GACAATCAGC TTGATCAGTT
3241 CCCTAGGCGC TTTAACCTGG CTGGCAACAC CGAACAGGAG TTCTTGAGAT ATCAGCAGCA
3301 GTCTAGGCAG TCTAGGAGGA GGTCCCTGCC ATACTCCCCT TACAGCCCTC AGAGTCAGCC
3361 TAGGCAGGAA GAGAGAGAAT TCAGTCCCAG AGGCCAGCAC TCTAGGCGGG AGCGGGCTGG
3421 GCAGGAGGAG GAAAACGAAG GTGGCAATAT CTTTAGCGGC TTCACTCCAG AGTTTCTGGA
3481 ACAGGCATTC CAAGTAGATG ACAGACAGAT CGTCCAGAAC CTTAGGGGCG AGACTGAATC
3541 AGAAGAGGAA GGGGCAATCG TGACGGTGCG CGGAGGCTTG CGCATCCTGT CCCCTGACCG
3601 CAAACGCGAG GCCGACGAGG AAGAAGAGTA TGACGAGGAT GAATATGAAT ATGATGAGGA
3661 GGATCGAAGG CGCGGAAGGG GCAGTAGGGG ACGAGGGAAC GGCATAGAAG AAATATTTG
3721 TACCGCGTCC GCCAAGAAGA ATATTGGGCG AAACCGCAGT CCCGACATAT ACAATCCTCA
3781 AGCCGCGAGC CTTAAACCG CCAACGATCT GAACCTGCTG ATCCTCCGCT GGCTGGGGCC
3841 AAGCGCCGAA TATGGGAATC TGTACCGAAA TGCTCTGTTT GTGGCCCACT ACAATACAAA
3901 TGCCCACTCT ATTATCTACC GCCTCAGAGG GAGGGCTCAT GTGCAAGTGG TCGACAGCAA
3961 TGGGAATCGC GTGTACGATG AGGAGCTCCA AGAAGGGCAT GTCCTTGTTG TGCCTCAGAA
4021 TTTTCGAGTT GCGGGCAAA CACAGAGTGA GAACTTCGAG TACGTTGCCT TTAAGACCGA
4081 TTCCAGACCC TCCATTGCAA ACCTGGCCGG AGAGAACAGT GTTATTGACA ATCTGCCGGA
4141 GGAAGTGGTT GCTAACAGTT ATGGGCTTCA GC CGGAACAG GCTCGGCAGC TGAAGAACAA
4201 CAATCCGTTT AAGTTTTTTCG TCCCTCCATC CCAGCAGTCA CCCAGAGCTG TGGCCGCCAA
4261 ATCCACTATT CTGTGGGCC TCTTGGCACT CGTGCTGGTC GCCCATGCTT CTGCTATGCG
4321 AAGGGAGAGA GGGCGCCAAG GTGACTCAAG CAGTTGCGAA CGACAAGTGG ACAGAGTGAA
4381 CCTCAAACCT TGCGAACAGC ACATTATGCA GAGAATTATG GGAGAGCAAG AGCAGTATGA
4441 TAGTTATGAT ATCAGATCAA CACGCTCTTC CGATCAGCAA CAGCGGTGTT GCGATGAACT
4501 CAACGAAATG GAGAATACGC AGCGGTGCAT GTGTGAGGCT CTTACAGCAA TCATGGAAAA
4561 CCAATGCGAT CGGCTCCAAG ATCGACAGAT GGTGCAGAG TTTAAGCGCG AGCTGATGAA
4621 TTTGCCACAA CAGTGCAACT TTCGGCTCC CAGAGATGC GACCTCGATG TCAGCGGAGG
4681 GAGATGCTAA TTTTATCCT GCAGG

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FIGURE 3***PHAVag Expression Cassette***

LOCUS PHAVag expression cassette 4480 bp DNA linear SYN 10-MAR-2014

DEFINITION PHAVag expression cassette

ORGANISM Vaccinia virus

Unclassified.

COMMENT Textco/File created by Gene Construction Kit (TextcoBioSoftware)

FEATURES Location/Qualifiers

misc_feature 9..52

/label="prPs"

/note="Vaccinia early/late promoter"

/note="Pox virus early transcriptional stop"

CDS 53..1930

/label="ara h1"

/note="Protein coding sequence of ara h 1"

CDS 1931..2443

/label="ara h2"

/note="Protein coding sequence of ara h 2"

CDS 2444..4030

/label="ara h3"

/note="Protein coding sequence of ara h 3"

CDS 4031..4465

/label="ara h6"

/note="Protein coding sequence of ara h 6"

CDS 53..4465

/label="PHAVag"

/note="Protein coding sequence of the peanut hypoallergen vaccine antigen"

misc_feature 4466..4472

/label="Transcription stop"

ORIGIN

1 TTAattaaca AAAAATTGAA ATTTTATTTT TTTTTTTGG AATATAAATA AtatgCGAGG

61 CAGAGTCAGC CCTCTGATGC TGCTGTGGG GATCTTGGT CTTGCATCCG TTTCAGCCAC

121 ACATGCCAAG TCCAGCCCAT ACCAGAAAAA GACCGAGAAC CCATGTGCTC AGCGGTGCCT

181 CCAGTCATGT CAGCAGGAAC CCGATGACCT CAAGCAAAAG GCGTGTGAAA GCAGATGTAC

241 GAAACTGGAA TACGACCCCA GATGCGTGTA CGATCCACGA GGCCATACTG GCACCACCAA

301 TCAAAGATCA CCACCTGGCG AGCGAACCAG GGGACGACAG CCAGGGGATT ACGATGACGA

361 TAGACGACAG CCTCGCCGGG AAGAGGGTGG GCGCTGGGGT CCAGCCGGTC CCAGAGAGCG

421 AGAACGGGAA GAGGACTGGC GCCAACCCCG GGAGGACTGG CGCAGACCTT CACACCAGCA

481 GCCCCGGAAG ATACGCCCGG AGGGCAGAGA GGGTGAACAG GAATGGGGAA CCCCTGGCAG

541 TCACGTCAGG GAAGAAACCA GCCGGAACAA CCCCTTCTAT TTCCCTCCC GGAGGTTTAG

601 CACTCGGTAC GGAACCAAAA ACGGACGCAT TCGCGTACTT CAGAGATTTC ATCAACGCTC

661 ACGGCAGTTC CAGAACCTTC AAAACCATCG GATTGTTCAG ATCGAGGCCA AACCAACAC

721 TTTGGTTCTG CCAAAACATG CTGATGCAGA CAACATACTG GTGATACAGC AGGGTCAAGC

781 CACAGTGACA GTAGCCAATG GGAACAATCG CAAATCATTC AATCTCGATG AGGGACACGC

841 ACTGAGGATC CCTTCTGGCT TTATCTCCTA TATACTGAAT CGGCACGACA ATCAAAATCT

901 CAGGGTTGCT AAGATCTCTA TGCCAGTCAA CACTCCGGGT CAGTTCGAGG ATTTCTTTCC

961 CGCGTCTCA CGGGACCATG CTAGTTATCT TCAAGGATTC AGCAGAAACA CCTTGAAGC

1021 GGCCTTTAAC GCCGAGTTTA ACGAGATCAG GCGGGTGCTT CTCGAGGAGA ACGCTGGCGG

1081 GGAACAGGAG GAGAGAGGCC AACGGCGGTG GTCTACCAGG TCCAGTGAGA ACAATGAGGG

1141 CGTGATCGTC AAGGTATCTA AGGAGCATGT CGAGGAATG ACCAAACATG CAAAGTCCGT

1201 TTCCAAGAAA GGCTCCGAGG AGGAAGGGGA CATTACGAAT CCGATCAACC TTCGGGAGGG

1261 CGAGCCGGAT CTGTCAAATA ACTTTGGAAA ACTCTTCGAA GTCAAGCCCG ACAAAAAGAA

1321 TCCGAGTTG CAAGATCTGG ACATGATGCT CACGTGTGTC GAGATTAGG AAGGAGCACT

1381 GATGTTGCCT CACTTTAACT CCAAAGCCAT GGTGATAGTC GTAGTAAACA AAGGAACCGG

1441 CAATCTGGAG TTGGTGGCTG TCCGAAAGGA ACAACAGCAA AGAGGGCGGA GGAAGAAGA

1501 GGAAGATGAG GACGAGGAGG AGGAGGGATC AAACCGGGAG GTACGCCGAT ACACAGCGAG

FIGURE 3 (CONTINUED)

