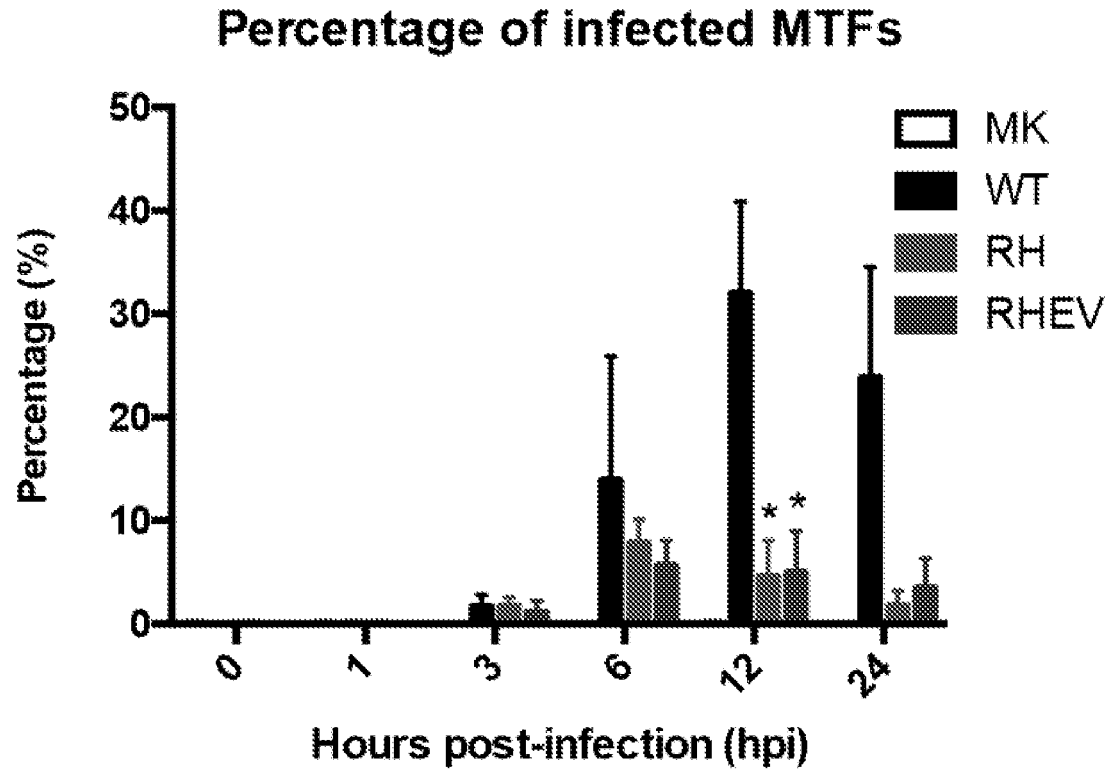


FIG. 1

(A)



(B)

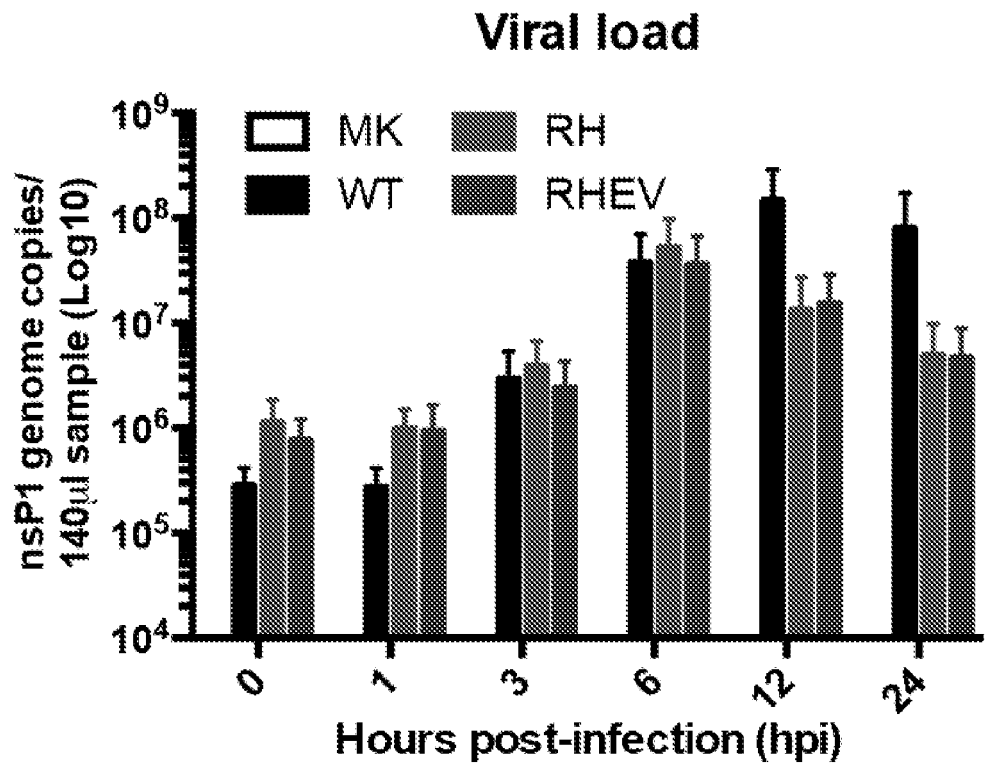
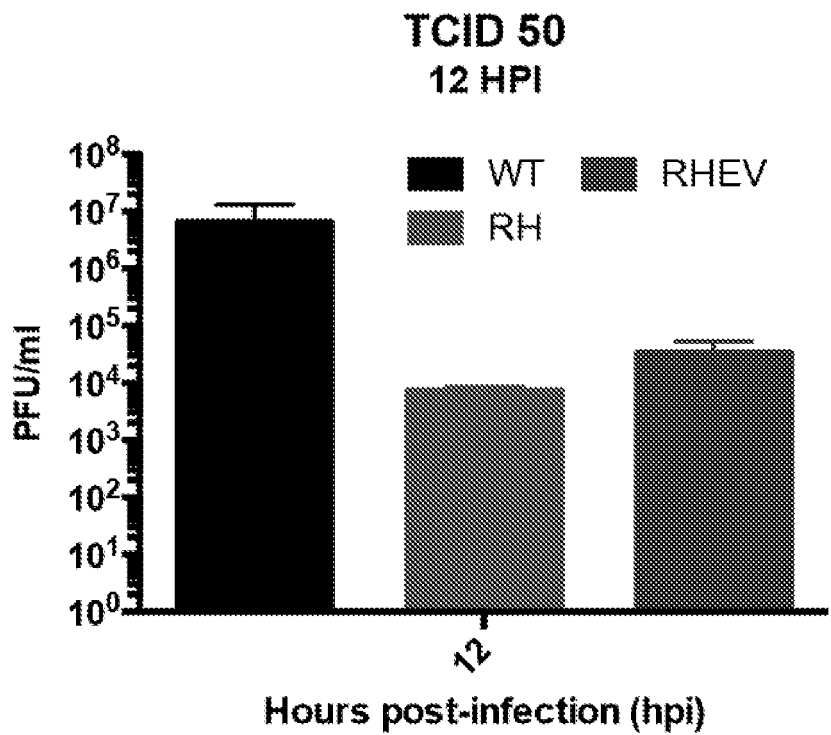
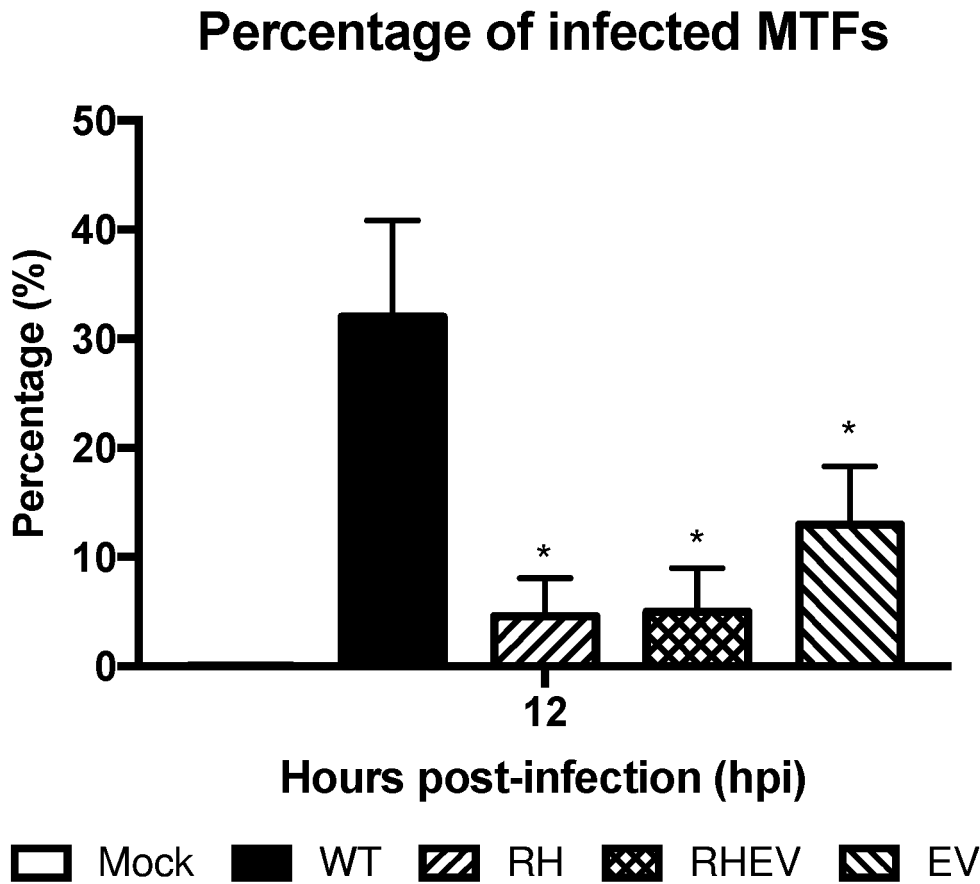


FIG. 1 (CONTINUED)

(C)



(D)



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FIG. 1 (CONTINUED)

(E)

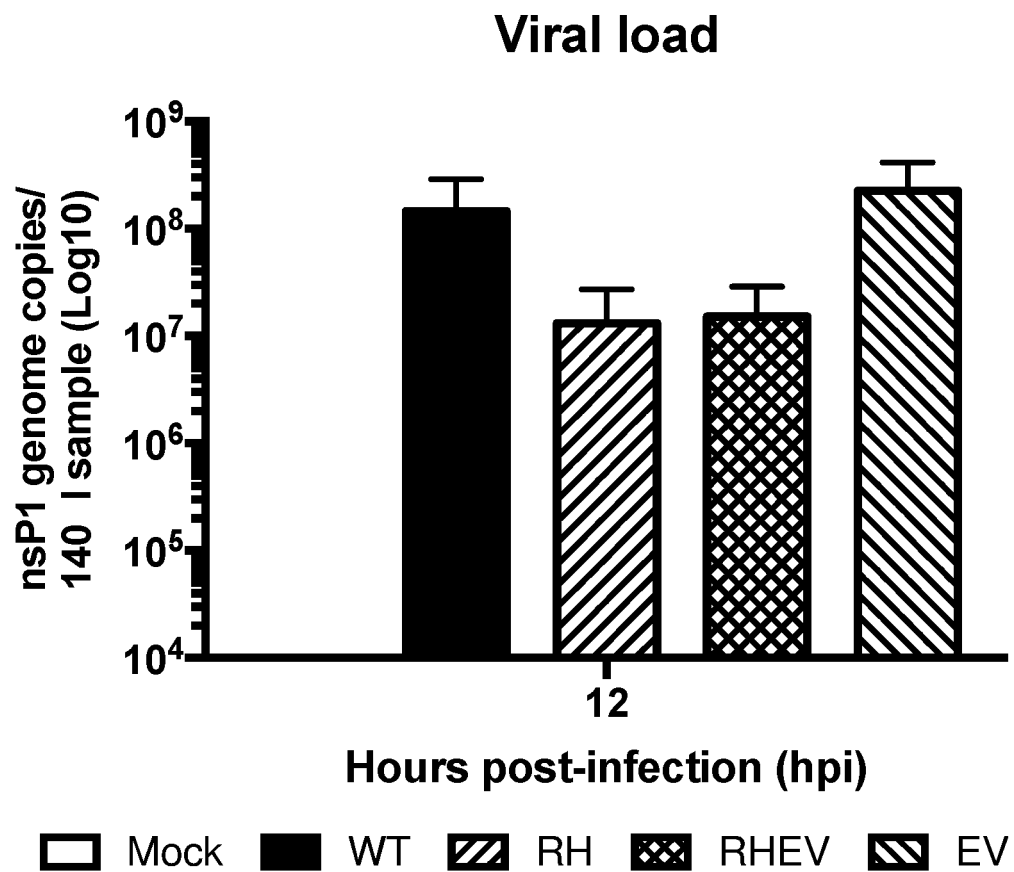
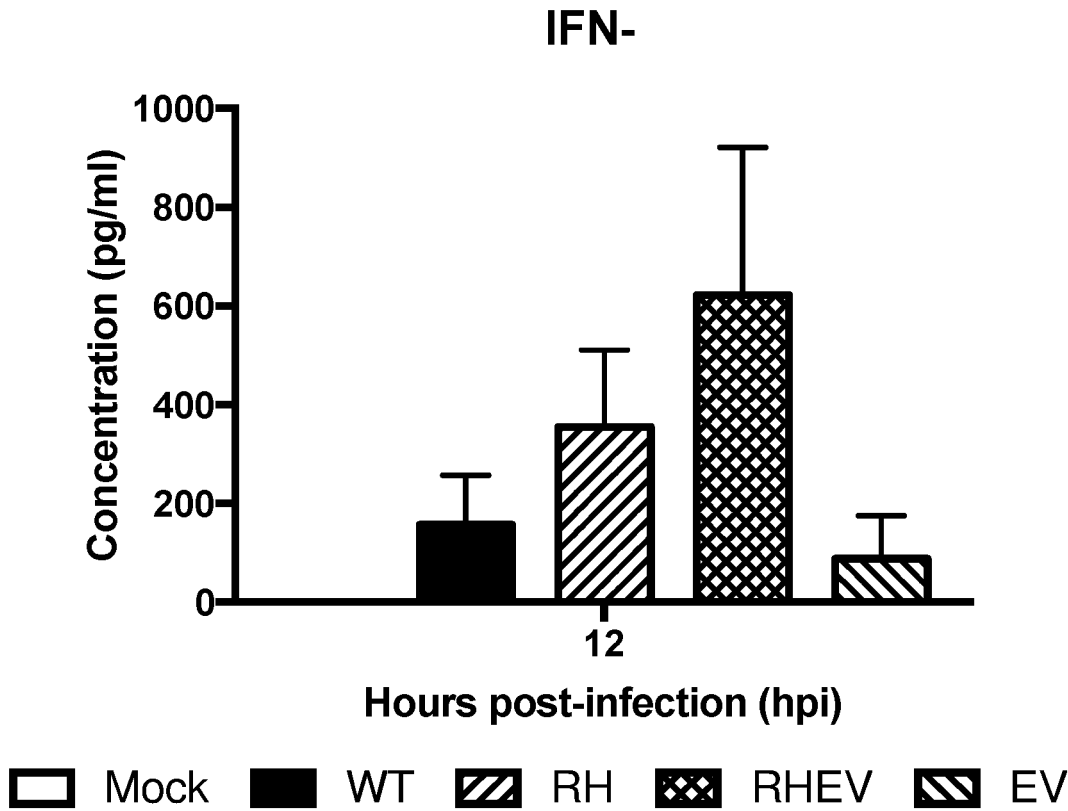


FIG. 2

(A)



(B)

