

FIG. 1A

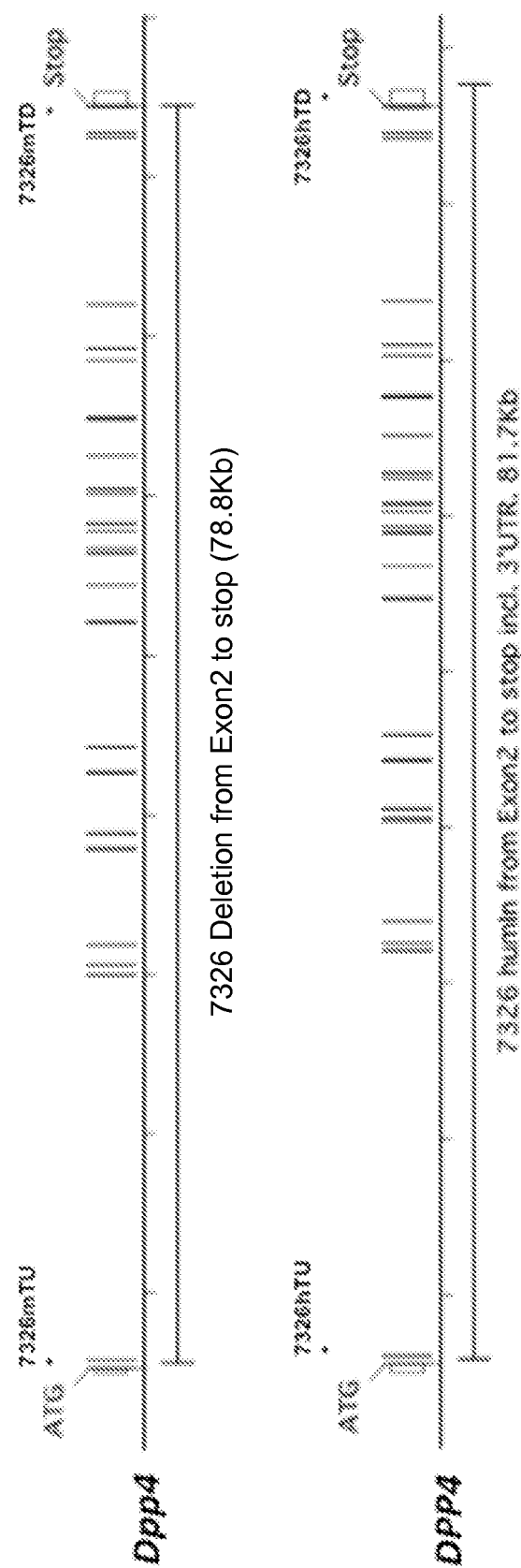


FIG. 1B

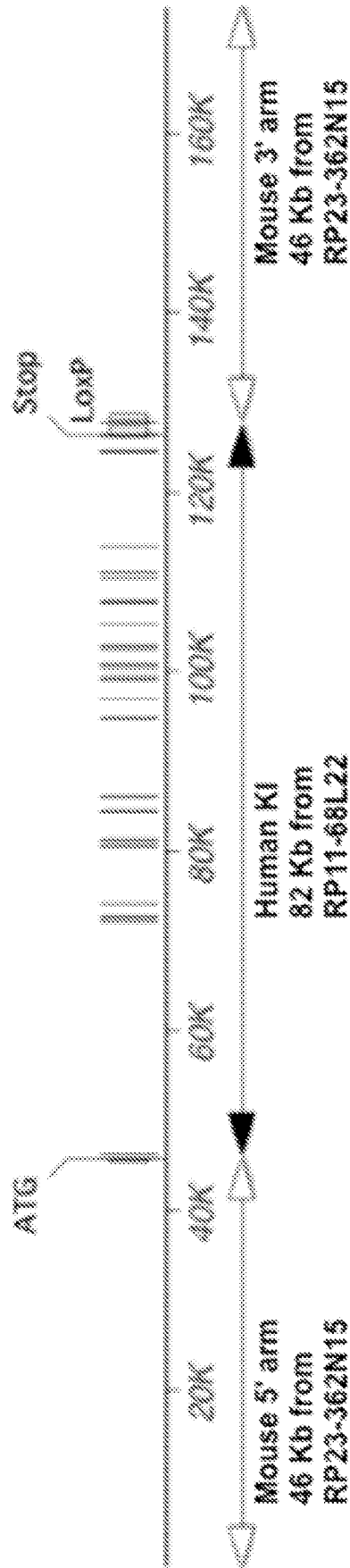


FIG. 2

++
MKTPWKVLLG LLGAAALVTI ITVPVLLNK GTDDATADSR KTYTLTDYLK NTYRLKLYSL
RWISDHEYLY KOENNILVEN AEYGNSSVEL ENSTFDEFGH SINDYSISPD GOFILLEINY
YKQWRHSYTA SYDIYDLNKR QLITEERIPN NTQWVTWSPV GHKLAYVWNN DIYVKIEPNL
PSYRITWTGK EDIIYNGITD WYEEEEVES A YSALWWSPNG TELAYAQFND TEVPLIEYSE
YSDESLOYPK TVRVYPKAG AVNPTVKFEV VNTDSLSSVT NATSIQITAP ASMLIGDHYL
CDVTWATQER ISLOWLRRIO NYSYMDICDY DESSGRWNCL VARQHIEMST TGWVGRFRPS
EPHETLDGNS FYKIISNEEG YRHICYFOID KKDCTFITKG TWEVIGIEAL TSDYLYYISN
EYKGMPPGGRN LYKIQLSDYT KVTCLSCELN PERCOYYSVS FSKEAKYYOL RCGPGGLPLY
TLHSSVNDKG LRVLEDNSAL DKMLQNVQMP SKKLDFIILN ETKEWYQMIL PPHEDKSKKY
PLLLDVYAGP CSQKADTVFR LNWATYLAST ENIIVASFEG RSGGYQGDKI MHAINRRLGT
FEVEDQIEAA RQFSKMGEVD NKRIAIWGWS YGGYVTSMVL GSGSGVEKCG IAVAPVSRWE
YYDSVYTERY MGLPTPEDNL DHYRNSTVMS RAENFKQVEY LLIHGTADDN VHEQQSAQIS
KALVDVGVD F QAMWYTDEDH GIASSTAHQH IYTHMSHEIK QCFSLP