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1561 GCTGAAAGAG GGAGACGTGT TTATCATGCC GGCAGCACAT CCTGTCGCTA TCAACGCCTC
1621 TAGCGAGCTC CATTGTCTGG GGTTCGGGAT CAATGCGGAG AACAAATCAT GCATTTTCTC
1681 GGCAGGCGAC AAGGACAACG TTATTGACCA AATTGAGAAG CAAGCCAAGG ACCTGGCCTT
1741 CCCTGGATCA GGTGAACAGG TCGAGAAGCT CATCAAAAAC CAGAAGGAAT CCCACTTTGT
1801 ATCTGCCAGA CCACAGTCAC AGTCCCAGAG CCCCTCTAGT CCCGAGAAGG AGAGCCCCGA
1861 AAAGGAAGAT CAAGAGGAGG AGAACCAGGG TGGAAAGGGC CCACTGCTTT CCATTCTCAA
1921 AGCCTTCAAT GCTAAGCTGA CAATATTGGT GGCCTGGCA CTGTTCTCTC TTGCTGCACA
1981 CGCGTCAGCC CGGCAGCAGT GGAATTGCA GGGCGATCGA AGGTGTCTAGT CACAGCTGGA
2041 GAGGGCGAAC CTCCGGCCTT GTGAACAGCA CCTGATGCAG AAGATTTCAG GGGACGAGGA
2101 TTCTTACGGG CGAGATCCTT ACAGTCCCTC CCAAGATCCA TATAGCCCGT CTCAAGACCC
2161 AGATCGCAGG GACCCATATA GCCCCAGCCC CTATGATCGA AGAGGTGCCG GAAGCAGCCA
2221 GCATCAGGAA AGGTGCTGCA ATGAGCTGAA CGAGTTCGAG AACAAACCAGA GATGTATGTG
2281 CGAGGCTCTG CAGCAGATTA TGGAAAATCA ATCTGACCGG CTGCAGGGAC GGCAGCAGGA
2341 GCAGCAGTTC AAAAGGGAGC TCCGCAACCT TCCACAGCAG TGCGGTTTGC GCGCACCTCA
2401 GCGCTGCGAC TTGGAGGTGG AAAGCGGAGG TAGAGACAGA TACGCGAAGC TGCTGGAACT
2461 CAGCTTCTGT TTCTGTTTCC TGGTACTCGG CGCTTCATCA ATATCTTTTA GGCAGCAGCC
2521 AGAGGAAAAT GCCTGCCAGT TCCAACGGCT GAACGCTCAG CGACCAGACA ATAGGATCGA
2581 ATCAGAAGGT GGATACATCG AGACTTGGAA CCCGAATAAC CAGGAGTTCG AATGTGCAGG
2641 CGTGGCACTG TCTCGCCTTG TTCTCCGACG CAATGCGCTC AGGCGCCCCA TCTATTCCAA
2701 TGCACCCCAA GAAATCTTTA TCCAACAGGG CAGAGGGTAC TTCGGGCTGA TCTTTCCCGG
2761 CTGTCCCGCG CACTATGAGG AACCCACAC ACAGGGCAGA AGGAGCCAGA GCCAGCGGCC
2821 TCCCCGAGGA TTGCAAGGGG AGGATCAGAG CCAGCAGCAG AGAGATTCTC ATCAGAAAGT
2881 ACATAGGTTT GATGAGGGTG ACCTGATAGC TGTGCCAACC GGTGTTGCCT TTTGGTTGTA
2941 TAATGACCAC GACACAGACG TGGTGGCTGT GTCTCTGACC GATACAAACA ACAATGACAA
3001 TCAGCTTGAT CAGTTCCTTA GCGCTTTTAA CCTGGCTGGC AACACCGAAC AGGAGTCTTT
3061 GAGATATCAG CAGCAGTCTA GGCAGTCTAG GAGGAGGTCC CTGCCATACT CCCCTTACAG
3121 CCCTCAGAGT CAGCCTAGGC AGGAAGAGAG AGAATTCAGT CCCAGAGGCC AGCACTCTAG
3181 GCGGGAGCGG GCTGGGCAGG AGGAGGAAAA CGAAGGTGGC AATATCTTTA GCGGCTTCAC
3241 TCCAGAGTTT CTGGAACAGG CATTCCAAGT AGATGACAGA CAGATCGTCC AGAACCTTAG
3301 GGGCGAGACT GAATCAGAAG AGGAAGGGGC AATCGTGACG GTGCGCGGAG GCTTGCGCAT
3361 CCTGTCCCCT GACCGCAAAC GCAGGGCCGA CGAGGAAGAA GAGTATGACG AGGATGAATA
3421 TGAATATGAT GAGGAGGATC GAAGGCGCGG AAGGGGCAGT AGGGGACGAG GGAACGGCAT
3481 AGAAGAAACT ATTTGTACCG CGTCCGCCAA GAAGAATATT GGGCGAAACC GCAGTCCCGA
3541 CATATACAAT CCTCAAGCCG GCAGCCTTAA AACCGCCAAC GATCTGAACC TGCTGATCCT
3601 CCGCTGGCTG GGGCCAAGCG CCGAATATGG GAATCTGTAC CGAAATGCTC TGTTTGTGGC
3661 CCACTACAAT ACAAATGCCC ACTCTATTAT CTACCGCTC AGAGGGAGGG CTCATGTGCA
3721 AGTGGTCGAC AGCAATGGGA ATCGCGTGTA CGATGAGGAG CTCCAAGAAG GGCATGTCCT
3781 TGTTGTGCCT CAGAATTTTCG CAGTTGCGGG CAAATCACAG AGTGAGAACT TCGAGTACGT
3841 TGCCTTTAAG ACCGATTCCA GACCTCCAT TGCAAACTTG GCCGGAGAGA ACAGTGTAT
3901 TGACAACTCT CCGGAGGAAG TGGTTGCTAA CAGTTATGGG CTTGAGCGCG AACAGGCTCG
3961 GCAGCTGAAG AACAAACAAT CGTTCAAGTT TTTCGTCCCT CCATCCCAGC AGTCACCCAG
4021 AGCTGTGGCC GCCAAATCCA CTATTCTTGT GGCCCTCTTG GCACTCGTGC TGGTCGCCCC
4081 TGCTTCTGCT ATGCGAAGGG AGAGAGGGCG CCAAGGTGAC TCAAGCAGTT GCGAACGACA
4141 AGTGGACAGA GTGAACCTCA AACCTTGCGA ACAGCACATT ATGCAGAGAA TTATGGGAGA
4201 GCAAGAGCAG TATGATAGTT ATGATATCAG ATCAACACGC TCTTCCGATC AGCAACAGCG
4261 GTGTTGCGAT GAACTCAACG AAATGGAGAA TACGACGCG TGATGTGTG AGGCTCTTCA
4321 GCAAATCATG GAAAACCAAT GCGATCGGCT CCAAGATCGA CAGATGGTGC AGCAGTTTAA
4381 GCGCGAGCTG ATGAATTTGC CACAACAGTG CAACTTTCGG GCTCCCCAGA GATGCGACCT
4441 CGATGTCAGC GGAGGGAGAT GCTAATTTTT ATCTGCAGG