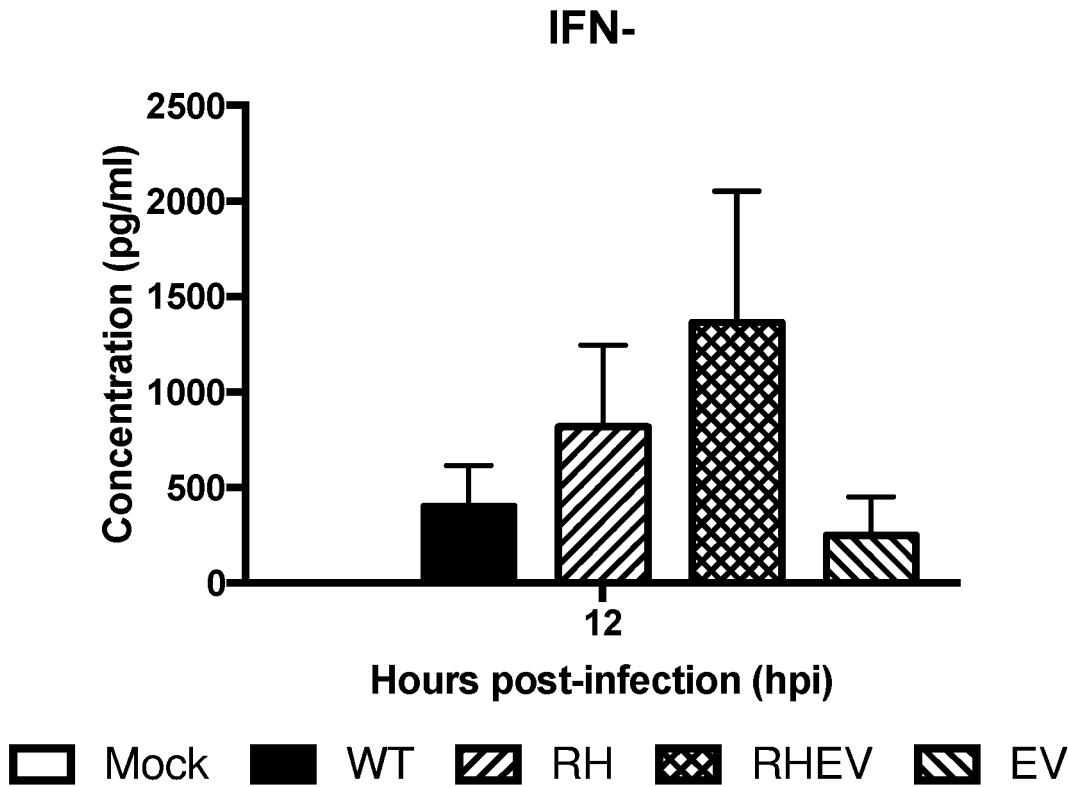


FIG. 3

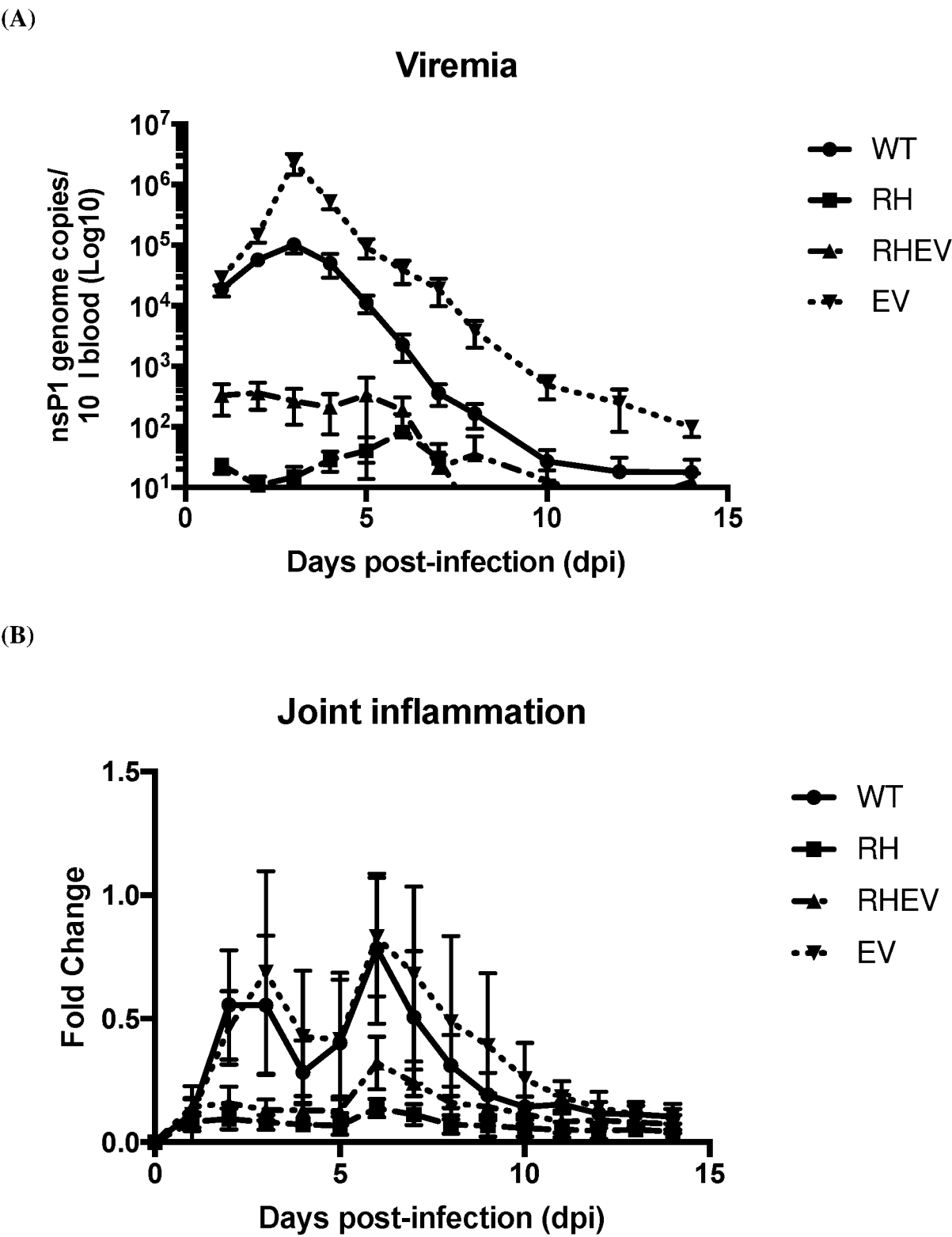
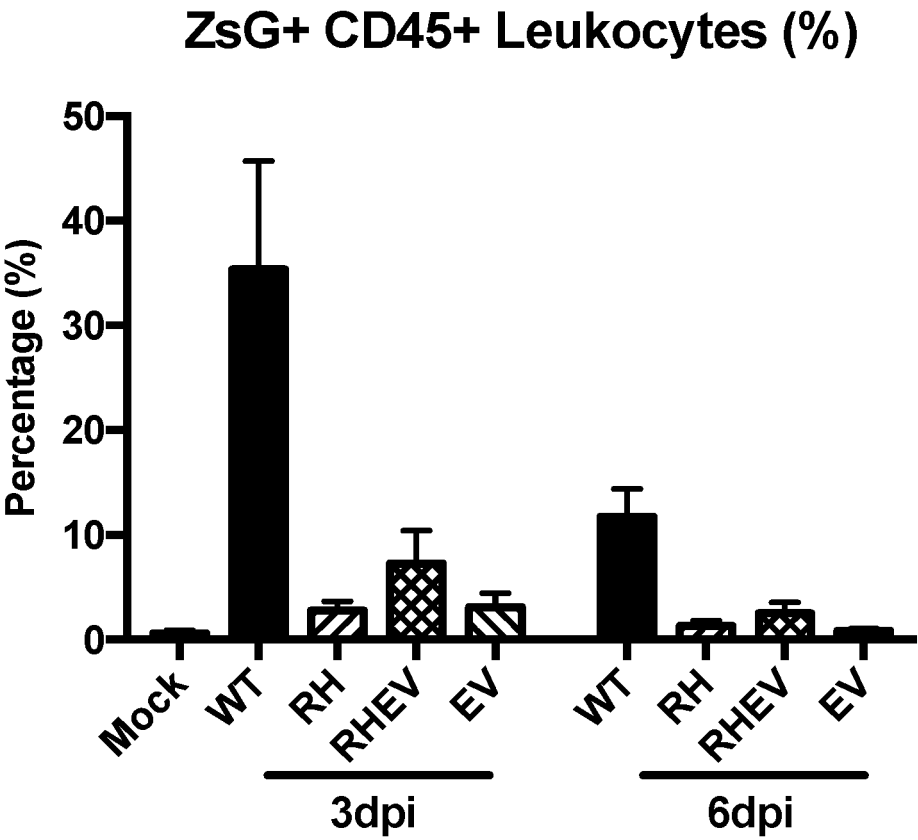


FIG. 4

(A)



(B)

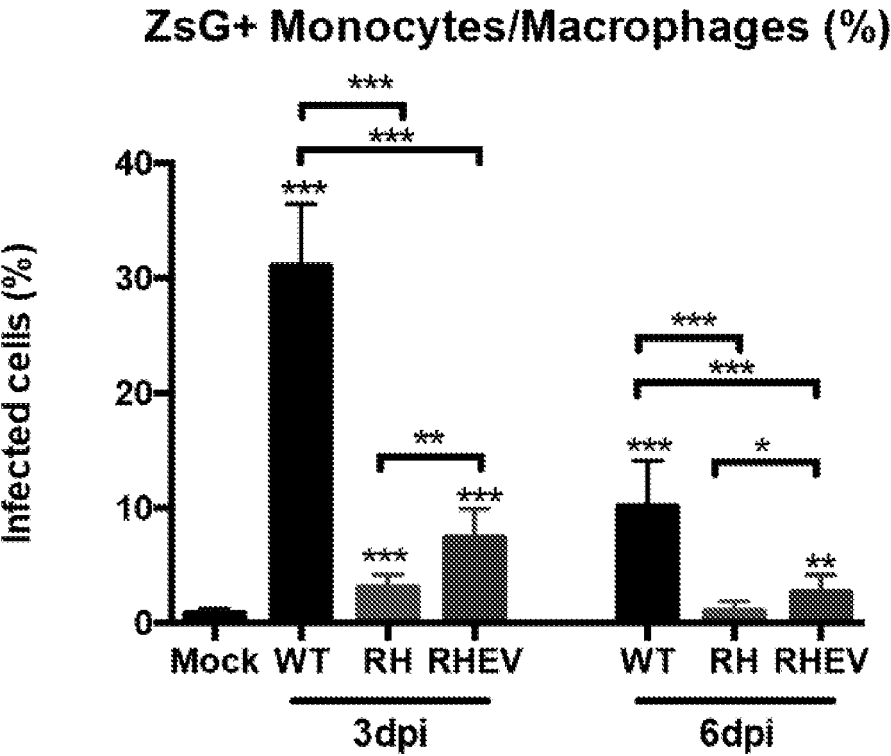


FIG. 4 (CONTINUED)

(C)

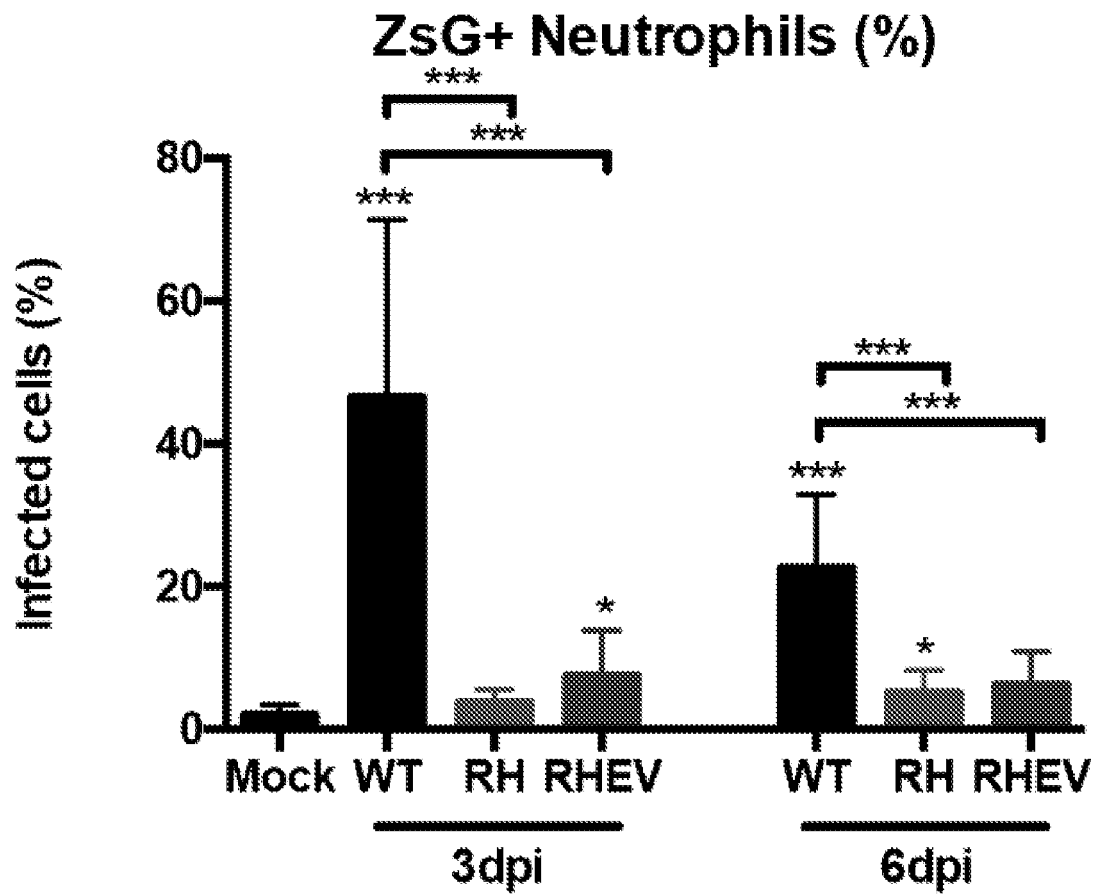


FIG. 4 (CONTINUED)

(D)

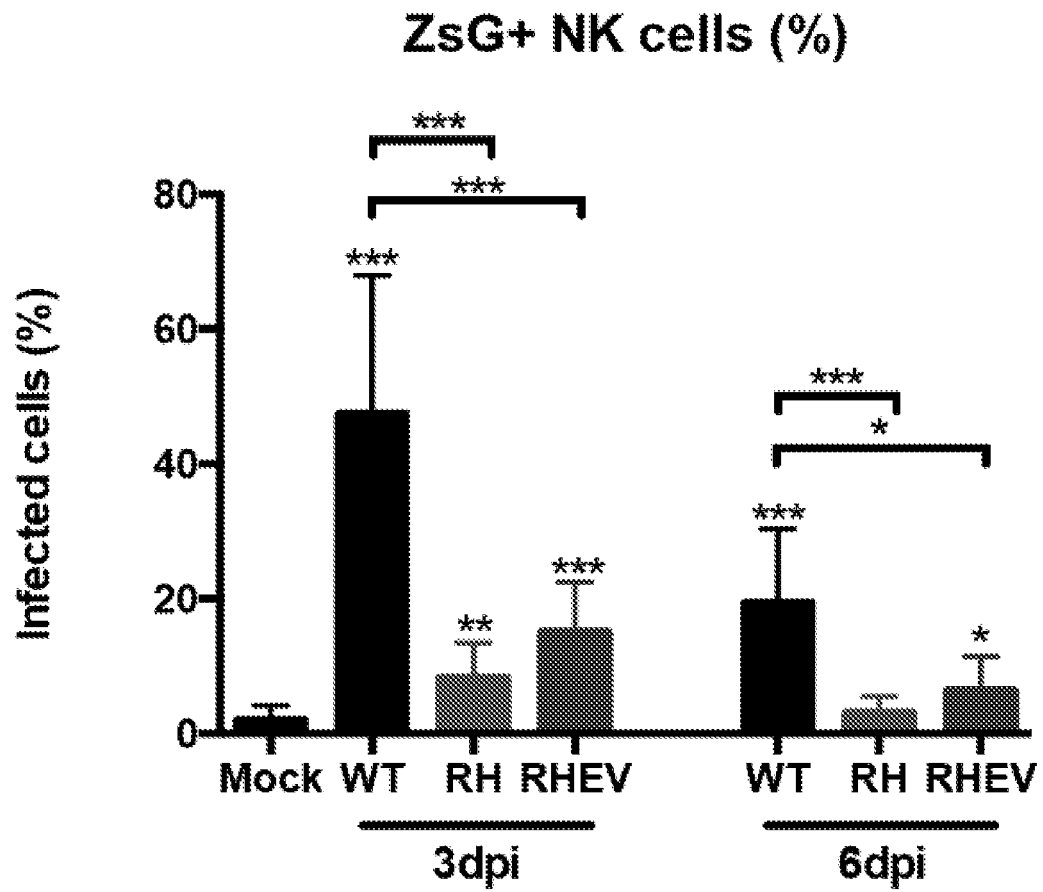


FIG. 4 (CONTINUED)

(E)