+ Residues coded by mouse exon 1, are the same in human

Underscored residues coded by introduced human exons

Humanized protein sequence is 100% human

FIG. 3

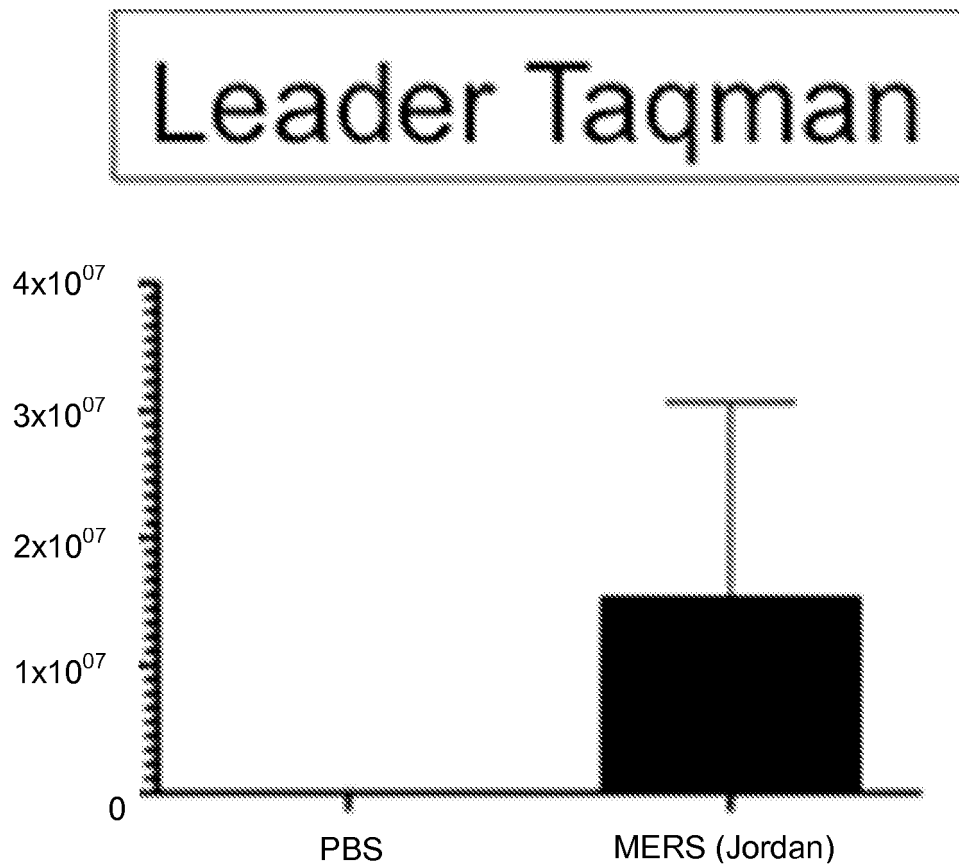


FIG. 4

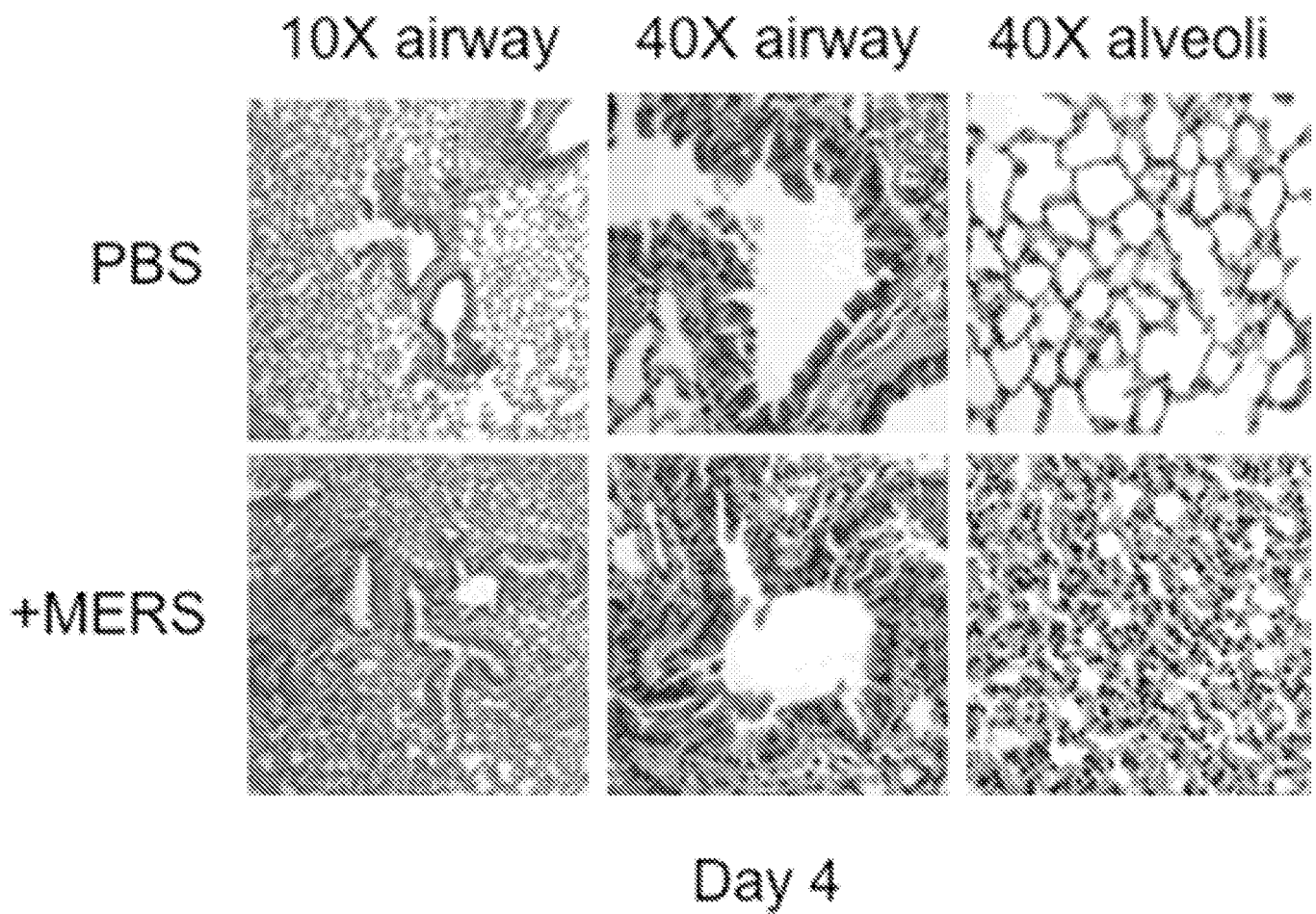


FIG. 5

mDpp4 MKTPWKVLLGLLGAALVTIIITVP**IV**LLSK--DEAAADSR**RT**Y**SL**ADYLKST**FR**VKSYSL**WW**VSDFEYLKQENNILL**LL**NAEHGNS**SS**IFLENSTFF**ES**FGY
 hDPP4 MKTPWKVLLGLLGAALVTIIITVP**VV**LLNKGT**DA**TADSR**K**TY**TL**TDYLKNT**YR**LKLYSL**RW**ISDHELYLKQENNILL**V**FNAEYGN**SS**VFLENSTFF**DE**FGH
 mDpp4 ---HS**VSP**DR**LF**V**LL**EYNYVKQWRHSY**TAS**YNIYD**VN**KROL**ITEE**K**I**PNNTQ**W**IT**W**SP**EG**HKLAY**VW**KNDIY**VK****VE**PH**LP**SHRITSTGEEN**VI**YNGITD
 hDPP4 SIND**YS**ISP**DG**Q**F**ILLEYN**VK**QWRHSY**TAS**YDIYD**LN**KROL**ITEE**R**I**PNNTQ**W**IT**W**SP**V**GHKLAY**VW**NNDIY**VK****TE**P**N**LPSYRIT**WT**G**KED**IT**Y**NGITD