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FIGURE 4

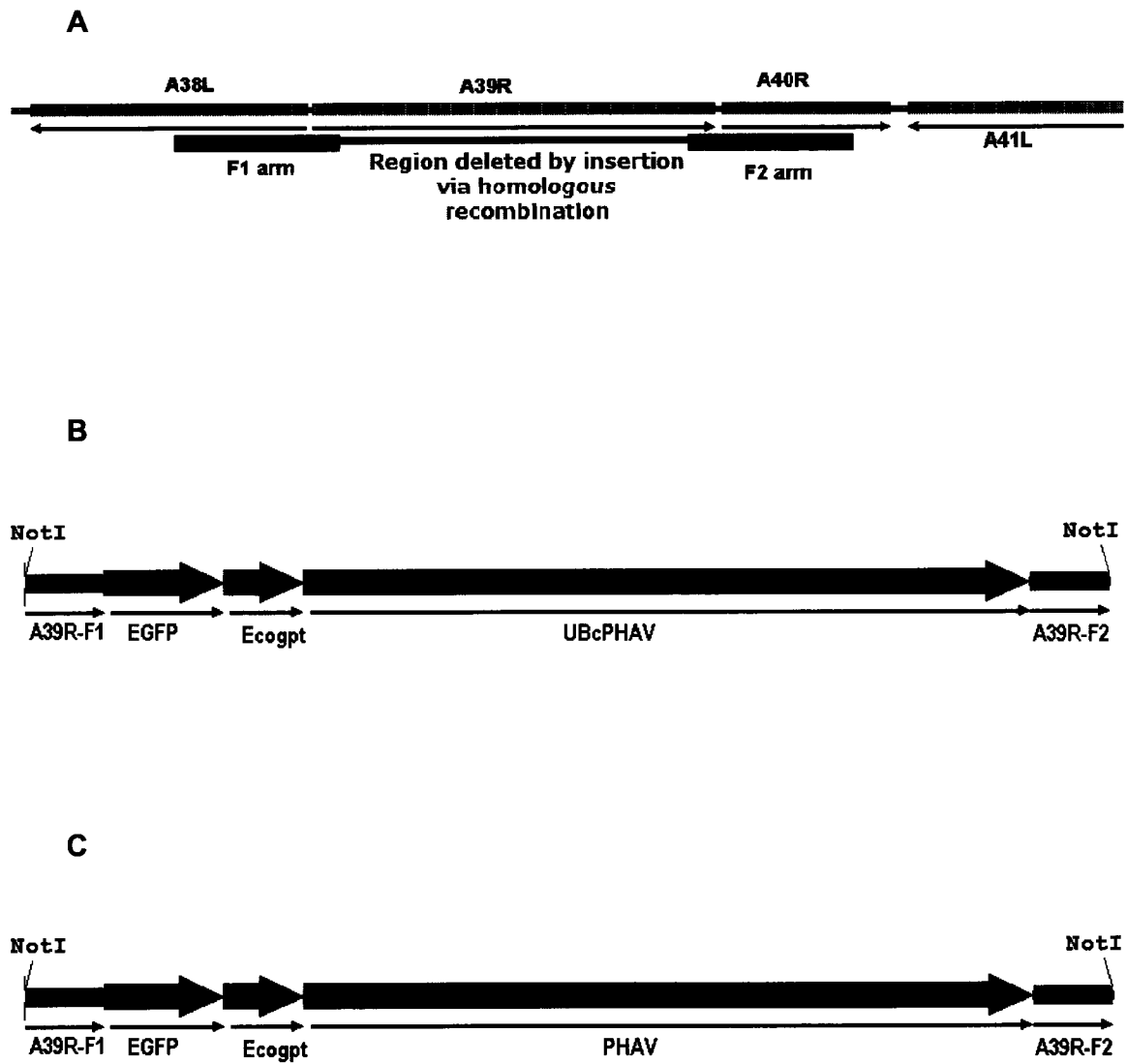


FIGURE 5***Homologous recombination cassette feature table***

Element	Description	Size
Not I	RE site flanking homologous recombination cassette	8 bp
A39R-F1	Homologous recombination arm 1	501 bp
EGFP	Enhance Fluorescent Green Protein expression cassette consisting of a vaccinia early/late promoter followed by the protein coding sequence of EGFP and terminated with the poxvirus early transcriptional stop sequence (TTTTTNT)	771 bp
Ecogpt	E. coli guanine phosphoribosyltransferase expression cassette consisting of a vaccinia early/late promoter followed by the protein coding sequence of Ecogpt and terminated with the poxvirus early transcriptional stop sequence (TTTTTNT)	510 bp
prPs	Vaccinia strong synthetic early/late promoter	44 bp
UbcPHAVag Or PHAV	Peanut hypoallergen vaccine antigen expression cassette UBc.PHAV PHAV	4705bp 4480 bp
A39R-F2	Homologous recombination arm 2	501 bp
Not I	RE site flanking homologous recombination cassette	8 bp

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FIGURE 6***Ubiquitinated Peanut HypoAllergen Vaccine (UBc.PHAV) antigen homologous recombination cassette***

LOCUS UBcPHAV HR Cassette 7010 bp DNA linear SYN 10-MAR-2014

DEFINITION UBcPHAV Homologous Recombination Cassette

COMMENT Textco/File created by Gene Construction Kit (TextcoBioSoftware)

ORGANISM Vaccinia virus Copenhagen strain

FEATURES Location/Qualifiers

CDS 1849..6486
/label="UBcPHAV"
/note="Ubiquitinated PHAV antigen protein coding sequence"

misc_feature 9..509
/label="A39R-F1"
/note=" VACV-COP A39R homologous recombination arm F1"

misc_feature 517..560
/label="prPS"
/note=" Vaccinia virus early/late promoter"

CDS 561..1280
/label="EGFP"
/note="Enhanced Green Fluorescent Protein coding sequence"

misc_feature 1281..1287
/label="T5NT"
/note=" Poxvirus early transcriptional stop sequence"

misc_feature 1288..1331
/label="prPs"
/note="Vaccinia virus early/late promoter"

CDS 1332..1790
/label="Ecogpt"
/note="Ecogpt protein coding sequence: E. coli guanine phosphoribosyltransferase"

misc_feature 1791..1797
/label="T5NT"
/note=" Poxvirus early transcriptional stop sequence"

misc_feature 1805..1848
/label="prPs"
/note="Vaccinia virus early/late promoter"

CDS 1849..2076
/label="UBc"
/note=" Human Ubiquitin C monomer. Terminal amino acid changed [A]"

CDS 2077..3951
/label="arah1"
/note=" Peanut allergen ara h 1 protein coding sequence"

CDS 3952..4464
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/note=" Peanut allergen ara h 2 protein coding sequence"

CDS 4465..6051
/label="arah3"
/note="Peanut allergen ara h 3 protein coding sequence"

CDS 6052..6486
/label="arah6"
/note=" Peanut allergen ara h 6 protein coding sequence"

misc_feature 6487..6493
/label="T5NT"
/note=" Pox virus early transcriptional stop"

misc_feature 6502..7002
/label="A39R-F2"
/note=" VACV-COP A39R homologous recombination arm F2"

FIGURE 6 (CONTINUED)