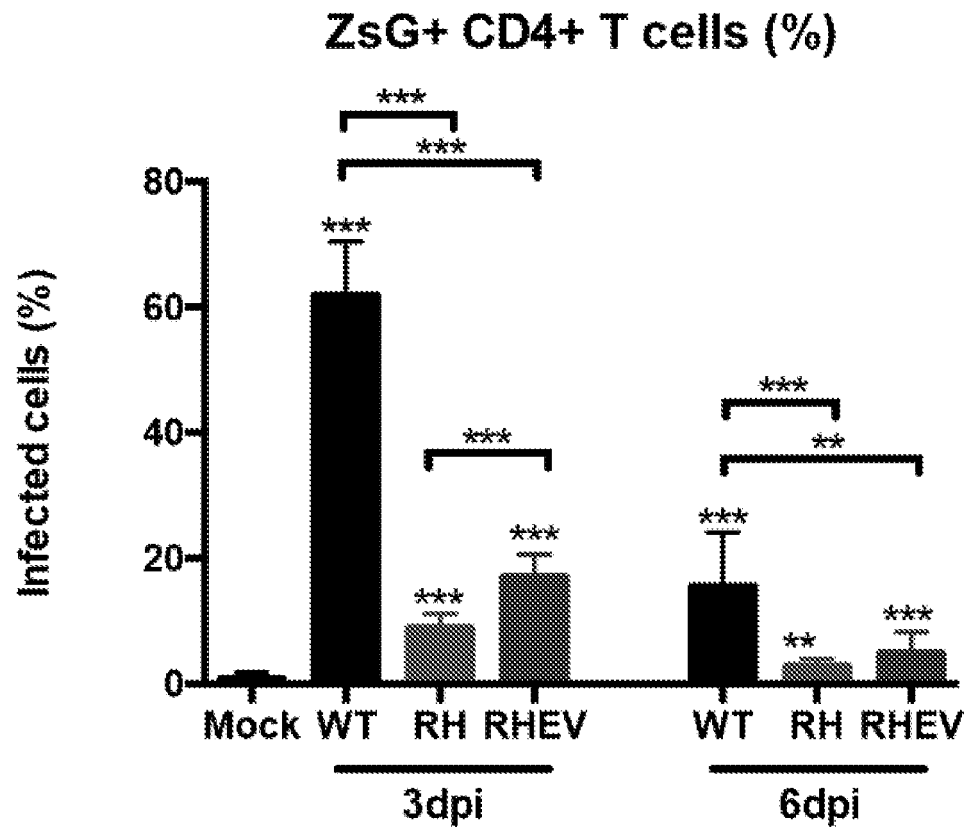
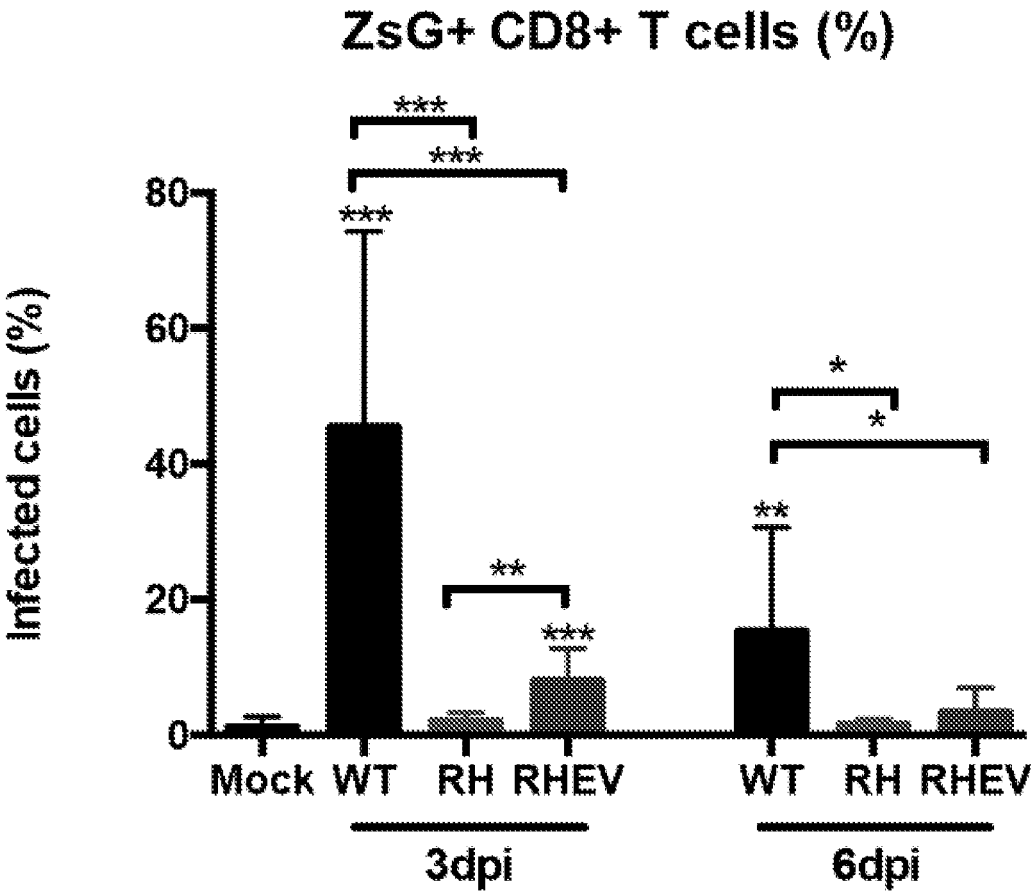


FIG. 4 (CONTINUED)

(F)



(G)

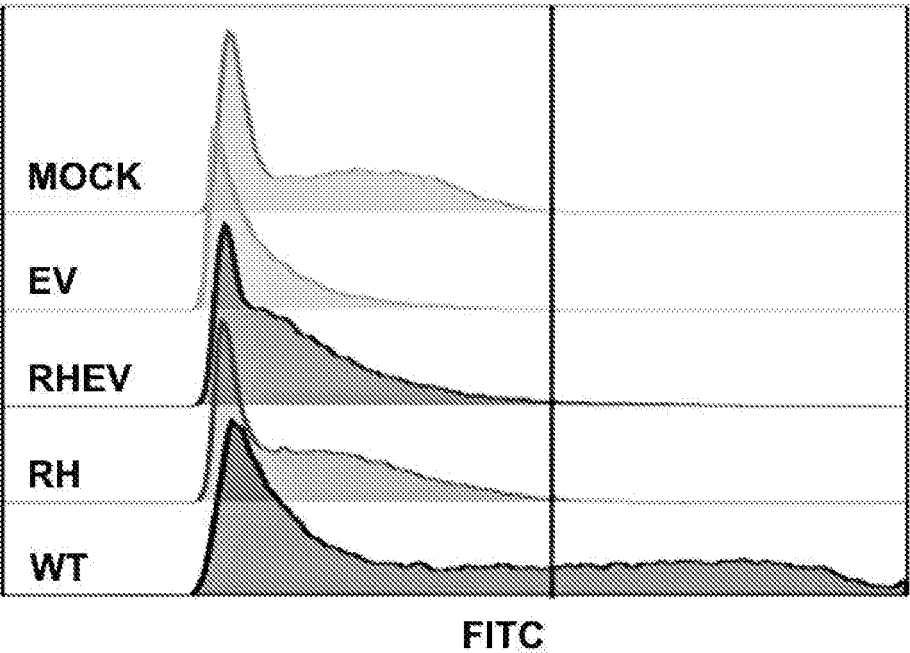


FIG. 5

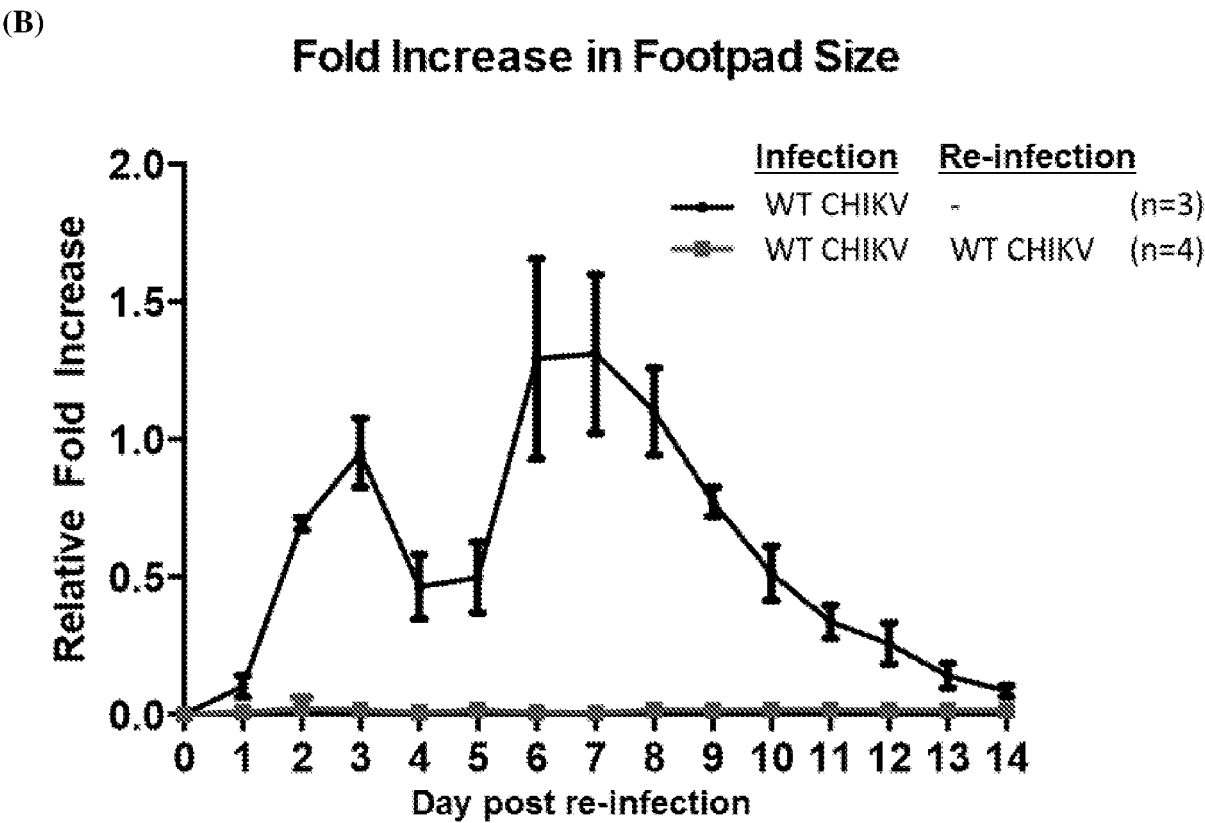
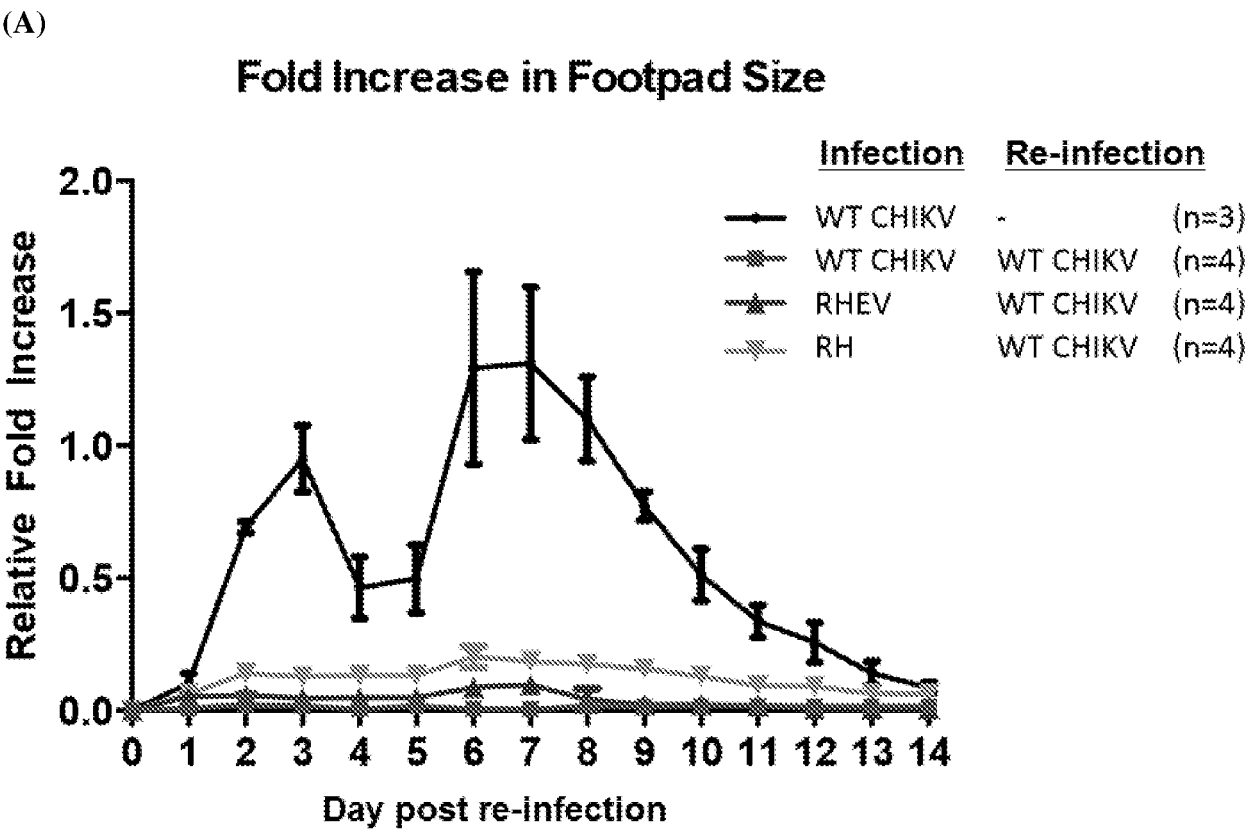
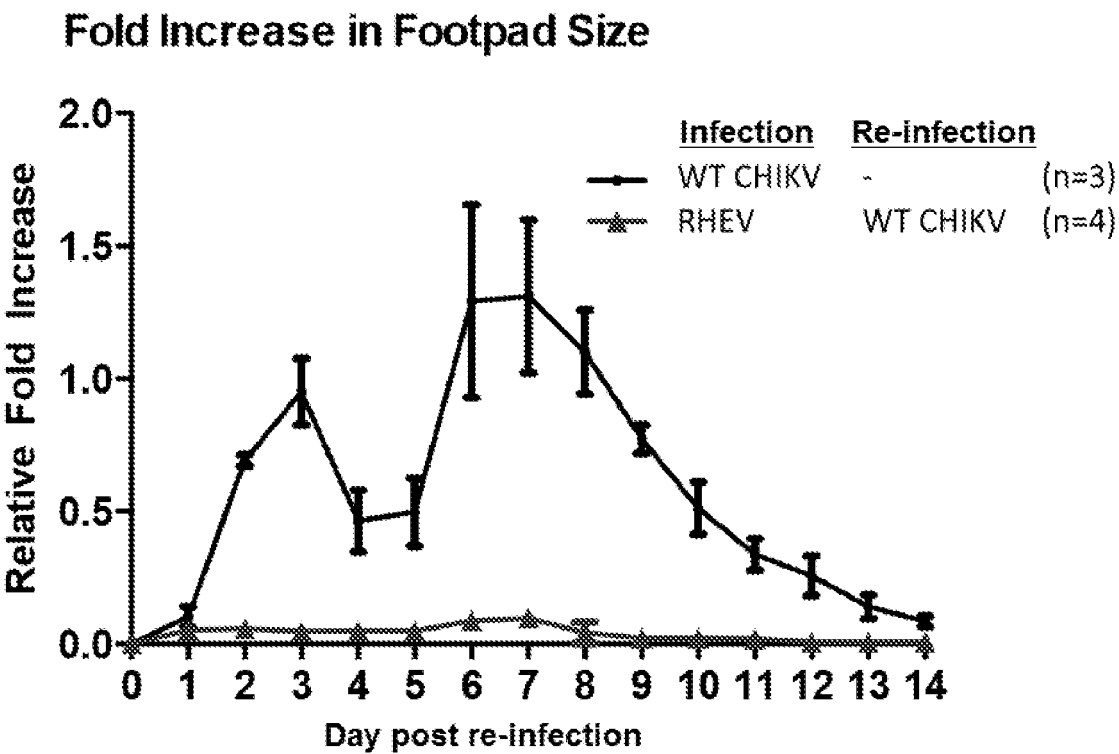


FIG. 5 (CONTINUED)

(C)



(D)