ORIGIN

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1  GCGGCCGCaatgcccgtaaagataaacatcaacattgttttggaatcattaaccaatta
61  gtatgaagttgaactaatttcacagtagattttattccagtggtatcctcgcatgtataa
121  gtacctggtgaagatatctttatattctataatcaatgagacatcactatccgataacgaa
181  tgaagtctagcactagtagtccattttactttaattgtcgtcttggaagttttattataa
241  gttaaaatatcatggttatccaatttccatctaatactttgtcggattatctatagta
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361  acaaccaacgtatagaggtatatcaacgatattctaactcttgacattttttatttattt
421  aaaatgatacctttgttattttattttattctattttgttaacggtattgaatggcataag
481  tttgaaacgagtgaagaaataatttctacGCGCGCCcaAA AAATTGAAAT TTTATTTTTT
541  TTTTTTGGAA TATAAATAAat ATGGTGAGCA AGGGCGAGGA GCTGTTCAAC GGGGTGGTGC
601  CCATCTGGT CGAGCTGGAC GGCAGCTAA ACGGCCACAA GTTCAGCGTG TCCGGCGAGG
661  GCGAGGGCGA TGCCACCTAC GGCAAGCTGA CCCTGAAGTT CATCTGCACC ACCGGCAAGC
721  TGCCCGTGCC CTGGCCCAAC CTCGTGACCA CCCTGACCTA CGCGGTGCAG TGCTTCAGCC
781  GCTACCCCGA CCACATGAAG CAGCAGACT TCTTCAAGTC CGCCATGCCC GAAGGCTACG
841  TCCAGGAGCG CACCATCTTC TCAAGGACG ACGGCAACTA CAAGACCCGC CCGAGGTGA
901  AGTTCGAGGG CGACACCCTG GTGAACCGCA TCGAGCTGAA GGGCATCGAC TTCAAGGAGG
961  ACGGCAACAT CCTGGGGCAC AAGCTGGAGT ACAACTACAA CAGCCACAAC GTCTATATCA
1021  TGGCCGACAA GCAGAAGAAC GGCATCAAGG TGAACCTCAA GATCCGCCAC AACATCGAGG
1081  ACGGCAGCGT GCAGCTCGCC GACCACCTACC AGCAGAACAC CCCCATCGGC GACGGCCCCG
1141  TGCTGCTGCC CGACAACCAC TACCTGAGCA CCCAGTCCGC CCTGAGCAAA GACCCCAACG
1201  AGAAGCGCGA TCACATGGTC CTGCTGGAGT TCGTGACCGC CGCCGGGATC ACTCTCGGCA
1261  TGGACGAGCT GTACAAGTAA tttttatcaA AAAATTGAAA TTTTATTTTT TTTTTTGGGA
1321  ATATAAATAA tATGAGCGAA AAATACATCG TCACCTGGGA CATGTTGCAG ATCCATGCAC
1381  GTAAACTCGC AAGCCGACTG ATGCCTTCTG AACAATGGAA AGGCATTATT GCCGTAGGCC
1441  GTGGCGGTCT GGTACCGGGT GCGTTACTGG CGCGTGAAC TGGTATTCTG CATGTCGATA
1501  CCGTTTGTAT TTCCAGCTAC GATCAGACA ACCAGCGCGA GCTTAAAGTG CTGAAACCGG
1561  CAGAAGCGCA TGGCGAAGGC TTCATCGTTA TTGATGACCT GGTGGATACC GGTGGTACTG
1621  CGGTTGCGAT TCGTGAAATG TATCCAAAAG CGCACTTTGT CACCATCTTC GCAAAACCGG
1681  CTGGTCTGCC GCTGGTTGAT GACTATGTTG TTGATATCCC GCAAGATACC TGGATTGAAC
1741  AGCCGTGGGA TATGGGCGTC GTATTCTGTC CGCCAATCTC CGGTCTGCTA tttttatATT
1801  TTAACAaaaa ATTGAAATTT TATTTTTTTT TTTTGAATA TAAATAaAT GCAGATCTTT
1861  GTGAAAACAC TCACGGGAAA AACTATAACT CTTGAGGTGG AGCCCTCTGA CACAATCGAA
1921  AATGTGAAAG CCAAGATCCA AGATAAGGAA GGCACTCCCTC CAGACCAGCA ACGGCTCATC
1981  TTTGCGGGCA AACAACCTGA GGATGGGCGC ACTCTCAGTG ATTACAATAT TCAAAAGGAA
2041  TCTACACTGC ACCTGGTTCT TAGGCTGCGG GGAGCCCGAG GCAGAGTCAG CCCTCTGATG
2101  CTGCTGTTGG GGATCTTGGT TCTTGCACTC GTTTCAGCCA CACATGCCAA GTCCAGCCCA
2161  TACCAGAAAA AGACCGAGAA CCCATGTGCT CAGCGGTGCC TCCAGTCATG TCAGCAGGAA
2221  CCCGATGACC TCAAGCAAAA GCGTGTGAA AGCAGATGTA CGAAACTGGA ATACGACCCC
2281  AGATGCGTGT ACGATCCACG AGGCCATACT GGCACCACCA ATCAAAGATC ACCACCTGGC
2341  GAGCGAACCA GGGGACGACA GCCAGGGGAT TACGATGACG ATAGACGACA GCCTCGCCGG
2401  GAAGAGGGTG GCGCTGGGG TCCAGCCGGT CCCAGAGAGC GAGAACGGGA AGAGGACTGG
2461  CGCCAACCCC GGGAGGACTG GCGCAGACCT TCACACCAGC AGCCCCGGAA AATACGCCCC
2521  GAGGCGAGAG AGGGTGAACA GGAATGGGGA ACCCCTGGCA GTCACGTCAG GGAAGAAACC
2581  AGCCGGAACA ACCCCTTCTA TTTCCCTCC CGGAGGTTTA GCACTCGGTA CGGGAACCAA
2641  AACGGACGCA TTCGCGTACT TCAGAGATTT GATCAACGCT CACGGCAGTT CCAGAACCTT
2701  CAAAACCATC GGATTGTTCA GATCGAGGCC AAACCAACA CTTTGGTTCT GCCAAAACAT
2761  GCTGATGCAG ACAACATACT GGTGATACAG CAGGGTCAAG CCACAGTGAC AGTAGCCAAT
2821  GGGAAACAATC GCAAAATCAT CAATCTCGAT GAGGGACACG CACTGAGGAT CCCTTCTGGC
2881  TTTATCTCCT ATATACTGAA TCGGCACGAC AATCAAAATC TCAGGGTTGC TAAGATCTCT
2941  ATGCCAGTCA ACACTCCGGG TCAGTTCGAG GATTCTTTT CCGCGTCTCT ACGGGACCAG
3001  TCTAGTTATC TTCAAGGATT CAGCAGAAAC ACCTTGAAG CGGCCTTTAA CGCCGAGTTT
3061  AACGAGATCA GCGGGGTGCT TCTCGAGGAG AACGCTGGCG GGGAACAGGA GGAGAGAGGC
3121  CAACGGCGGT GGTCTACCA GTCAGTGAG AACAATGAGG GCGTGATCGT CAAGGTATCT
3181  AAGGAGCATG TCGAGGAAC TACCAACAT GCAAAGTCCG TTTCCAAGAA AGGCTCCGAG
3241  GAGGAAGGGG ACATTACGAA TCCGATCAAC CTTCCGGAGG GCGAGCCGGA TCTGTCAAAT
3301  AACTTTGGAA AACTCTTCGA AGTCAAGCCC GACAAAAGA ATCCGCAGTT GCAAGATCTG
3361  GACATGATGC TCACGTGTGT CGAGATTAAG GAAGGAGCAC TGATGTTGCC TCACTTAAC
3421  TCCAAAGCCA TGGTGATAGT CGTAGTAAAC AAAGGAACCG GCAATCTGGA GTTGGTGGCT
3481  GTCCGAAAGG AACAACAGCA AAGAGGGCGG AGGGAAGAAG AGGAAGATGA GGACGAGGAG

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FIGURE 6 (CONTINUED)

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3541 GAGGAGGGAT CAAACCGGGA GGTACGCCGA TACACAGCGA GGCTGAAAGA GGGAGACGTG

3601 TTTATCATGC CGGCAGCACA TCCTGTCGCT ATCAACGCCT CTAGCGAGCT CCATTTGCTG
3661 GGGTTCGGGA TCAATGCGGA GAACAATCAT CGCATTTTCC TGGCAGGCGA CAAGGACAAC
3721 GTTATTGACC AAATTGAGAA GCAAGCCAAG GACCTGGCCT TCCCTGGATC AGGTGAACAG
3781 GTCGAGAAGC TCATCAAAAA CCAGAAGGAA TCCCACTTTG TATCTGCCAG ACCACAGTCA
3841 CAGTCCCAGA GCCCTCTAG TCCCGAGAAG GAGAGCCCCG AAAAGGAAGA TCAAGAGGAG
3901 GAGAACCAGG GTGGAAAGGG CCCACTGCTT TCCATTCTCA AAGCCTTCAA TGCTAAGCTG
3961 ACAATATTGG TGGCACTGGC ACTGTTCCCT CTGCTGCAC ACGCGTCAGC CCGGCAGCAG
4021 TGGGAATTGC AGGGCGATCG AAGGTGTCAG TCACAGCTGG AGAGGGCGAA CCTCCGCTT
4081 TGTGAACAGC ACCTGATGCA GAAGATTGAG CGGGACGAGG ATTCTTACGG GCGAGATCCT
4141 TACAGTCCCT CCCAAGATCC ATATAGCCCG TCTCAAGACC CAGATCGCAG GGACCCATAT
4201 AGCCCCAGCC CCTATGATCG AAGAGGTGCC GGAAGCAGCC AGCATCAGGA AAGGTGCTGC
4261 AATGAGCTGA ACGAGTTCGA GAACAACCAG AGATGTATGT GCGAGGCTCT GCAGCAGATT
4321 ATGGAAAATC AATCTGACCG GCTGCAGGGA CGGCAGCAGG AGCAGCAGTT CAAAAGGGAG
4381 ATCCGCAACC TTCCACAGCA CTGCGGTTTG CGCGCACCTC AGCGCTCGCA CTTGGAGGTG
4441 GAAAGCGGAG GTAGAGACAG ATACGCGAAG CTGCTGGAAC TCAGCTTCTG TTTCTGTTTC
4501 CTGGTACTCG GCGCTTCATC AATATCTTTT AGGCAGCAGC CAGAGGAAAA TGCCTGCCAG
4561 TTCCAACGGC TGAACGCTCA GCGACCAGAC AATAGGATCG AATCAGAAAG TGGATACATC
4621 GAGACTTGGA ACCCGAATAA CCAGGAGTTC GAATGTGCAG GCGTGGCACT GTCTCGCCTT
4681 GTTCTCCGAC GCAATGCGCT CAGGCGCCCA TTCTATTCCA ATGCACCCCA AGAAATCTTT
4741 ATCCAACAGG GCAGAGGGTA CTTGCGGCTG ATCTTTCCCG GCTGTCCCGG GCACTATGAG
4801 GAACCCACAC CACAGGGCAG AAGGAGCCAG AGCCAGCGGC CTCCCGGAG ATTGCAAGGG
4861 GAGGATCAGA GCCAGCAGCA GAGAGATTCT CATCAGAAAG TACATAGGTT CGATAGGGT
4921 GACCTGATAG CTGTGCCAAC CGGTGTTGCC TTTTGGTTGT ATAATGACCA CGACACAGAC
4981 GTGGTGGCTG TGTCTCTGAC CGATACAAAC AACAATGACA ATCAGCTTGA TCAGTTCCCT
5041 AGGCGCTTTA ACCTGGCTGG CAACACCGAA CAGGAGTTCT TGAGATATCA GCAGCAGTCT
5101 AGGCAGTCTA GGAGGAGGTC CCTGCCATAC TCCCTTACA GCCCTCAGAG TCAGCCTAGG
5161 CAGGAAGAGA GAGAATTGAG TCCAGAGGC CAGCACTCTA GGCGGGAGCG GGCTGGGCAG
5221 GAGGAGGAAA ACGAAGGTGG CAATATCTTT AGCGCTTCA CTCCAGAGTT TCTGGAACAG
5281 GCATTCGAAG TAGATGACAG ACAGATCGTC CAGAACCCTA GGGGCGAGAC TGAATCAGAA
5341 GAGGAAGGGG CAATCGTGAC GGTGCGCGGA GGCTTGCGCA TCCTGTCCCC TGACCGCAAA
5401 CGCAGGGCCG ACGAGGAAGA AGAGTATGAC GAGGATGAAT ATGAATATGA TGAGGAGGAT
5461 CGAAGGCGCG GAAGGGGCAG TAGGGGACGA GGAACGGCA TAGAAGAAAC TATTTGTACC
5521 GCGTCCGCCA AGAAGAATAT TGGGCGAAAC CGCAGTCCCG ACATATACAA TCCTCAAGCC
5581 GGCAGCCTTA AAACCGCCAA CGATCTGAAC CTGTGATGCC TCCGCTGGCT GGGGCCAAGC
5641 GCCGAATATG GGAATCTGTA CCGAAATGCT CTGTTTGTGG CCCACTACAA TACAAATGCC
5701 CACTCTATTA TCTACGCCTT CAGAGGGAGG GCTCATGTGC AAGTGGTCGA CAGCAATGGG
5761 AATCGCGTGT ACGATGAGGA GCTCCAAGAA GGCATGTCC TTGTTGTGCC TCAGAAATTC
5821 GCAGTTGCGG GCAAAATCACA GAGTGAGAAC TTCGAGTACG TTGCCTTTAA GACCGATTCC
5881 AGACCCTCCA TTGCAAACCT GGCCGAGAG AACAGTGTTA TTGACAATCT GCCGAGGAA
5941 GTGGTTGCTA ACAGTTATGG GCTTCAGCGC GAACAGGCTC GGCAGCTGAA GAACAACAAT
6001 CCGTTCAAGT TTTTCGTCCC TCCATCCCAG CAGTCACCCA GAGCTGTGGC CGCCAAATCC
6061 ACTATTCTTG TGGCCCTCTT GGCACCTGTG CTGGTCGCCC ATGCTTCTGC TATGCGAAGG
6121 GAGAGAGGGC GCCAAGGTGA CTCAAGCAGT TGCGAACGAC AAGTGGACAG AGTGAACCTC
6181 AAACCTTGCG AACAGCACAT TATGCAGAGA ATTATGGGAG AGCAAGAGCA GTATGATAGT
6241 TATGATATCA GATCAACAGC CTCTTCCGAT CAGCAACAGC GGTGTTGCGA TGAACCTAAC
6301 GAAATGAGAG ATACGCAGCG GTGCATGTGT GAGGCTCTTC AGCAAATCAT GGAATAACCA
6361 TGCGATCGGC TCCAAGATCG ACAGATGGTG CAGCAGTTTA AGCGCGAGCT GATGAATTTG
6421 CCACAACAGT GCAACTTTTC GGCTCCCCAG AGATGCGACC TCGATGTCAG CGGAGGGAGA
6481 TGCTAATTTT TATCCTGCAG Gacttcgaaaccggtatattatagcagatatagggatagga
6541 gtaggaatgccacaaatgaaaaaataacttaaaatgtaatcttaatcgagtacaccacac
6601 gacaatgaacaaacctaagacagattatgctggttatgcttgctgcgtaatatgcggtct
6661 aattgtcggaattatattttacagcgacactattaaaagtgtagaacgtaaatagttca
6721 tacaccatcaatagataaaaacgataaaaagatgcataatattagagaagattgtcctactga
6781 ctggataagctataaataaaatgtatccatttatctactgatcgaaaaacctgggagga
6841 aggacgtaatacatgcaaagctctaaatccaaattcggatctaattaagatagagactcc
6901 aaacgagttaagttttttaagaagccttagacgaggctattgggtaggagaatccgaat
6961 attaaaccagacaacccccatataatttttagctaaaaatgcGCGGCCG

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FIGURE 7***Peanut HypoAllergen Vaccine (PHAV) antigen homologous recombination cassette***

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LOCUS  PHAV HR cassette          6785 bp    DNA        linear    SYN 10-MAR-2014
DEFINITION  PHAV homologous recombination cassette
ORGANISM  Vaccinia virus Copenhagen strain
COMMENT    Textco/File created by Gene Construction Kit (TextcoBioSoftware)
FEATURES             Location/Qualifiers
     CDS             1849..6261
                     /label="PHAV"
                     /note=" PHAV antigen protein coding sequence"
misc_feature         9..509
                     /label="A39R-F1"
                     /note=" VACV-COP A39R homologous recombination arm 1"
misc_feature         517..560
                     /label="prPs"
                     /note="Vaccinia virus early/late promoter"
     CDS             561..1280
                     /label="EGFP"
                     /note=" Enhanced Green Fluorescent Protein coding sequence"
misc_feature         1281..1287
                     /label="T5NT"
                     /note=" Poxvirus early transcriptional stop sequence"
misc_feature         1288..1331
                     /label="prPs"
                     /note=" Vaccinia virus early/late promoter"
     CDS             1332..1790
                     /label="Ecogpt"
                     /note="Ecogpt protein coding sequence: E. coli guanine
phosphoribosyltransferase"
misc_feature         1791..1797
                     /label="T5NT"
                     /note=" Poxvirus early transcriptional stop sequence"
misc_feature         1805..1848
                     /label="prPs"
                     /note=" Vaccinia virus early/late promoter"
     CDS             1849..3726
                     /label="arah1"
                     /note="Peanut allergen ara h 1 protein coding sequence"
     CDS             3727..4239
                     /label="arah2"
                     /note=" Peanut allergen ara h 2 protein coding sequence"
     CDS             4240..5826
                     /label="arah3"
                     /note="Peanut allergen ara h 3 protein coding sequence"
     CDS             5827..6261
                     /label="arah6"
                     /note=" Peanut allergen ara h 6 protein coding sequence"
misc_feature         6262..6268
                     /label="T5NT"
                     /note=" Pox virus early transcriptional stop"
misc_feature         6277..6777
                     /label="A39R-F2"
                     /note=" VACV-COP A39R homologous recombination arm 2"

ORIGIN
1  GCGGCCGCaatgcccgtaaagataaacatcaacattgtttgtaatcattaaaccaatta
61  gtatgaagttgaactaatttcacagtagattttattccagtgttatcctcgcatgtataa
121  gtacctggtaagatatctttatattctataatcaatgagacatcactatccgataacgaa
181  tgaagtctagcactagtagtgcatttacttaatatattgtcgtcttgaagttttattataa

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FIGURE 7 (CONTINUED)