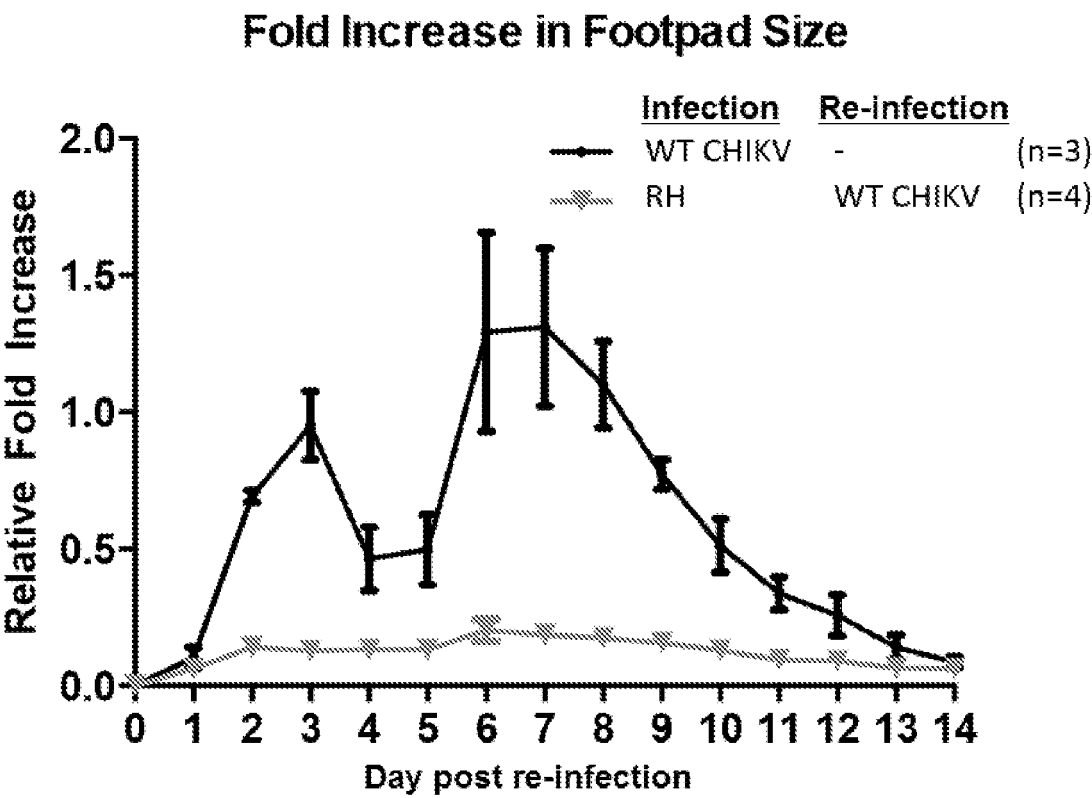
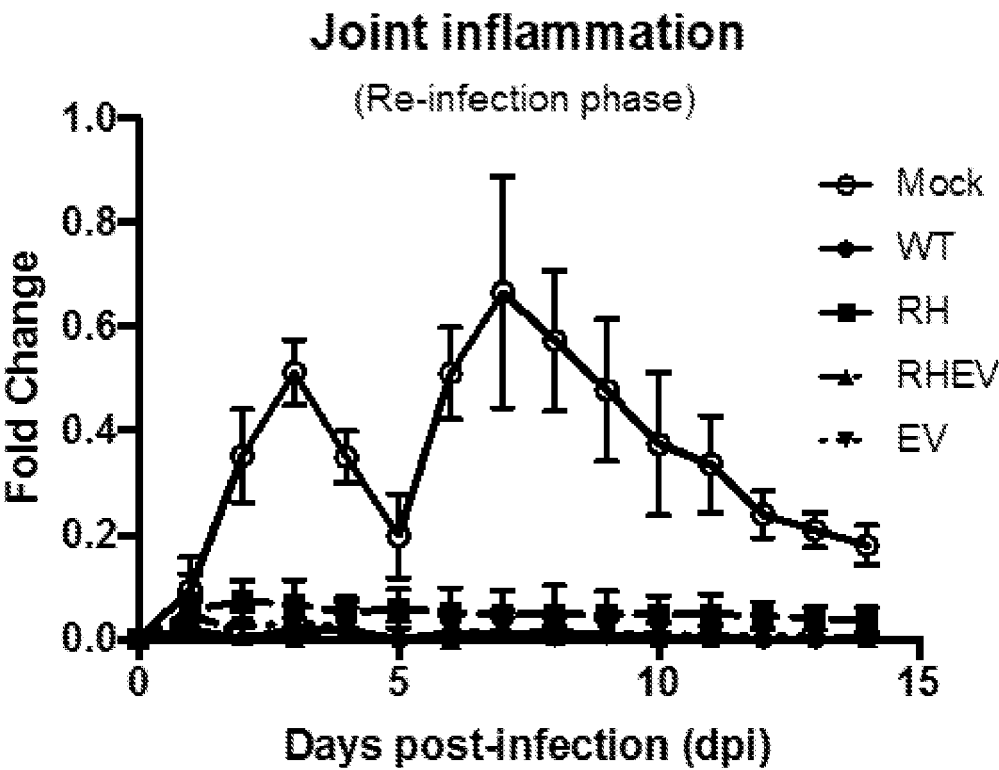


FIG. 6

(A)



(B)

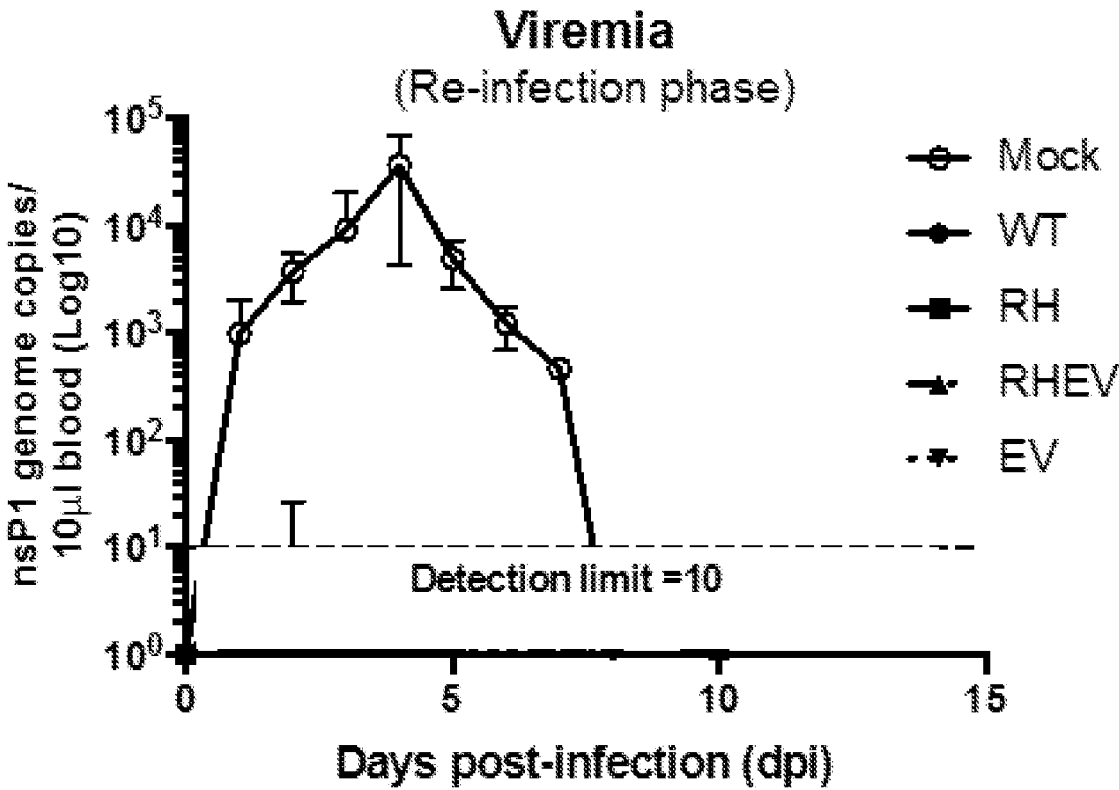


FIG. 6 (CONTINUED)

(C)

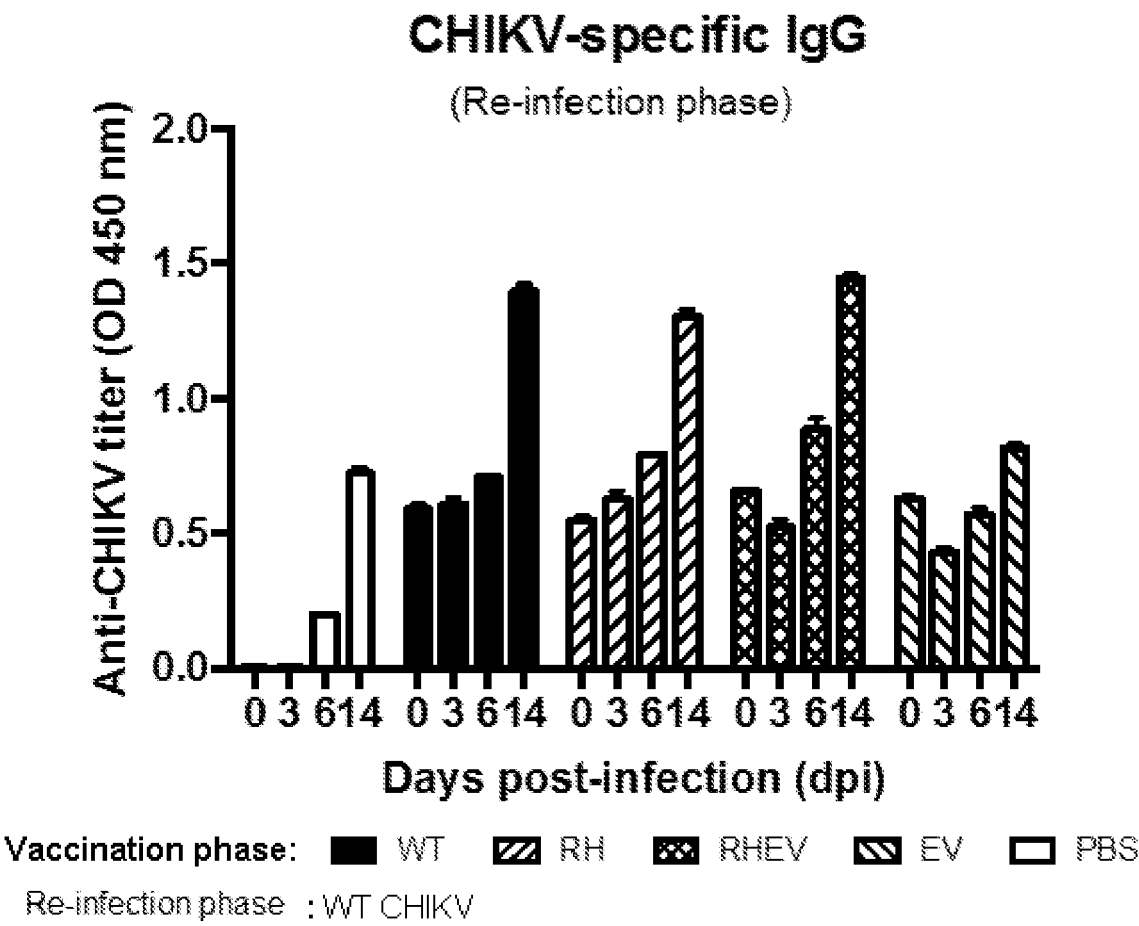


FIG. 6 (CONTINUED)

(D)

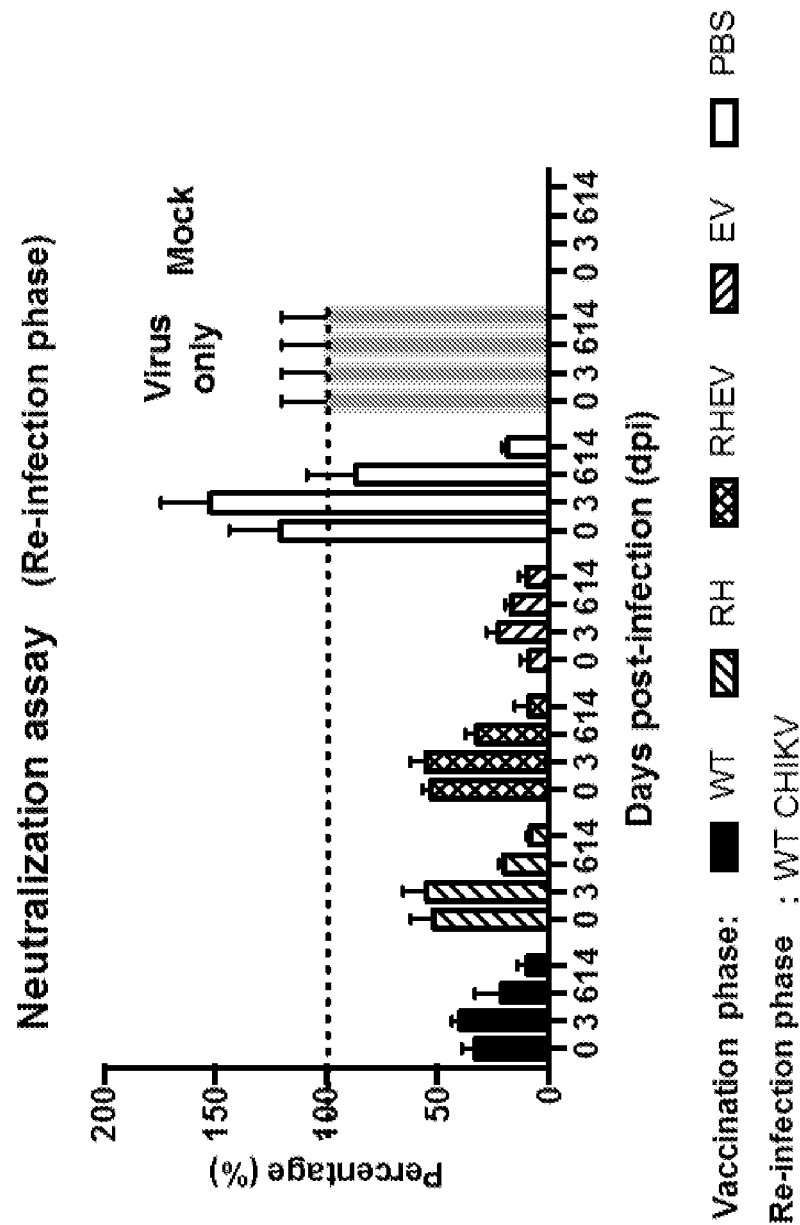


FIG. 7

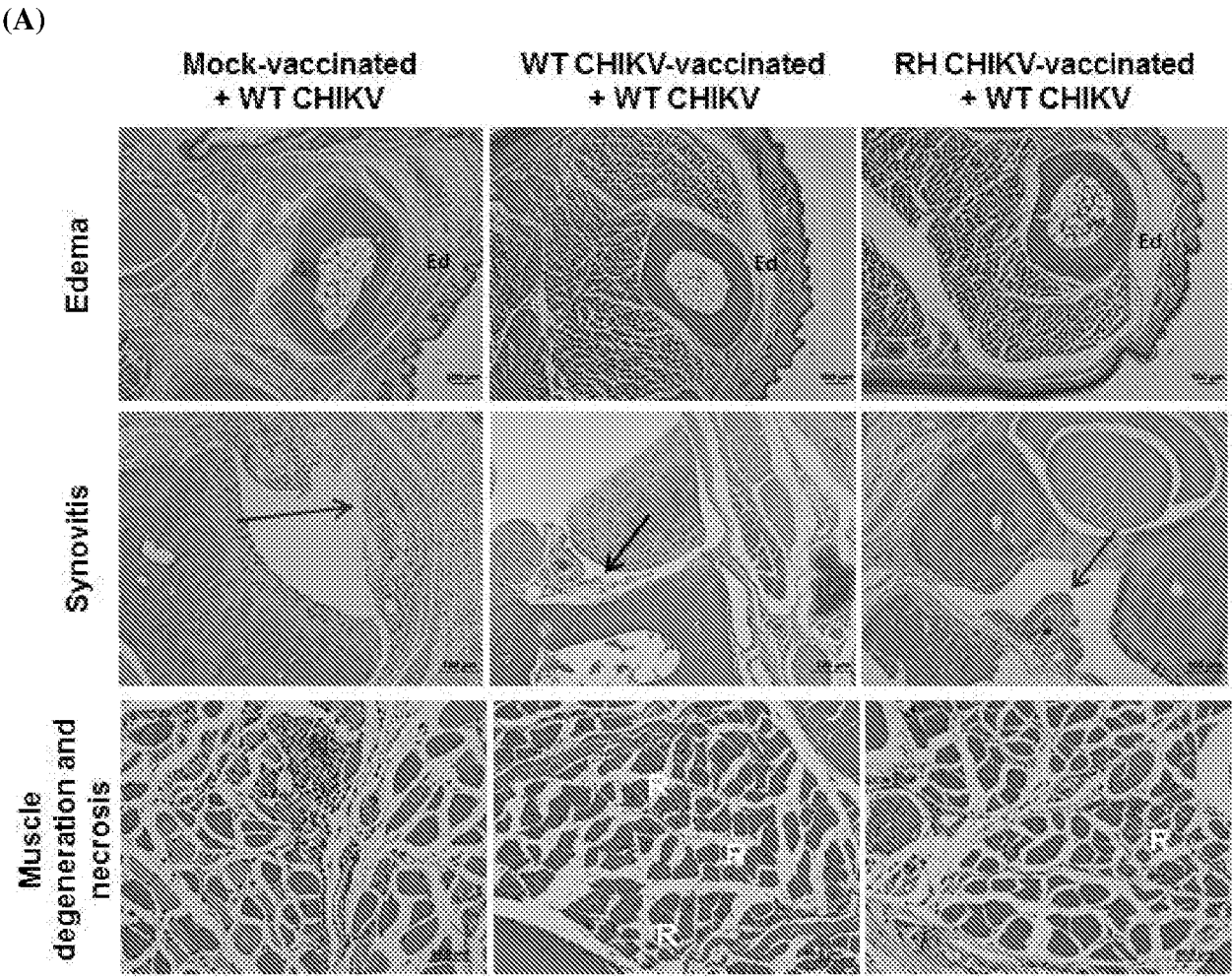
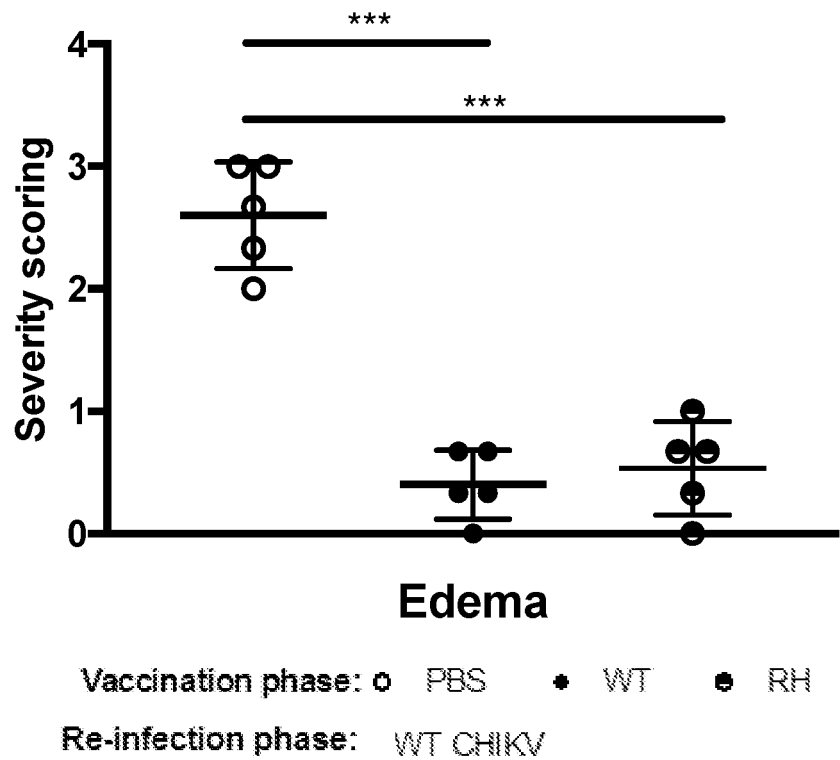