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241 gttaaaaatcatggttatccaatttccatctaataactttgtcggattatctatagta
301 cacggaataatgatggtatcattacatgctgtataactctatggtctttgtagttgttata
361 acaaccaacgtatagaggtatatcaacgatattctaactcttgacattttttattttattt
421 aaaatgatacctttgttattttattttatttctattttgtacacggtattgaaatggcataag
481 tttgaaacgagtgaagaaataattttctacGCGCGCCcaAA AAATTGAAAT TTTATTTTTT
541 TTTTTTGGAA TATAAATAAT ATGGTGAGCA AGGGCGAGGA GCTGTTACC GGGGTGGTGC
601 CCATCTTGGT CGAGCTGGAC GGCGACGTAA ACGGCCACAA GTTCAGCGTG TCCGGCGAGG
661 GCGAGGGCGA TGCCACCTAC GGCAAGCTGA CCCTGAAGTT CATCTGCACC ACCGGCAAGC
721 TGCCCGTGCC CTGGCCCAACC CTCGTGACCA CCTGACCTA CGGCGTGCG TGCTTCAGCC
781 GCTACCCCGA CCACATGAAG CAGCACGACT TCTTCAAGTC CGCCATGCC GAAGGCTACG
841 TCCAGGAGCG CACCATCTTC TTCAAGGACG ACGGCAACTA CAAGACCCGC GCCGAGGTGA
901 AGTTCGAGGG CGACACCCTG GTGAACCGCA TCGAGCTGAA GGCATCGAC TTCAAGGAGG
961 ACGGCAACAT CCTGGGGCAC AAGCTGGAGT ACAACTACAA CAGCCACAAC GTCTATATCA
1021 TGGCCGACAA GCAGAAGAAC GGCATCAAGG TGAACCTCAA GATCCGCCAC AACATCGAGG
1081 ACGGCAGCGT GCAGCTCGCC GACCACTACC AGCAGAACAC CCCCATCGGC GACGGCCCCG
1141 TGCTGTGCGC CGACAACCAC TACCTGAGCA CCCAGTCCGC CCTGAGCAA GACCCCAACG
1201 AGAAGCGCGA TCACATGGTC CTGCTGGAGT TCGTGACCGC CGCCGGGATC ACTCTCGGCA
1261 TGGACGAGCT GTACAAGTAA tttttatcaA AAAATTGAAA TTTTATTTTT TTTTTTGGGA
1321 ATATAAATAA tATGAGCGAA AAATACATCG TCACCTGGGA CATGTTGCAG ATCCATGCAC
1381 GTAAACTCGC AAGCCGACTG ATGCCCTTCTG AACAATGGAA AGGCATTATT GCCGTAAGCC
1441 GTGGCGGTCT GGTACCGGGT GCGTTACTGG CCGGTGAAC TGGTATTCTG CATGTCGATA
1501 CCGTTTGTAT TTCCAGCTAC GATCACGACA ACCAGCGCGA GCTTAAAGTG CTGAAACGCG
1561 CAGAAGCGGA TGGCGAAGGC TTCATCGTTA TTGATGACCT GGTGGATACC GGTGGTACTG
1621 CCGTTTCGAT TCGTGAAATG TATCCAAAAG CGCACTTTGT CACCATCTTC GCAAAACCGG
1681 CTGGTCGTCC GCTGGTTGAT GACTATGTTG TTGATATCCC GCAAGATACC TGGATTGAAC
1741 AGCCGTGGGA TATGGGCGTC GTATTCTGTC CGCCAATCTC CGGTCGCTAA tttttatATT
1801 TTAACAaaaa ATTGAAATTT TATTTTTTTT TTTTGAATA TAAATAAtatgCGAGGCAGA
1861 GTCAGCCCTC TGATGCTGCT GTTGGGGATC TTGGTTCTTG CATCCGTTTC AGCCACACAT
1921 GCCAAGTCCA GCCCATACCA GAAAAAGACC GAGAACCCAT GTGCTCAGCG GTGCCTCCAG
1981 TCATGTCAGC AGGAACCCGA TGACCTCAAG CAAAAGGCGT GTGAAAGCAG ATGTACGAAA
2041 CTGGAATACG ACCCCAGATG CGTGTACGAT CCACGAGGCC ATACTGGCAG CACCAATCAA
2101 AGATCACCAC CTGGCGAGCG AACCAGGGGA CGACAGCCAG GGGATTACGA TGACGATAGA
2161 CGACAGCCTC GCCGGGAAGA GGGTGGGCGC TGGGGTCCAG CCGTCCCAG AGAGCGAGAA
2221 CGGGAAGAGG ACTGGCGCCA ACCCGGGGAG GACTGGCGCA GACCTTCACA CCAGCAGCCC
2281 CGGAAAATAC GCCCGGAGGG CAGAGAGGGT GAACAGGAAT GGGGAACCCC TGGCAGTCAC
2341 GTCAGGGAAG AAACCAGCCG GAACAACCCC TTCTATTTCC CCTCCCGGAG GTTTAGCACT
2401 CCGTACGGGA ACCAAACGG ACGCATTCG GTACTTCAGA GATTTGATCA ACCTCAGCG
2461 CAGTTCCAGA ACCTTCAAAA CCATCGGATT GTTCAGATCG AGGCCAAACC AAACACTTTG
2521 GTTCTGCCAA AACATGCTGA TGCAGACAAC ATACTGGTGA TACAGCAGGG TCAAGCCACA
2581 GTGACAGTAG CCAATGGGAA CAATCGCAAA TCATTCAATC TCGATGAGGG ACACGCACTG
2641 AGGATCCCTT CTGGCTTTAT CTCCTATATA CTGAATCGGC ACGACAATCA AAATCTCAGG
2701 GTTGCTAAGA TCTCTATGCC AGTCAACACT CCGGGTCAGT TCGAGGATTT CTTTCCCGCG
2761 TCCTCACGGG ACCAGTCTAG TTATCTTCAA GGATTCAGCA GAAACACCTT GGAAGCGGCC
2821 TTTAACGCCG AGTTTAACGA GATCAGGCGG GTGCTTCTCG AGGAGAACGC TGGCGGGGAA
2881 CAGGAGGAGA GAGGCCAAGC GCGGTGGTCT ACCAGGTCCA GTGAGAACAA TGAGGGCGTG
2941 ATCGTCAAGG TATCTAAGGA GCATGTCGAG GAACTGACCA AACATGCAAA GTCCGTTTCC
3001 AAGAAAGGCT CCGAGGAGGA AGGGGACATT ACGAATCCGA TCAACCTTCG GGAGGGCGAG
3061 CCGGATCTGT CAAATAACTT TGAAAAACTC TTCGAAGTCA AGCCCGACAA AAAGAATCCG
3121 CAGTTGCAAG ATCTGGACAT GATGCTCACG TGTGTCGAGA TTAAGGAAGG AGCACTGATG
3181 TTGCCTCACT TTAACCTCAA AGCCATGGTG ATAGTCGTAG TAAACAAAGG AACCGGCAAT
3241 CTGGAGTTGG TGGCTGTCCG AAAGGAACAA CAGCAAAGAG GCGGAGGGGA AGAAGAGGAA
3301 GATGAGGACG AGGAGGAGGA GGGATCAAAC CGGGAGGTAC GCCGATACAC AGCGAGGCTG
3361 AAAGAGGGAG ACGTGTTTAT CATGCCGGCA GCACATCTG TCGCTATCAA CGCCTCTAGC
3421 GAGCTCCATT TGCTGGGGTT CGGGATCAAT GCGGAGAACA ATCATCGCAT TTTCCTGGCA
3481 GGCACAAGG ACAACGTTAT TGACCAAAAT GAGAAGCAAG CCAAGGACCT GGCCTTCCCT
3541 GGATCAGGTG AACAGGTCGA GAAGCTCATC AAAAACCAGA AGGAATCCCA CTTTGTATCT
3601 GCCAGACCAC AGTCACAGTC CCAGAGCCCC TCTAGTCCCG AGAAGGAGAG CCCCGAAAAG
3661 GAAGATCAAG AGGAGGAGAA CCAGGTGGA AAGGGCCAC TGCTTTCCAT TCTCAAAGCC
3721 TTCAATGCTA AGCTGACAAAT ATTGGTGGCA CTGGCACTGT TCCTTCTTGC TGCACACGCG
3781 TCAGCCCGGC AGCAGTGGGA ATTGCAGGGC GATCGAAGGT GTCAGTCACA GCTGGAGAGG

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FIGURE 7 (CONTINUED)