FIG. 7 (CONTINUED)

(B)
(i)



(ii)

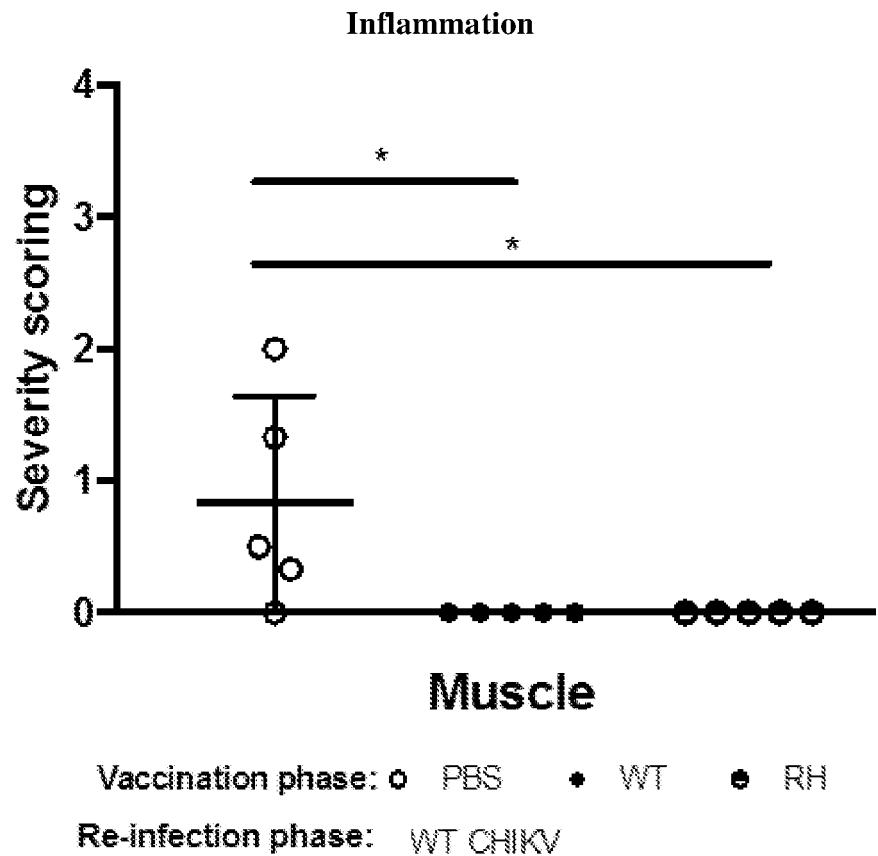
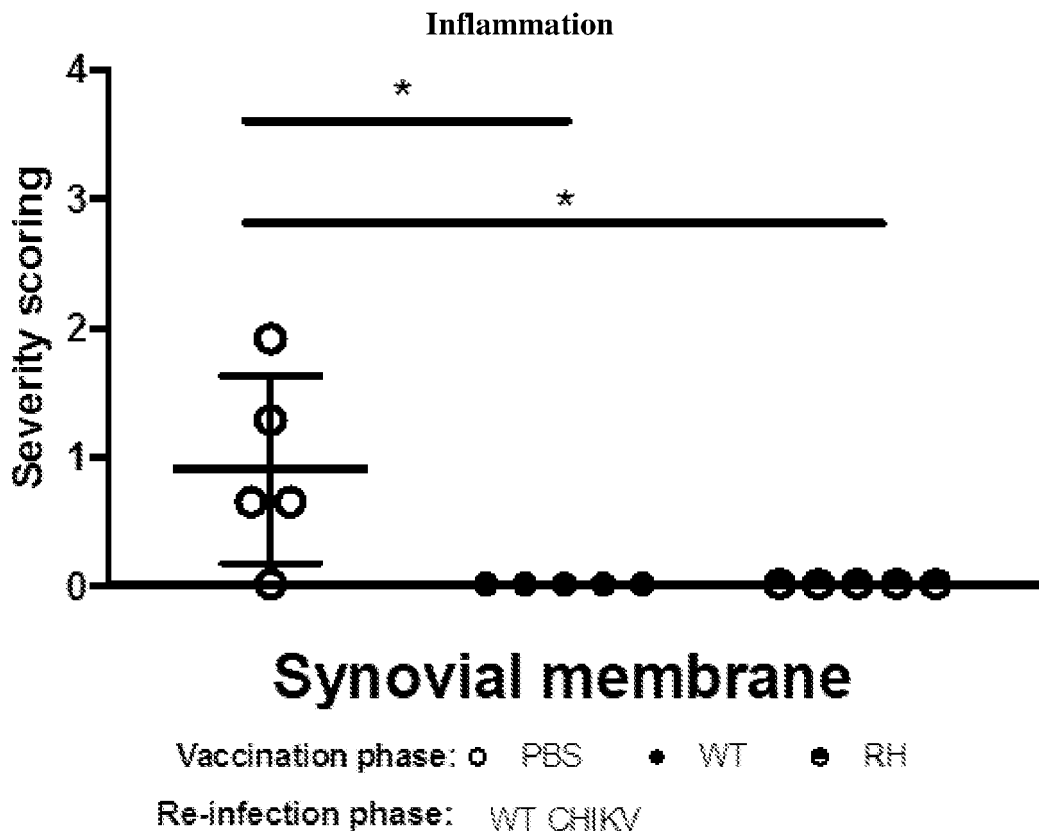


FIG. 7 (CONTINUED)

(B)
(iii)

(iv)

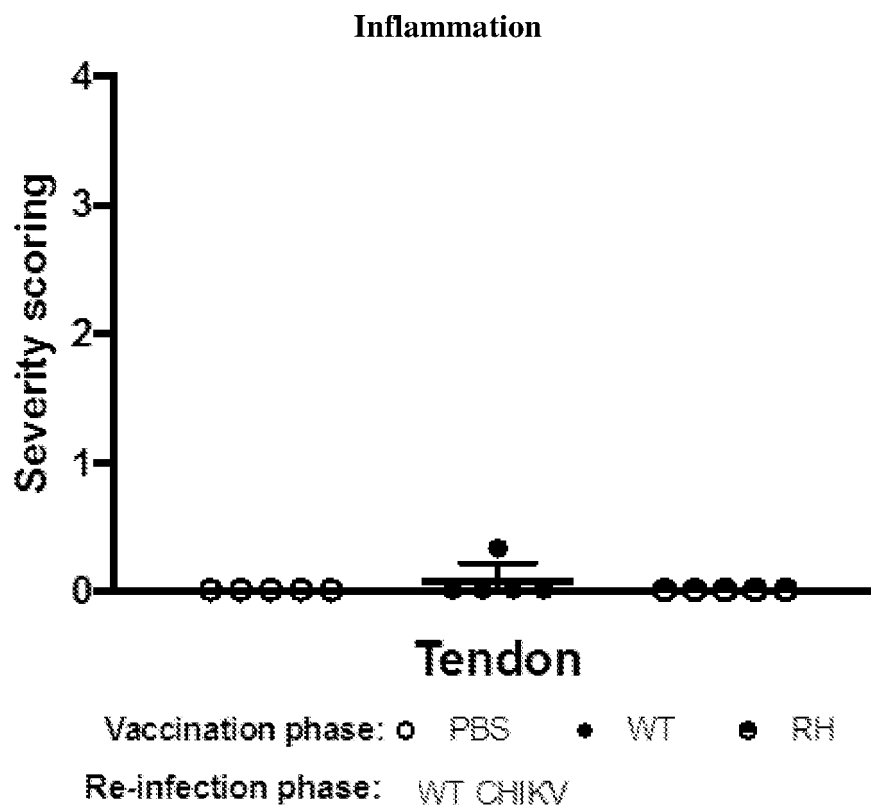
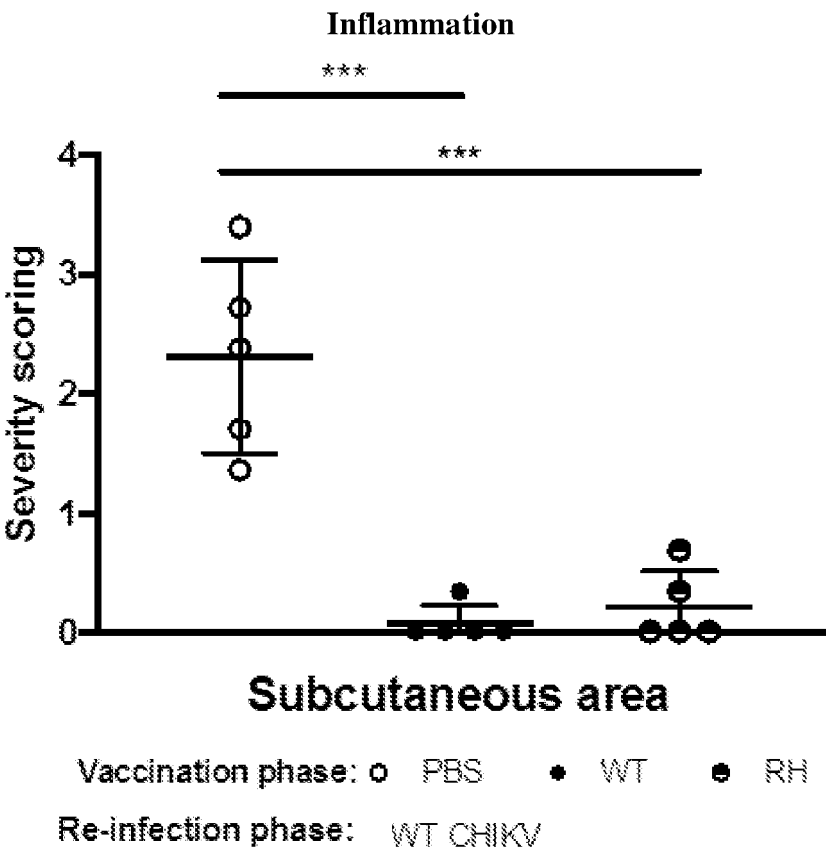


FIG. 7 (CONTINUED)

(B)
(v)



(vi)

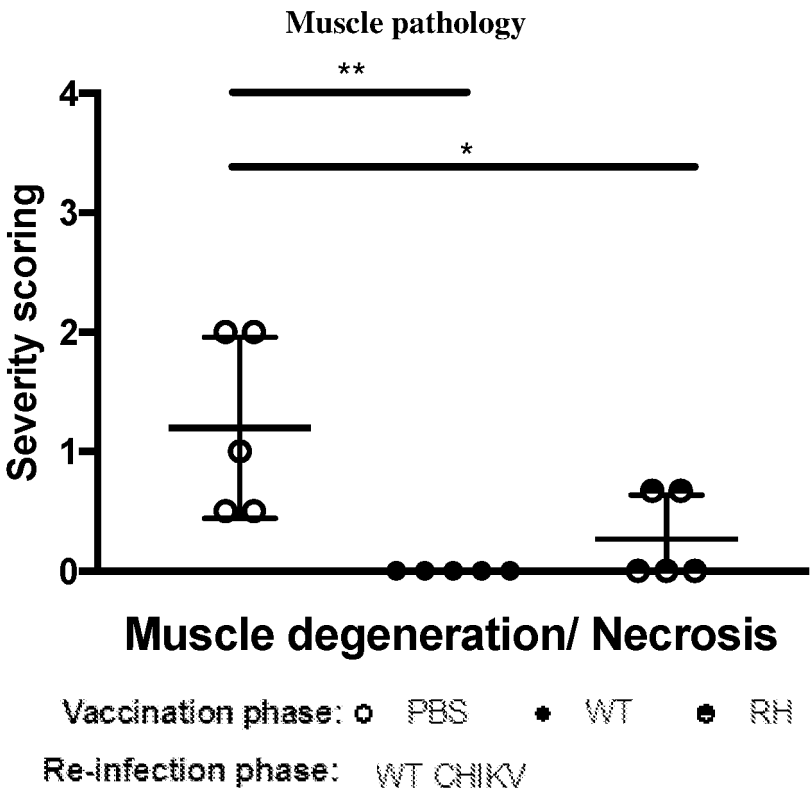
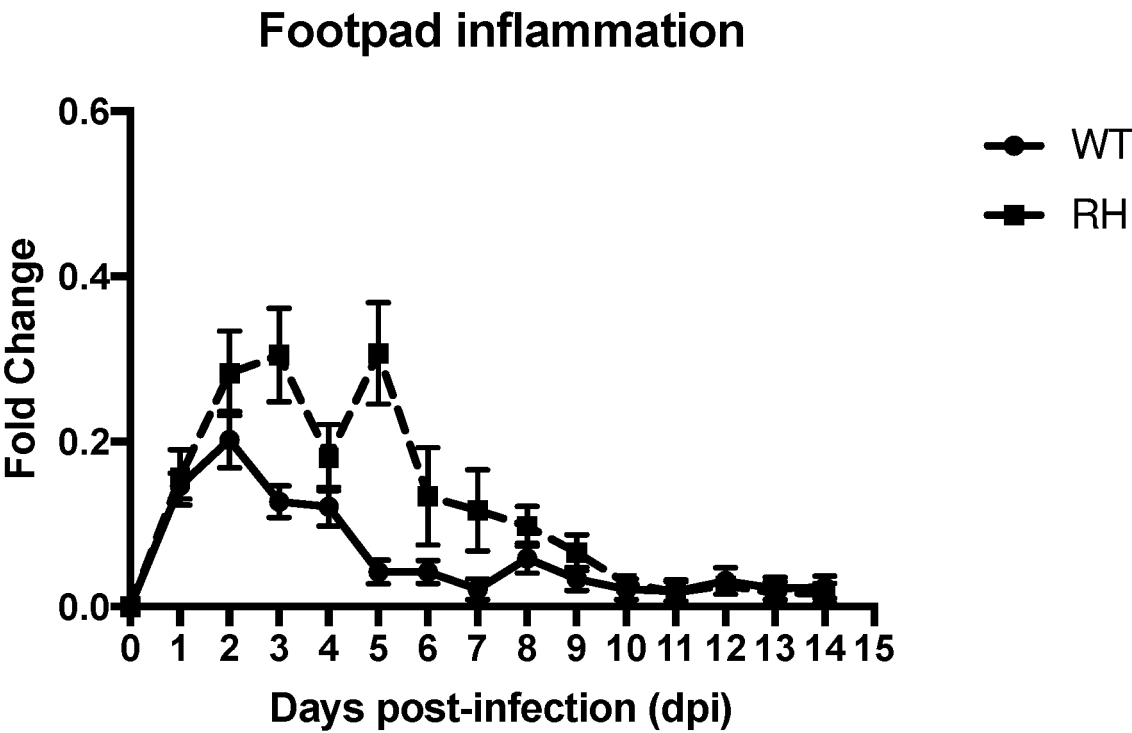