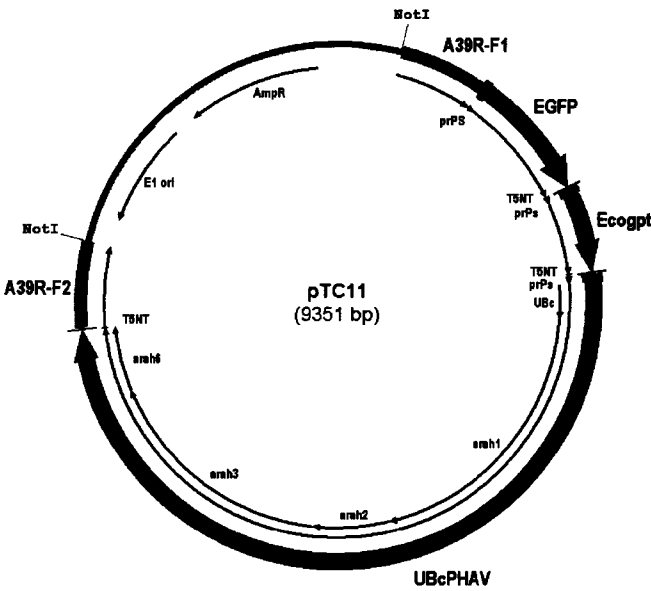
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3901 TACGGGCGAG ATCCTTACAG TCCCTCCCAA GATCCATATA GCCCGTCTCA AGACCCAGAT
3961 CGCAGGGACC CATATAGCCC CAGCCCCTAT GATCGAAGAG GTGCCGGAAG CAGCCAGCAT
4021 CAGGAAAGGT GCTGCAATGA GCTGAACGAG TTCGAGAACA ACCAGAGATG TATGTGCGAG
4081 GCTCTGCAGC AGATTATGGA AAATCAATCT GACCGGCTGC AGGGACGGCA GCAGGAGCAG
4141 CAGTTCAAAA GGGAGCTCCG CAACCTTCCA CAGCAGTGCG GTTTGCGCGC ACCTCAGCGC
4201 TGCGACTTGG AGGTGGAAG CGGAGGTAGA GACAGATACG CGAAGCTGCT GGAACTCAGC
4261 TTCTGTTTCT GTTTCCTGGT ACTCGGCGCT TCATCAATAT CTTTtaggca GCAGCCAGAG
4321 GAAAATGCCT GCCAGTTCCA ACGGCTGAAC GCTCAGCGAC CAGACAATAG GATCGAATCA
4381 GAAGGTGGAT ACATCGAGAC TTGGAACCCG AATAACCAGG AGTTCGAATG TGCAGGCGTG
4441 GCACTGTCTC GCCTTGTTCT CCGACGCAAT GCGCTCAGGC GCCCATTCTA TTCCAATGCA
4501 CCCCAGAAA TCTTTATCCA ACAGGGCAGA GGGTACTTCG GGCTGATCTT TCCCGGCTGT
4561 CCCCggcact ATGAGGAACC CCACACACAG GGCAGAAGGA GCCAGAGCCA CGCGCCTCCC
4621 CGGAGATTGC AAGGGGAGGA TCAGAGCCAG CAGCAGAGAG ATTCTCATCA GAAAGTACAT
4681 AGGTTTCGATG AGGTGACCT GATAGCTGTG CCAACCGGTG TTGCCTTTTG GTTGTATAAT
4741 GACCACGACA CAGACGTGGT GGCTGTGTCT CTGACCGATA CAAACAACAA TGACAATCAG
4801 CTTGATCAGT TCCCTAGGCG CTTTAACTTG GCTGGCAACA CCGAACAGGA GTTCTTGAGA
4861 TATCAGCAGC AGTCTAGGCA GTCTAGGAGG AGGTCCCTGC CATACTCCCC TTACAGCCCT
4921 CAGAGTCAGC CTAGGCAGGA AGAGAGAGAA TTCAGTCCCA GAGGCCAGCA CTCTAGGCGG
4981 GAGCGGGCTG GGCAGGAGGA GGAAAACGAA GGTGGCAATA TCTTTAGCGG CTTACTCCA
5041 GAGTTTCTGG AACAGGCAT CCAAGTAGAT GACAGACAGA TCGTCCAGAA CCTTAGGGGC
5101 GAGACTGAAT CAGAAGAGGA AGGGGCAATC GTGACGGTGC GCGGAGGCTT GCGCATCCTG
5161 TCCCCTGACC GCAAACGCAG GGCCGACGAG GAAGAAGAGT ATGACGAGGA TGAATATGAA
5221 TATGATGAGG AGGATCGAAG GCGCGGAAGG GGCAGTAGGG GACGAGGGAA CGGCATAGAA
5281 GAAACTATTT GTACCGCGTC GCCTAAGAAG AATATTGGGC GAAACCGCAG TCCCAGACATA
5341 TACAATCCTC AAGCCGGCAG CCTTAAACC GCCAACGATC TGAACCTGCT GATCCTCCGC
5401 TGGCTGGGGC CAAGCGCCGA ATATGGGAAT CTGTACCGAA ATGCTCTGTT TGTGGCCAC
5461 TACAATACAA ATGCCCACTC TATTATCTAC CGCTCAGAG GGAGGGCTCA TGTGCAAGTG
5521 GTCGACAGCA ATGGGAATCG CGTGACGAT GAGGAGCTCC AAGAAGGGCA TGTCTTGTT
5581 GTGCCTCAGA ATTTGCGAGT TGCGGGCAAA TCACAGAGTG AGAACTTCCA GTACGTGACC
5641 TTTAAGACCG ATTCCAGACC CTCCATTGCA AACCTGGCCG GAGAGAACAG TGTATTGAC
5701 AATCTGCCGG AGGAAGTGGT TGCTAACAGT TATGGGCTTC AGCGCGAACA GGCTCGGCAG
5761 CTGAAGAACA ACAATCCGTT CAAGTTTTTC GTCCCTCCAT CCCAGCAGTC ACCCAGAGCT
5821 GTGGCCGCCA AATCCACTAT TCTTGTGGCC CTCTTGGCAC TCGTGCTGGT CGCCCATGCT
5881 TCTGCTATGC GAAGGGAGAG AGGGCGCCAA GGTGACTCAA GCAGTTGCCA ACGACAAGTG
5941 GACAGAGTGA ACCTCAAACC TTGCGAACAG CACATTATGC AGAGAATTAT GGGAGAGCAA
6001 GAGCAGTATG ATAGTTATGA TATCAGATCA ACACGCTCTT CCGATCAGCA ACAGCGGTGT
6061 TGCGATGAAC TCAACGAAAT GGAGAATACG CAGCGGTGCA TGTGTGAGGC TCTTCAGCAA
6121 ATCATGGAAA ACCAATGCGA TCGGCTCCAA GATCGACAGA TGGTGCAGCA GTTTAAGCGC
6181 GAGCTGATGA ATTTGCCACA ACAGTGCAAC TTTCGGGCTC CCCAGAGATG CGACCTCGAT
6241 GTCAGCGGAG GGAGATGCTA ATTTTATCC TGCAGGacttcgaaaccgttatttatagca
6301 gatatagggataggagtaggaatgccacaaatgaaaaaataacttaaaatgtaatcttaa
6361 tcgagtacaccacacgacaatgaacaaacctaaagacagattatgctggttatgcttgctg
6421 cgtaatatgcggtctaattgtcggaattattttacagcgacactattaaaagttgtaga
6481 acgtaaatagttcatcacccatcaatagataaaacgataaaagatgcatatattagaga
6541 agattgtcctactgactggataagctataataaatgtatccatttatctactgatcg
6601 aaaaacctgggaggaaggacgtaatacatgcaaagctctaaatccaaattcggtatcta
6661 taagatagagactccaaacgagtttaagtttttaagaagccttagacgaggctattgggt
6721 aggagaatccgaaatattaaaccagacaaccccatataattttatagctaaaaatgcGCG
6781 GCCGC

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FIGURE 8

A



B

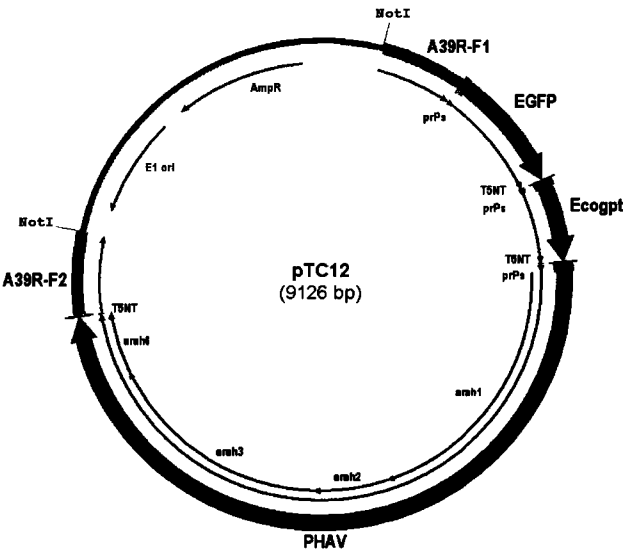
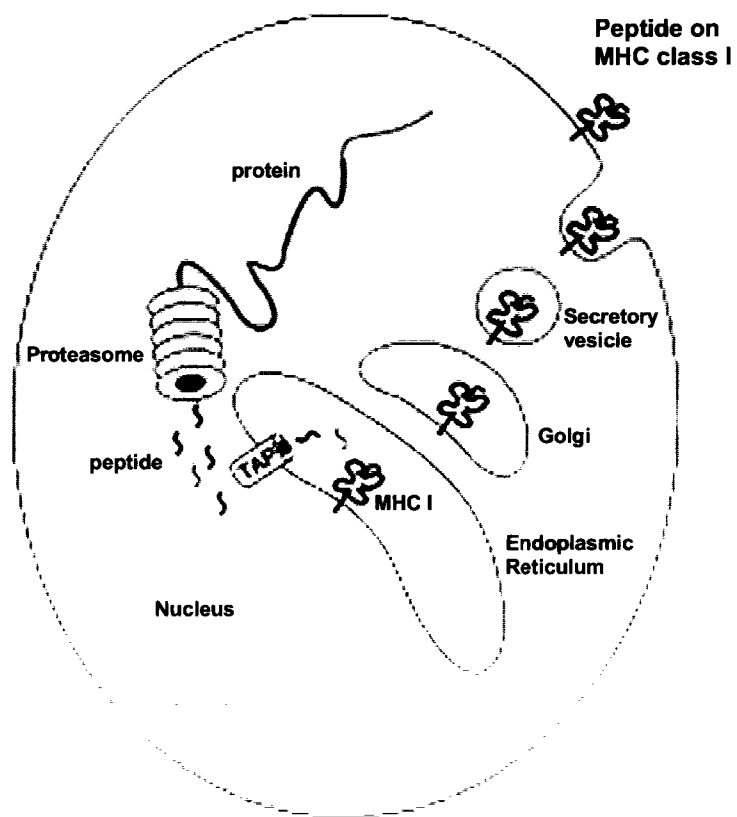


FIGURE 9

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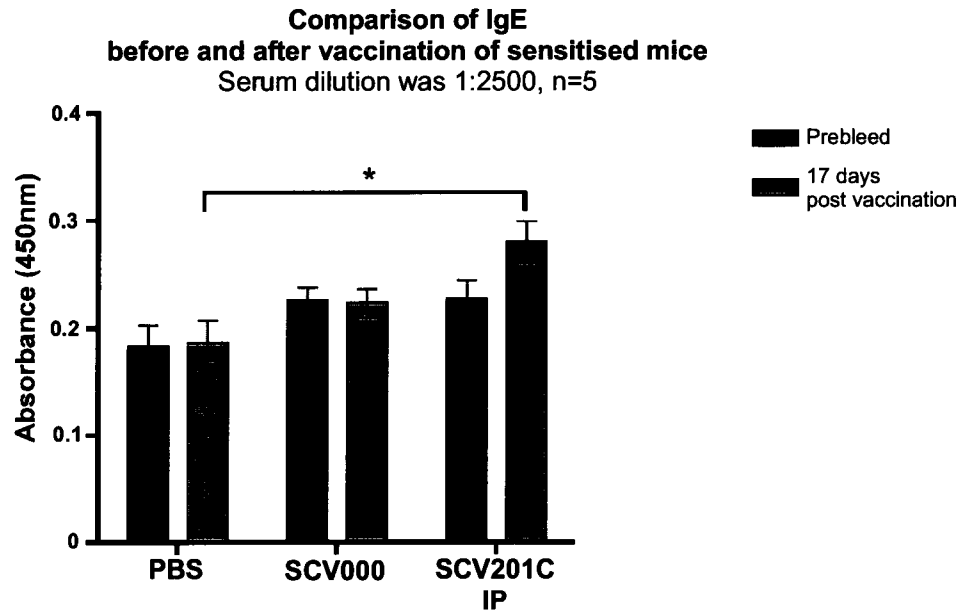
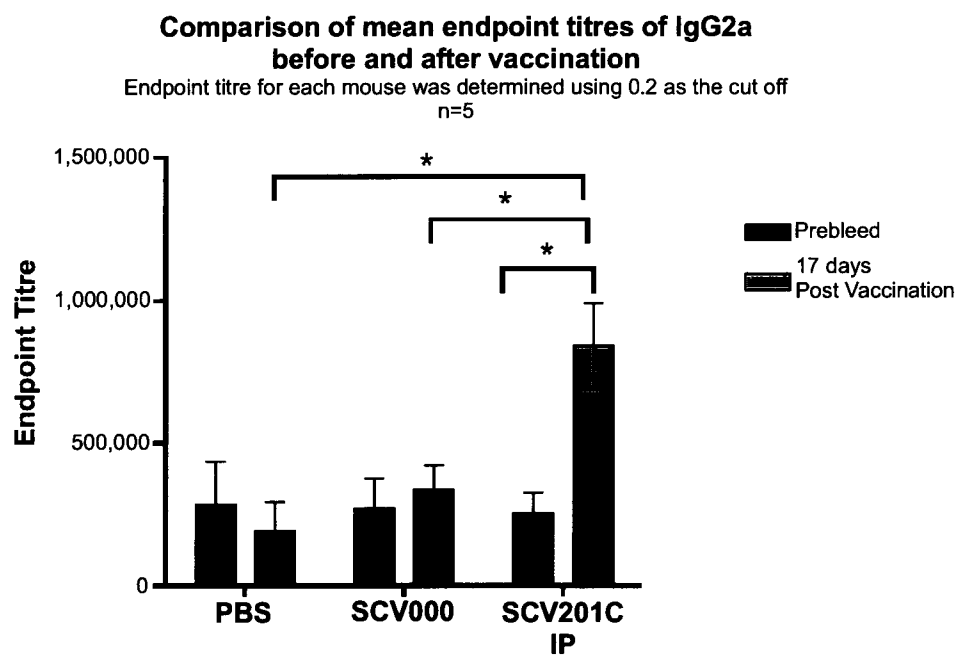
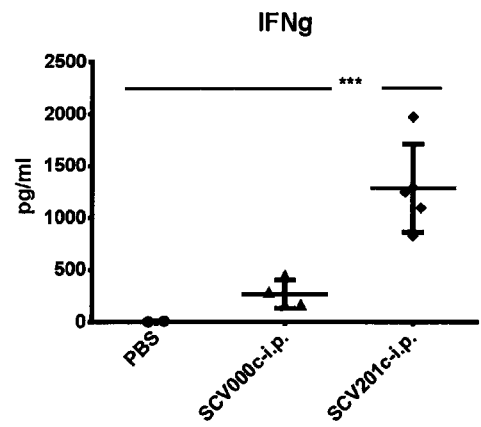
FIGURE 10**A****B**

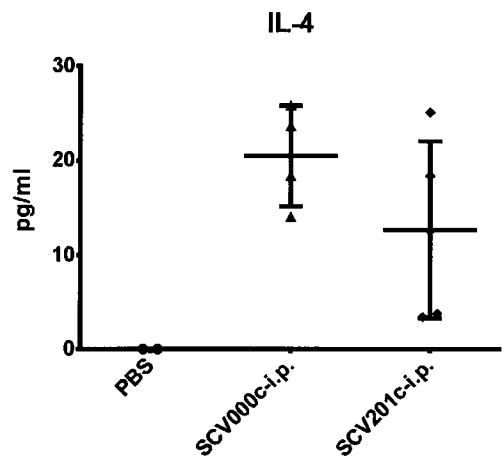
FIGURE 11

A



Group B is significantly greater than group A ($p < 0.005$)

B



C