FIG. 8

(A)



(B)

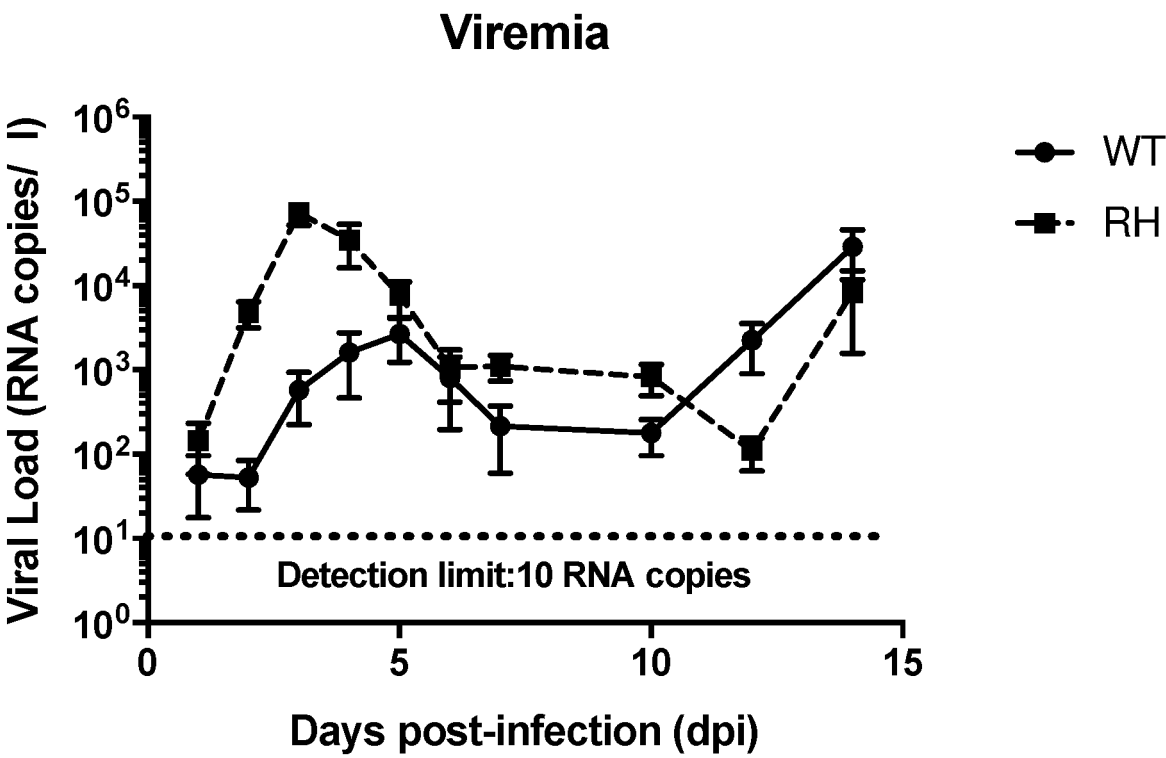
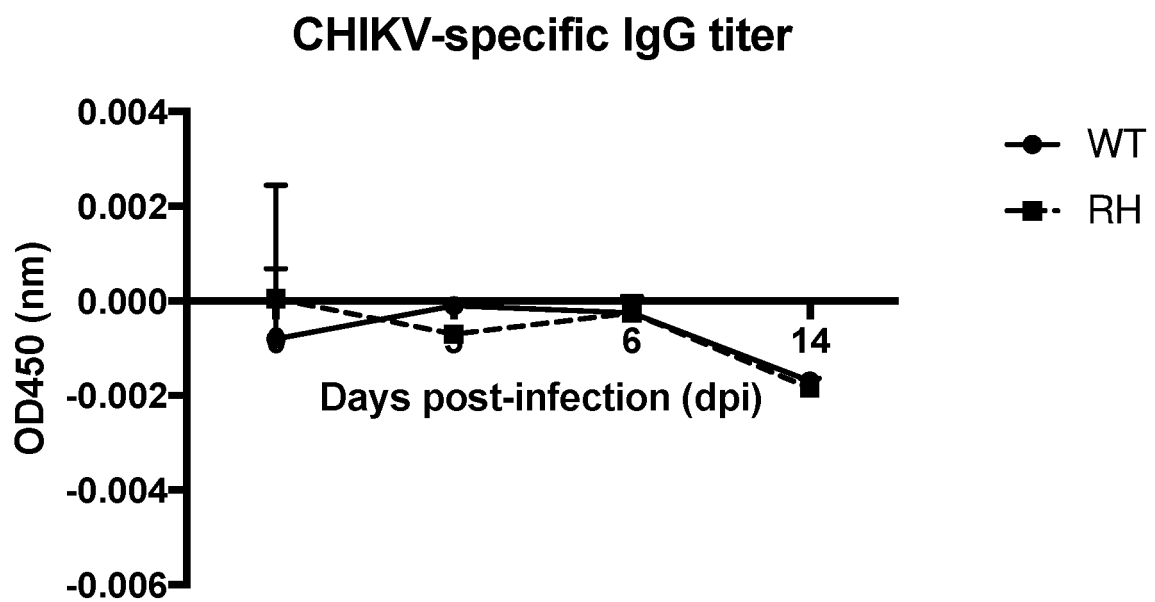


FIG. 8 (CONTINUED)

(C)



(D)

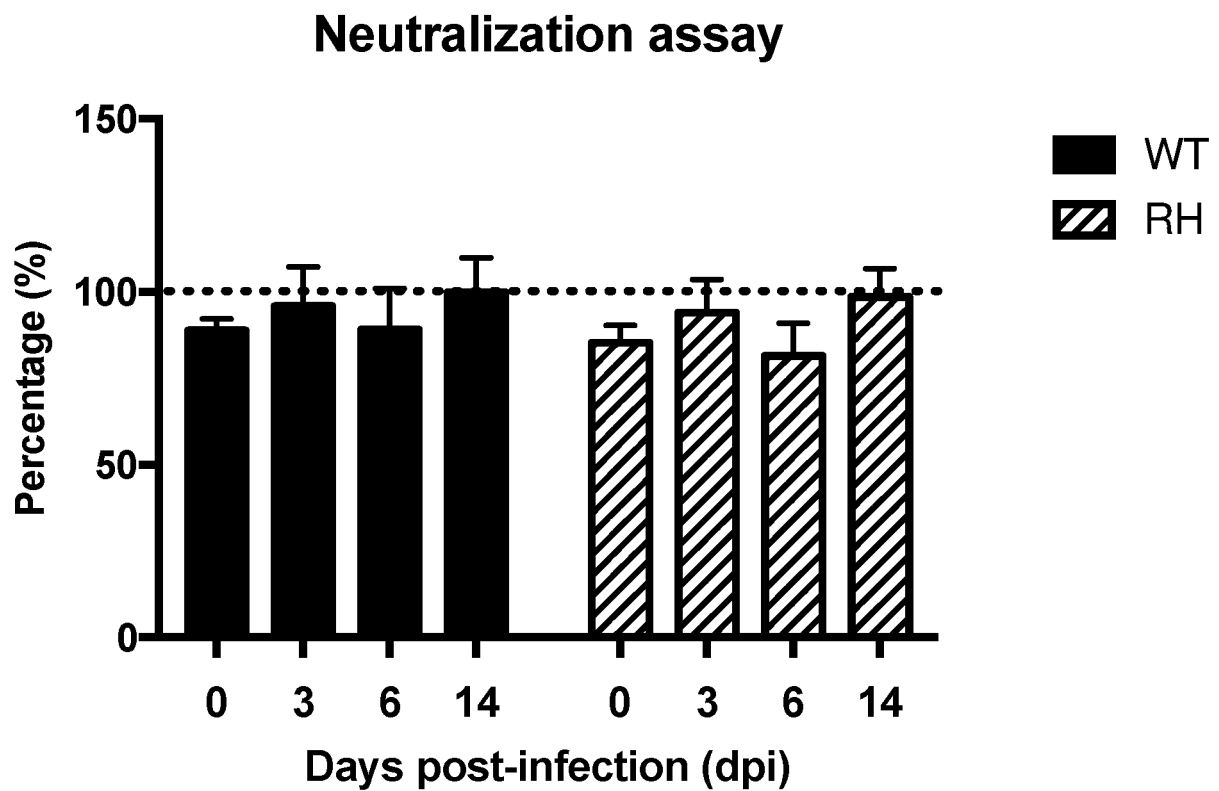
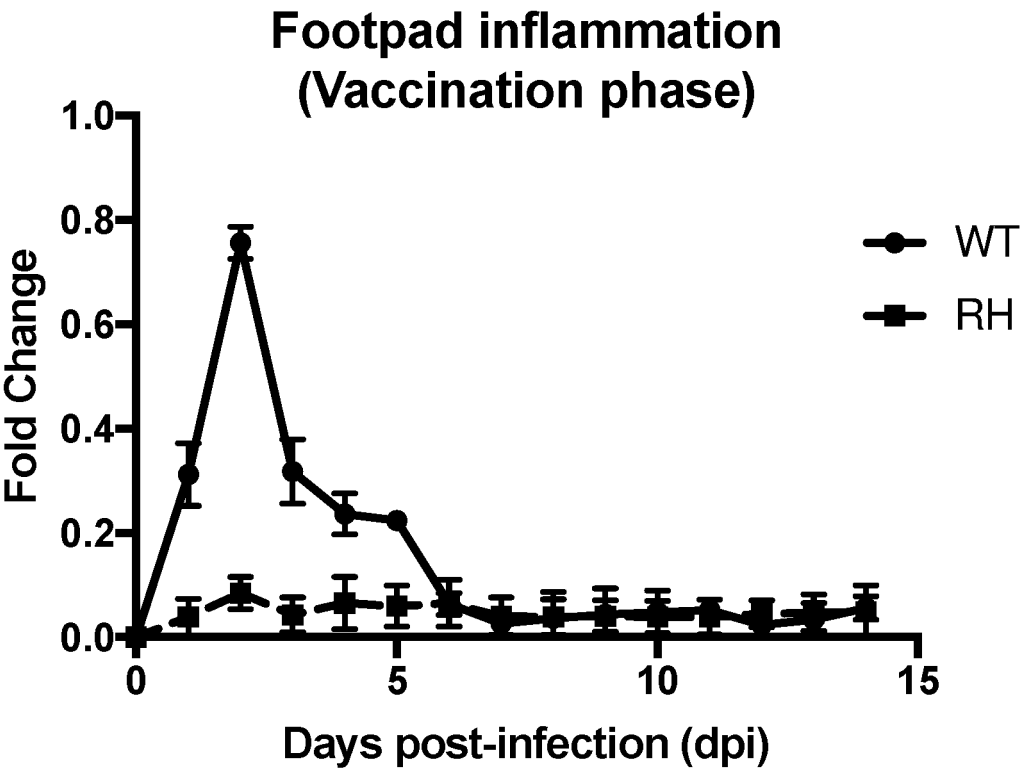


FIG. 9

(A)



(B)

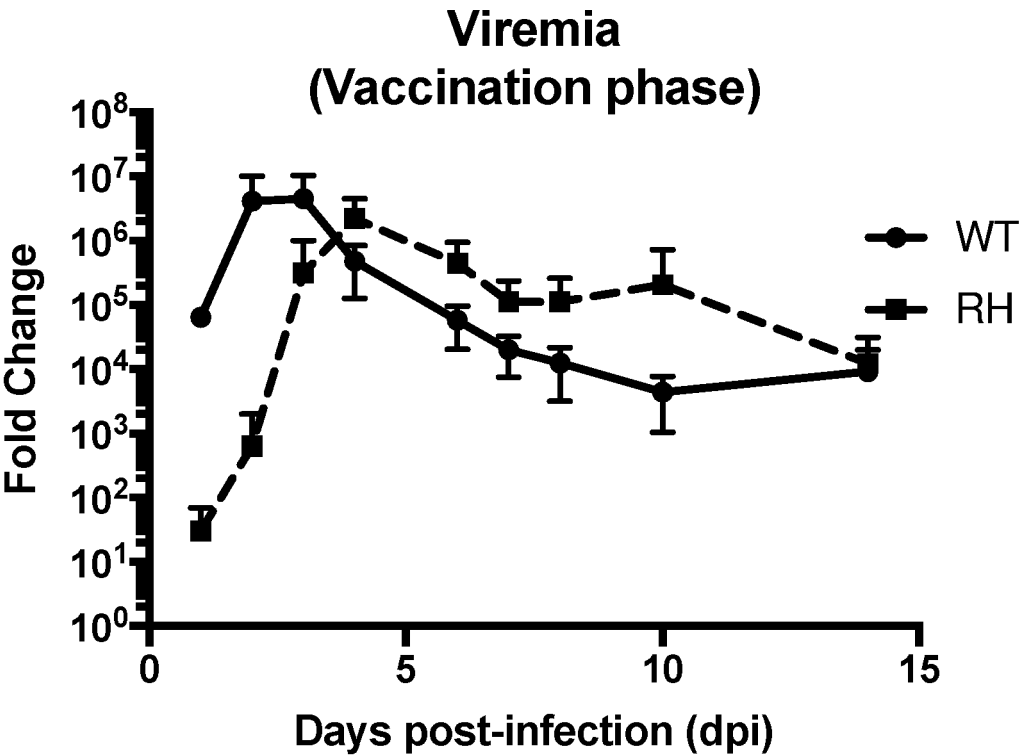
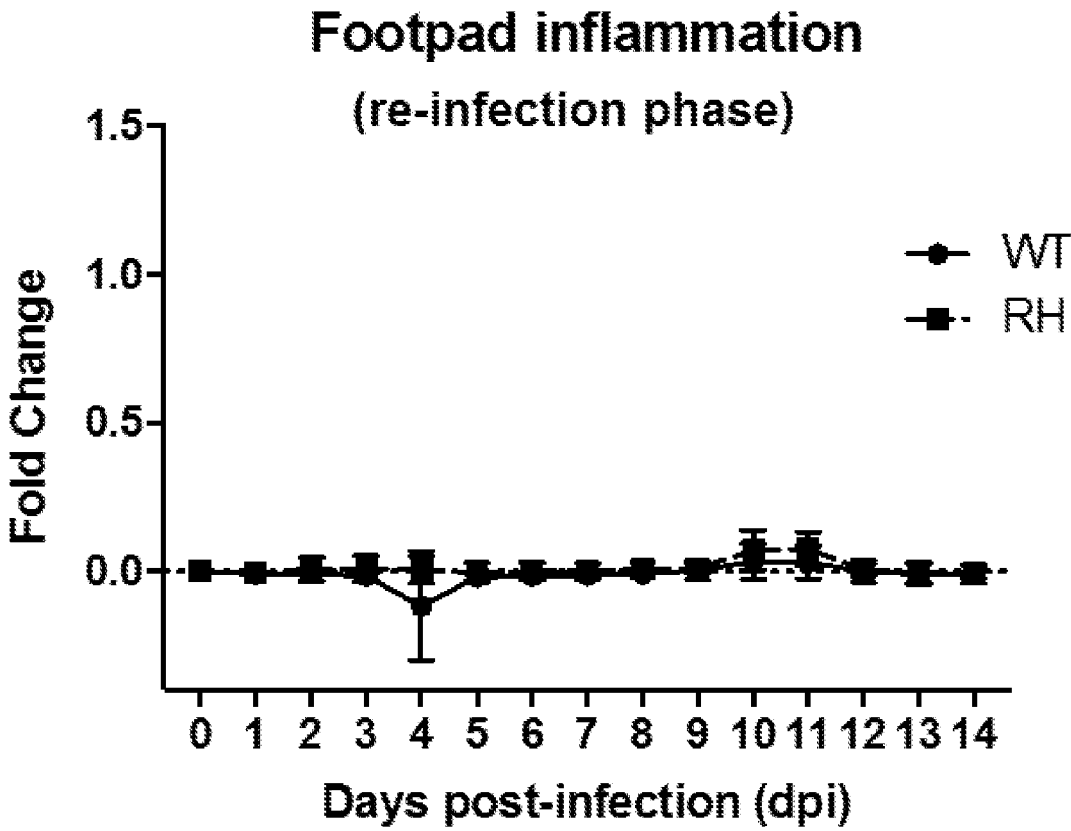


FIG. 9 (CONTINUED)

(C)



(D)

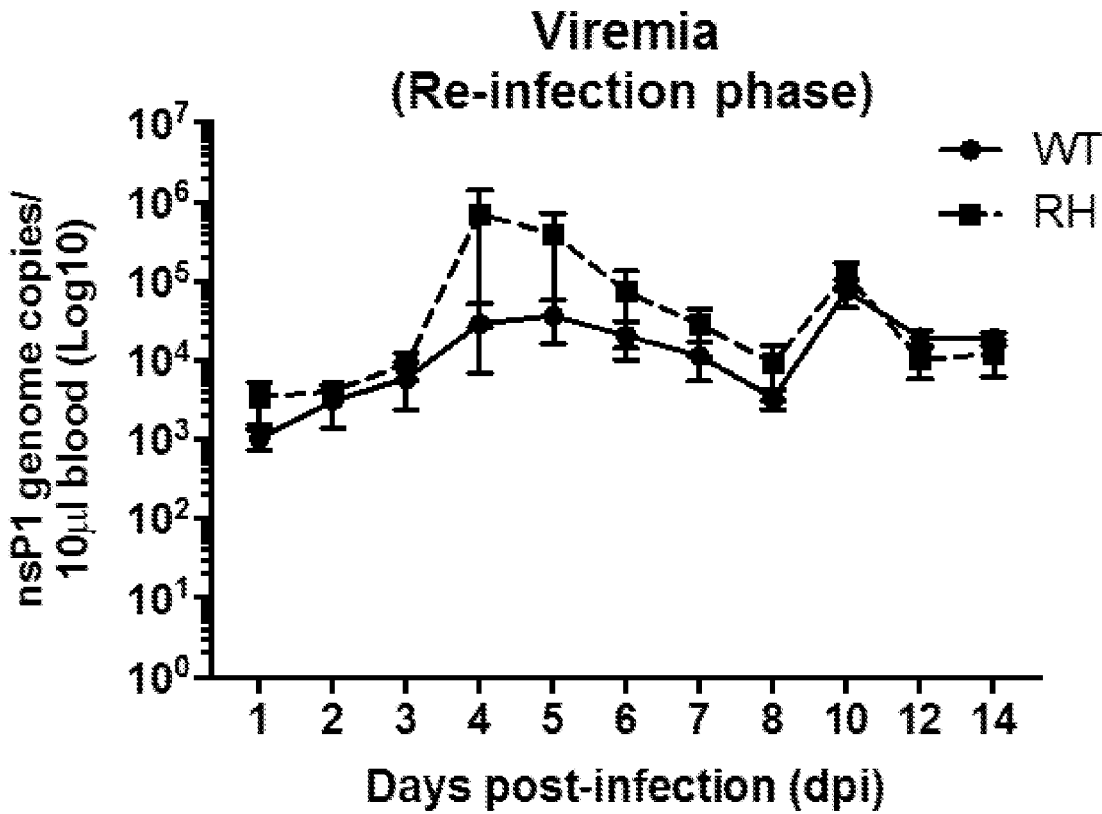
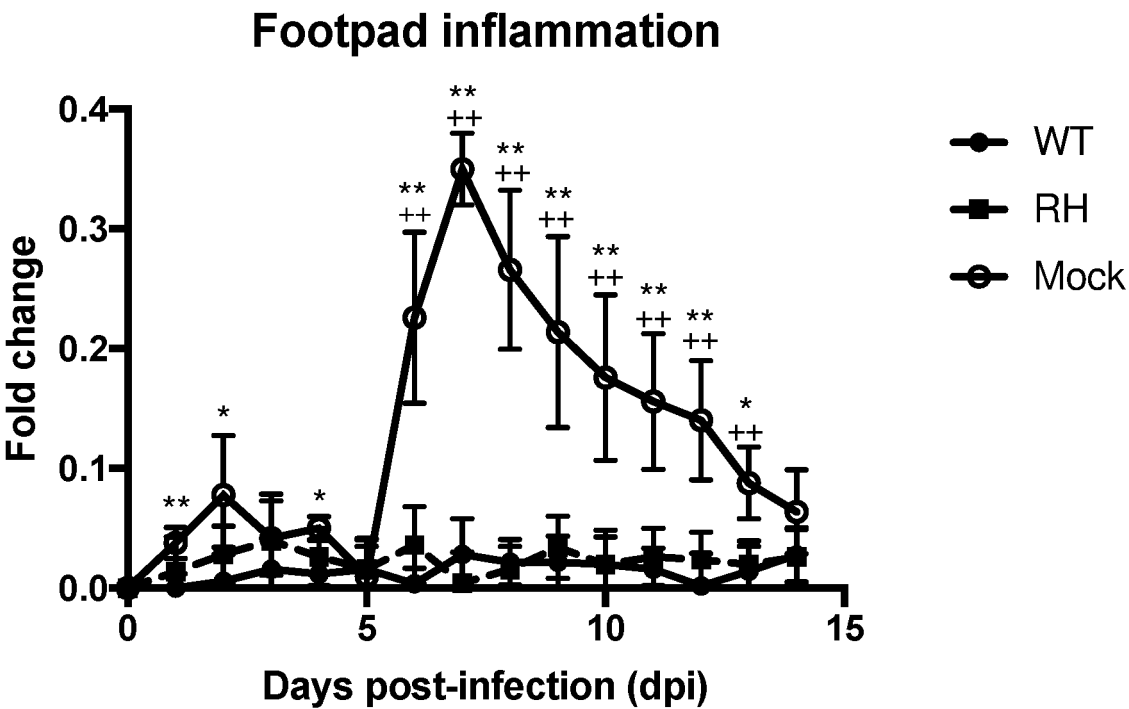


FIG. 10

(A)



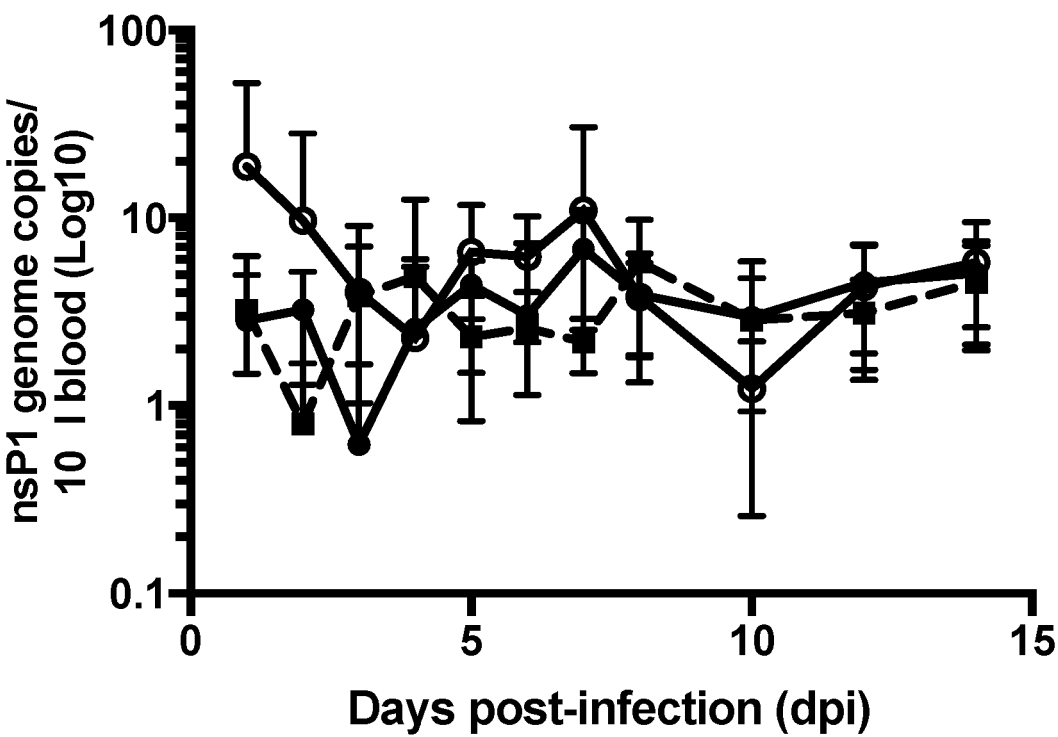
Vaccination phase: ● WT ■ RH ○ Mock

Re-infection phase : WT ONNV

FIG. 10 (CONTINUED)

(B)

Viremia



Vaccination phase: ● WT ■ RH ○ Mock

Re-infection phase : WT ONNV

FIG. 11

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VEEV      --MEKVHVDIEEDSPFLRALQSRFPQFEVEAKQVTDNDHANARAFSHLASKLIETEVDPS
BFV       MAKPVVKIDVEPESHEFAKQVQSCFPQFEIEAVQTTTPNDHAHARAFSHLAKLIEMETAKD
ONNV      --MDSVYVDIDADS AFLKALQRAYPMFEVEPEKQVTPNDHANARAFSHLAKLIEQEIDPD
CHIKV     --MDFVYVDIDADS AFLKALQRAYPMFEVEPEKQVTPNDHANARAFSHLAKLIEQEIDPD
RRV       --MKVTVDVEADSPFLKALQKAFPAFEVESQVTPNDHANARAFSHLAKLIEQEVPTN
SFV       -MAAKVHVDIEADSPFIKSLQKAFPSFEVESLQVTPNDHANARAFSHLAKLIEQETDKD
MAYV      --MSKVVFVDIEAESPFELKSLQRAFPAPFEVEAQVTPNDHANARAFSHLAKLIEQETEKD
          * :*: : * : * : * : * : * : * : * : * : * : * : * : * : * :
          * :*: : * : * : * : * : * : * : * : * : * : * : * : * : * :

VEEV      DTILDIGSAPARRMYSKHKYHCICPMRCAEDPDRLKYATKLLKKNCKEITDKELDKKMKE
BFV       QIILDIGSAPARRLYSEHKYHVCVCPMKCTEDPERMLGYARKLIAGSAK---GKAEKLRD
ONNV      STILDIGAPARRMMSDRKYHVCVCPMRS AEDPERLANYARKLASAAGKVTDKNISGKIND
CHIKV     STILDIGSAPARRMMSDRKYHVCVCPMRS AEDPERLANYARKLASAAGKVLDNISGKIGD
RRV       ITILDVGSAPARRIMSDHSYHCICPMKSAEDPERLANYARKLAKAAGEVLDKNVSGKITD
SFV       TLILDIGSAPRRMMSTHKYHVCVCPMRS AEDPERLVCYAKKLAASGKVLDREIAGKITD
MAYV      TLILDIGSAPARRMMSEHTYHVCVCPMRS AEDPERLLYARKLAKASGEVVDNIAAKIDD
          ***: * ** : * : : ***: ***: . : * : * : * : * : * : * :

VEEV      LAAVMSDDPLETETMCLHDDESCRYEGQVAVYQDVYAVDGPSTSLYHQANKGVRVAYWIGE
BFV       LRDVLATPDIEQTQSLCLHTDASCRYRGDVAVYQDVYVIDAPTLYHQALKGVRTAYWIGE
ONNV      LQAVMAVNPNETSTFCLHTDATCKQRGDVAIYQDVYAVHAPTSLYHQAIKGVVRVAYWIGE
CHIKV     LQAVMAVPDTEPTFCLHTDVSCRQRADVAIYQDVYAVHAPTSLYHQAIKGVVRVAYWVGE
RRV       LQDVMATPDLESPTFCLHTDETCRTAEVAVYQDVYAVHAPTSLYHQAMKGVRTVYWIGE
SFV       LQTVMATPDAESPTFCLHTDVTCTAAEVAVYQDVYAVHAPTSLYHQAMKGVRTAYWIGE
MAYV      LQSVMATPDNESRTFCLHTDQTCRTPAEVAVYQDVYAVHAPTSLYFQAMKGVRTAYWIGE
          * :*: : * : * : * : * : * : * : * : * : * : * : * : * : * :
          * :*: : * : * : * : * : * : * : * : * : * : * : * : * : * :

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FIG. 11 (CONTINUED)

BFV	DTTPFMYDALAGAYPLYSTNWADEQVLESRNIGLCSDKVSEGGKGRSILRKKFLKQSDR
ONNV	DTTPFMYNAMAGAYPSYSTNWADEQVLKAKNIGLCSTDLSEGRGKLSIMRGKKLKPCDR
CHIKV	DTTPFMYNAMAGAYPSYSTNWADEQVLKAKNIGLCSTDLTEGRRGKLSIMRGKKLKPCDR
RRV	DTTPFMEFVLAGAYPTYSTNWADEQVLQARNIGLCATSLSEGHRGKLSIMRKKRLRPSDR
SFV	DTTPFMEDALAGAYPTYATNWADEQVLQARNIGLCAASLTEGRLGKLSILRKKQLKPCDT
MAYV	DTTPFMEDTMAGAYPTYATNWADEQVLKARNIGLCSAALTEGHLGKLSIMRKKRMKPSDQ
	****: . : ***** ** : : ***** : * ** * * : : . :
VEEV	VLESVGSTIYHEKRDLRLRSWHLPSVFHLRGKQNYTCRCETIVSCDGYVVKRIAISPGLYG
BFV	VMFSVGSTLYTESRKLQSWHLPSVFHLKGKSSFTCRCDTIVSCEGYVLKKITMCPGVTG
ONNV	VLESVGSTLYPESRKLQSWHLPSVFHLKGKLSFTCRCDTIVSCEGYVVKRVTMSEGIYG
CHIKV	VLESVGSTLYPESRKLQSWHLPSVFHLKGKLSFTCRCDTIVSCEGYVVKRITMSEGLYG
RRV	VMFSVGSTLYIESRRLKSWHLPSVFHLKGKNSFTCRCDTIVSCEGYVVKKITMSPGTYG
SFV	VMFSVGSTLYTESRKLRLSWHLPSVFHLKGKQSFTRCCTIVSCEGYVVKKITMCPGLYG
MAYV	IMFSVGSTLYTESRRLKSWHLPSVFHLKGRQSFTCRCCTIVSCEGYVVKKITMSPGVFG
	: : *****: * * . * : : ***** . *****: * : *****: * : : : . * * *
VEEV	KPSGYAATMHREGFLCCKVTDTLNGERVSPFVCTYVPATLCDQMTGILATDVSADDAQKL
BFV	KPIGYAVTHHKEGFVVGKVTDTIRGERVSFAVCTYVPTTLCQMTGILATEVTADDAQKL
ONNV	KTSGYAVTHHADGFLMCKTDTDVTGGERVSFSVCTYVPTICDQMTGILATEVTPEDAQKL
CHIKV	KTTGYAVTHHADGFLMCKTDTDVTGGERMSFSVCTYVPTICDQMTGILATEVTPEDAQKL
RRV	KTVGYAVTHHAEGLMCKVTDTVRGERVSFPVCTYVPTICDQMTGILATDVTPEDAQKL
SFV	KTVGYAVTYHAEGLVCKTDTDTVKGERVSFPVCTYVPTICDQMTGILATDVTPEDAQKL
MAYV	KTSGYAVTHHAEGLVCKITDTIAGERVSFPVCTYVPTICDQMTGILATEVTPEDAQKL
	* ****. * * : ***: * ****: ****: * * ****: * : ****: * : ****: *

FIG. 11 (CONTINUED)

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VEEV      GSVETPRGLIKVTSYAGEDKIGSYAVLSPQAVLSEKLSIHPLAEQVIVITHSGRKGRY
BEV       GVVETPRNSIKVSTQIGDALIGSYLILSPQAVLRSEKLIACIHDLAEQVKLVTHSGRSGRY
ONNV      GIVETPRGAIKVTAQPSDRVVGEYLVLTTPQAVLRSQKLSLIHALAEQVKCTCTHSGRAGRY
CHIKV     GIETPRGAIKVTAQPTDHHVVGEYLVLSPTQTVLRSQKLSLIHALAEQVKCTCTHNGRAGRY
RRV       GVVETPRNALRVTPQERDQLIGAYLILSPQAVLSEKLTPIHPLAEQVVTIMTHSGRSGRY
SEV       GVVETPRSALKVTAQPNVDVLLGNVYVLSPTQTVLKSCLKAPVHPLAEQVKIITHNGRAGRY
MAYV      GVVETPRNALKVTPQDRDTMVGSYLVLSPTQTVLKSALKQLVHPLAEQVKIITHKGRACRY
* :****. :*: :*: :*: :*: :*: :*: :*: :*: :*: :*: :*: :*
VEEV      AVEPYHGKVVPEGHAI PVQDFEQALSESATIVYNERE FVNRYLHHIATHGGALNTDEEY
BEV       AVDKYDGRVLVPTGVAIDIQSEFQALSESATLVYNERE FVNRKLWHIAVYGAALNTDEEGY
ONNV      AVEAYDGRVLVPSGYAIPQEDFQSLSESATMVFNERE FVNRKLHHIAMHGPALNTDEESY
CHIKV     AVEAYDGRVLVPSGYAISPEDEFQSLSESATMVYNERE FVNRKLHHIAMHGPALNTDEESY
RRV       PVDRYDGRVLVPTGAAIPVSEFQALSESATMVYNERE FVNRKLHHIALYGPALNTEENY
SEV       QVDGYDGRVLLPCGSAIPVPEFQALSESATMVYNERE FVNRKLYHIAVHGPSINTDEENY
MAYV      QVDAYDGRVLIPTGAAIPVPDEFQALSESATMVYNERE FVNRKLYHIAVHGALNTDEEGY
* :*. :*: :*: :*. :*. :*. :*. :*. :*. :*. :*. :*. :*
VEEV      KTVKPSEHDGEYLYDIDRKQCVKKELVGTGLTGELVDPEPHEFAYESLRTSPAAPYQVP
BEV       EKVPVERAESDYVFDVDQKMCLKKEQASGWVLCGELVNPPEFHEFAYEGLRTRPSAPYKVH
ONNV      ELVRVEKTEHEYVVDVDQKKCKKREEATGLVLVGLDLSPPYHEFAYEGLKIRPACPYKTA
CHIKV     ELVRAERTHEYVVDVDQRRCCCKKEAAGLVLVGLDLTNPNPYHEFAYEGLKIRPACPYKIA
RRV       EKVRAERAEAEYVFDVDKCMCVKREEASGLVLVGLDLINPNPEFHEFAYEGLKIRPATPEQTT
SEV       EKVRAERTDAEYVFDVDKKCKCVKREEASGLVLVGLDLTNPNPEFHEFAYEGLKIRPSAPYKTT
MAYV      EKVRAERTDAEYVFDVDRKQCCKREDAEGLVMIGDLVNPPEFHEFAYEGLKRRPAAPYKTT
* :*. :*. :*: :*: :*. :*. :*. :*. :*. :*. :*. :*. :*

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FIG. 11 (CONTINUED)

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VEEV  RGWVKQLQIDYKGNEIMTAAASQGLTRKGVYAVRYKVNENPLYAPTSEHVNVL LTRTEDR
BFV   RGWVKQLQDDYRGNEVMTAAASQGLTRASVYAVRTKVNENPLYAQTSEHVNVL LTRTENK
ONNV  RGWVKQLQIDYRGNEVMTAAASQGLTRKGVYAVRQKVNENPLYASTSEHVNVL LTRTEGK
CHIKV RGWVKQLQIDYRGYEVMTAAASQGLTRKGVYAVRQKVNENPLYASTSEHVNVL LTRTEGK
RRV   RGWVKQLQIDYRGHEVMTAAASQGLTRKGVYAVRQKVNENPLYAPSSSEHVNVL LTRTENR
SFV   RGWVKQLQLDYRGHEVMTAAASQGLTRKGVYAVRQKVNENPLYAPASEHVNVL LTRTEDR
MAYV  RGWVKQLQLDYRGHEVMTAAASQGLTRKGVYAVRMKVNENPLYAQSSSEHVNVL LTRTEGR
      ***** **:* **:* ***** . ***** ***** ; ***** **:* :
VEEV  IVWKTLAGDPWIKTLTAKYPGNFTATIEEWQAEHDAIMRHI LERPDETDVFQNKANVCWA
BFV   LVWKTLSGDPWIKTLTNPPRGHYTATIAEWEAEHQGIMKAI QGYAPPVNTFMNKVNVCWA
ONNV  LIWKTLSGDPWIKILQNPPKGNFKATIKEWEAEHASIMAGI CNHQMAFDTFQNKANVCWA
CHIKV LVWKTLSGDPWIKTLQNPPKGNFKATIKEWEVEHASIMAGI CSHQMTDFTFQNKANVCWA
RRV   LVWKTLSGDPWIKVLNIPKGFESATLEEWQEEHDNIMNALRERSTAVDPFQNKAKVCWA
SFV   LVWKTLAGDPWIKVLSNIPQGNFTATLEEWQEEHDKIMKVI EGPAAPVDAFQNKANVCWA
MAYV  LVWKTLSGDPWIKTLSNIPKGNFTATLEDWQQEHDAIMRAITQEAAPLDVFQNKAKVCWA
      ***** * . . . * * : * * : * * : * * : * * : * * : * * : * * :
VEEV  KALVPVLKTAGIDMTTEQWNTV-DYFETDKAHSAP EIVLNQLCVRFGLDLDGLFSAPT V
BFV   KTLTPVLETAGISLSAEDWSELLPPEAQDVAYSPE VALNIICTKMYGFDLDTGLFSRPSV
ONNV  KCLVPILDTAGIKLSDRQWSQIVQAFKEDRAYSP E VALNEICTRIYGVDDLDSGLFSKPLI
CHIKV KSLVPILETAGIKLNDRQWSQIIQAFKEDKAYSPE VALNEICTRMYGVDDLDSGLFSKPLV
RRV   KCLVQVLETAGIRMTAEEDTV-LAFREDRAYSP E VALNEICTKYGVDDLDSGLFSAQSV
SFV   KSLVPVLDTAGIRLTAEEWSTIIITAFKEDRAYSP E VALNEICTKYGVDDLDSGLFSAPKV
MAYV  KCLVPVLETAGIRLSAADWSSIIIAFKEDRAYSP E VALNEICTKVYGVDDLDSGLFSAPRV
      * * . : * . : * . : * . : * . : * . : * . : * . : * . : * . : * . :

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FIG. 11 (CONTINUED)

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VEEV KASRPEQITVCSSEPLPKYRITGVQKIQCSQPILESPKVPAYIHPRKYLVEPPVDETPE
BEV KCTNTTQFTVCSSEFELPKYHIQGVQVRVKCERIIILDPTVPPTYKRPCIRRYPSTISCNSS
ONNV RMNHTTSII VCSSEPLPKYKIEGVQVKVCSKALLEDHNVFSRVSPRYRPADEIIQTPQI
CHIKV RMNHVTSII VCSSEPLPKYKIEGVQVKVCSKVMLEDHNVFSRVSPRYRSSQESAQEAST
RRV RMNNTKAI I VCSSEPLPKYRIEGVQVKVCDRLVLI EDQTVPSLVSPRKYIPAAASTHADTV
SEV RSHQVKSMVVCSSSEPLPKYHVDGVQVKVCEKVLLEDP TVPSVVSPRKYAASTTDHSDRSL
MAYV RMHHTKDLVVCSSSEFQLPKYRIAGVQVRVCEKVMLEDPASVSPVQYLTSHSETT-VSL
: . : ***** : ***::*: : : : . *

VEEV PSAENQSTE-----GTPEQPPLITEDETRTRTPEPIIE-EEEEISLLSD-G
BEV E-DSRSLSTFSVSD--SSI-----GSLPVGDR-PIAPRTI-----
ONNV PTEACQDAQFVQS----ITDEAVPVPSDLEAC--DATMDWPSIDIVPTRQRSDSFDSEYS
CHIKV I-TSLTHSQFDLS----VDGEILPVPSDLAD--APALEP-ALDDGA-----
RRV SLDSTVSTGSAWSEFSEATYETMEVVAEVHHS--EPPVPPRRR---RA-----QVT
SEV R-----GEDLDWTTDSSSTASDTMSLPSLQSCDIDSIYEFMAPI---VV-----T--
MAYV S-----SFSITSDSSSLSTFPDLESLEEL---GNDFQ---SM---RM-----D--
:
VEEV PTHQVLQVEADIHGPPSVSSSSWSIPHASDEFVDLSILDTLEGASVTSGATSAETNS-Y
BEV -----
ONNV SRSNIQLVTADVHA-----PMY-----ANSLASSGGSVLSLSEQAQNGIM
CHIKV -----THLPSTTGNLA-----
RRV MHHQELLEVSMDHTPIAARV---EIPVY-----DTAVVVERVAI PCTSEYA-----
SEV -----ADVH-----PEPAGIADLAADV-----
MAYV -----ES-----VNQ-----

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FIG. 11 (CONTINUED)

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VEEV F-----AKSMELARPVPAPRTVFRNPPHPAPRTRTPSLAPSR--ACSR TSLVS--TPP
BFV FRP---VPAPRAPVLR TTPPKPPRTFTVRAEV-----
ONNV ILPDS EDTSISRVS TPIAPRRRLGR TINVTCDEREGKILEMASDRLE TAKPYTVALGV
CHIKV ----AVSDWVMSTVPVAPRRRRGRNLVTCDEREGNITEMASVRFRAELCPVVQET
RRV -KP---IPAPRAARVVPAPRIQRASTYRVSTFTP-----RVLRASVCSVTSA
SFV -HP---EPADHVDLENPIPPRPKRAAYLASR-----
MAYV -QP---IP-TAEFVVQVPVPPRPKRARRLAARMQVQ-----VEVHRPPVV---QR
      * :

VEEV GVN RVITREELEALTPSRTPS-R-----SVSR TSLVS
BFV -----HQAPPTVP-P-PPKRAAKLAREMHPCFTFGDFEGEHEVEELTASPLTFGD
ONNV STAD-ITAYPIQAPLGS-----TQPPALEQITFGDEAEGEIDNLLTGALTFGD
CHIKV AETR-DTAMSLQAPPSTATEPNHPI-SFGASSETFPITFGDENEGEIESLSSELLTFGD
RRV GVEFPWAPEDLEVLTPEPVHCKMREP-V-ELPWEPE DVDIQFGDFETS-----D-KIQFGD
SFV ----AAERPVPAPRKFTTAPRT-AFR---NKLPLTFGDEDEHEVDALAS-GITFGD
MAYV TKPV PAPRTSLRPVPAPRSCMPRPV-ELPWPQETVDVEFGAPT-----EEDS-EITFGD
      . : .

VEEV NPPGVNRVITREEFEAF--VAQQORRRFDAGAYIFSSDTGQGH LQQKSVRQTVLSEVVLER
BFV FAEGEIQGMG-----VEFERLGRAGGYIFSSDTGPGH LQQRSVLQNC TAECIYEF
ONNV FEFGVEELTDSEWSTCSDTDEELRLDRAGGYIFSSDTGQGH LQQKSVRQTTLPVNI VEE
CHIKV FLPGEVDDLTDSDWSTCSDTDEELRLDRAGGYIFSSDTGPGH LQQKSVRQSVLPVNTLEE
RRV ID-----FDQFRIGRAGAYIFSSDTGPGH LQQKSVRQH ALPCEMLYV
SFV F-----DDVLRIGRAGAYIFSSDTGSGH LQQKSVRQH NLQCAQLDA
MAYV ESAS-----EWET---ISNSSRLGRAGAYIFSSDVGP GH LQQKSVRQH DLEVPIMDR
      : * ** . ***** * ***** : ** *

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FIG. 11 (CONTINUED)

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VEEV TELEISYAPRLDQEKELLRKKLQLNFTPANRSRYQSRKVENMKAI TARRILQGLGHLK
BFV AKLEKI HAPKLDKTKEDI LRSKYQMKPSEANKSRYQSRKVENMKAEI VGRLLDGLGEYLG
ONNV VHEEKYPPKLDIKEQLLKKRLQESASTANRSRYQSRKVENMKATI IHRKKEGCRLYLA
CHIKV VHEEKYPPKLD EAKEQLLKKLQESASMANRSRYQSRKVENMKAAI IQRLKRGCRLYLM
RRV HEEERTYPPALDEAREKLLQAKMQMAPTEANKSRYQSRKVENMKAVI IDRLKDGARTYLT
SFV VEEKMYPPKLDTEREKLLLLKMQMHPSEANKSRYQSRKVENMKATVVDRLTSGARLYTG
MAYV VVEEKVYPPKDFEAKKQLLLKQLQMHATDANRSRYQSRKVENMKATI IDRLKQGSASYIS
      * : * : * : * : * : * : * : * : * : * : * : * : * : * : * :
VEEV AE-GKVECYRTLHPVPLYSSSVNRAESSPKVAVEACNAMLKENFPTVASYCI IPEYDAYL
BFV TEHP-VECYRITYPVPIYSTSVLRLGLSSAKTAVRACNAFLEANFPSVTSYKITDEYDAYL
ONNV SDTPRVPSYRITYPAPVYSPSISIKLNNPETAVAVCNEFLARNYPTVASYQVTDEYDAYL
CHIKV SETPKVPTYRTTYPAPVYSPPINVRLSNPESAVAAACNEFLARNYPTVSSYQITDEYDAYL
RRV EQSEKIPTYVSKYPRPVYSPVEDSLQNPFEVAVAAACNAFLEANYPTVASYQITDEYDAYL
SFV ADVGRIPTYAVRYPVYSPPTVIERFSSPDVAIAACNEVLSRNYPTVASYQITDEYDAYL
MAYV AEADKAVTYHVKYAKPRYSVPMQRLSSATTAVAAACNEFLARNYPTVASYQITDEYDAYL
      : * : * : * : * : * : * : * : * : * : * : * : * : * : * : * :
DMVDGASCCLDTASECPAKLRSEFPKKHSYLEPTIRSAVPSAIQNTLQNVLAATAATKRNCNV
BFV DMVDGSESCLDRSSSESPSRIRSEFPKTHSYLDPQINSVAVPSPFQNTLQNVLAATAATKRNCNV
ONNV DMVDGSESCLDRATEFNPSKLRSPKQHSYHAPTIRSAVPSPFQNTLQNVLAATAATKRNCNV
CHIKV DMVDGSESCLDRATEFNPSKLRSPKQHAYHAPSIRSAVPSPFQNTLQNVLAATAATKRNCNV
RRV DMVDGSESCLDRATEFCPAKLRCPKHHAYHQPVRSVAVPSPFQNTLQNVLAATAATKRNCNV
SFV DMVDGSDCLDRATEFCPAKLRCPKHHAYHQPTVRSVAVPSPFQNTLQNVLAATAATKRNCNV
MAYV DMVDGSESCLDRANECPAKLRCPKHHAYHVPQIRSAVPSPFQNTLQNVLAATAATKRNCNV
      ***** : . . * : * : * : * : * : * : * : * : * : * : * : * : * : * : * :

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FIG. 11 (CONTINUED)

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VEEV      ILEDGVDAELLTIEAAFEI SSIHLP TKTKFKFGAMKSGMFLTLEFVNTVINIVIASR
BFV      ILEDLGVNQNLNMLIEAAFEI VSTHLP TGTRFKFGAMKSGMFLTLEFVNTILNVVIACR
ONNV      LLEDLGVDPILDLIEAAFEI SSCHLP TGTRFKFGAMKSGMFLTLEFVNTLLNITIASR
CHIKV     LLEDLGVDSLLDLIEAAFEI SSCHLP TGTRFKFGAMKSGMFLTLEFVNTLLNITIASR
RRV      LLEDLGVDDQELLDLIEAAFEI TSVHLP TGTRFKFGAMKSGMFLTLEFVNTLLNIVIASR
SFV      ILEDLGVDDQYLLDLIEAAFEI SSCHLP TGTRFKFGAMKSGMFLTLEFVNTVLNITIASR
MAYV     ILEDLGVDNQLLDLIEAAFGQ ITSCHLP TGTRFKFGAMKSGMFLTLEFVNTVLNITIASR
          :*****: * * * * * :*****:***:*.***. *
          :*****: * * * * * :*****:***:*.***. *

VEEV      VLRLTGSPCAAFIGDDNIVKGVKSDKLMADRCATWLNMEVKI I DAVVGEKAPYFCGGF
BFV      VLEDQLAQSPCAAFIGDDNIIHGI ISDKLMADRCATWNNMEVKI L DSIVGIRPPYFCGGF
ONNV      VLEERLTSACAAAFIGDDNIIHGVVSDALMAARCATWNNMEVKI I DAVVSEKAPYFCGGF
CHIKV     VLEDRLTKSACAAAFIGDDNIIHGVVSDDELMAARCATWNNMEVKI I DAVVSLKAPYFCGGF
RRV      VLEKLTNSVCAAFIGDDNIVHGVRS DPLMAERCA SWVNMEVKI I DATMCEKPPYFCGGF
SFV      VLEQRLTDSACAAAFIGDDNIVHGV ISDKLMAERCA SWVNMEVKI I DAVMGEKPPYFCGGF
MAYV     VLEARLTNSACAAAFIGDDNVVHGVVSDKLMADRCATWVNMEVKI I DAVMCAKPPYFCGGF
          **.:**.* *****:***: ** * * * * * :*****:***:*.*****
          **.:**.* *****:***: ** * * * * * :*****:***:*.*****

VEEV      ILCDSVTGTACRVADPLKRLEKLGKPLAADDEHDDDRRRALHEESTRWNRVGILSELCKA
BFV      IVCDDVTGTACRVADPLKRLEKLGKPLPLDDGQDEDRRRALHDEVKTWSRVGLRHRVCEA
ONNV      ILHDTVTGTSCR VADPLKRLEKLGKPLAAGDEQDEDRRRALADEVTRWQRTGLITELEKA
CHIKV     ILHDTVTGTACRVADPLKRLEKLGKPLAAGDEQDEDRRRALADEVIRWQRTGLIDELEKA
RRV      ILYDKVTGSACRVADPLKRLEKLGKPLPAGDTQDEDRRRALKDETDRWARVGLKSELEIA
SFV      IVFDSVTQTACRVSDPLKRLEKLGKPLTAEDKQDEDRRRALSDEVSKWERTGLGAELEVA
MAYV     LVYDHSVTRMSCRIADPLKRLEKLGKPLPADDCQDEDRRRALHDEVKKWERSGLGSEIEVA
          :*. ** :*:*: ***** * * * * * :* * * * * :* * * * *

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FIG. 11 (CONTINUED)

[illegible]