 mDpp4 WVEEEVFGAYSAL**W**SP**NT**FLAYAQFNDTG**VP**LIEYSFYSD**ES**LQY**PK**TV**W**IT**P**YPKAGAVNPT**VK**FF**IV**NIDSLSS**SS**A**PI**Q**I**PAPAS**V**ARGDHYL
 hDPP4 WVEEEVFSAYSAL**W**SP**NG**FLAYAQFNDT**EV**PLIEYSFYSD**ES**LQY**PK**TV**R**V**P**YPKAGAVNPT**VK**FF**VV**NTD**SL**SS**V**T**NA**T**SI**Q**IT**APAS**M**LIGDHYL
 mDpp4 CDVV**W**AT**EE**RISLQWLRRIQNY**SVM**AI**CD**YDKINLT**W**NC**PS**E**QQ**H**V**EMSTTG**W**GRFRP**AE**PHFTSDGSSFYKIISDK**DG**Y**KH**ICH**F**PKDKDKCTFITKG
 hDPP4 CDVT**W**AT**Q**ERISLQWLRRIQNY**SVM**D**IC**DYDESSGR**W**NC**LV**A**RQ**H**I**EMSTTG**W**GRFRP**SE**PHFTLDGNSFYKIIS**NE****EG**Y**RH**IC**Y**FQ**ID**KKDKCTFITKG
 mDpp4 **A**WEV**IS**IEALTS**DY**LYIS**Q**YK**EM**PGGRNLYKIQL**TD**HT**N**VK**CL**SC**DL**N**PER**CQY**Y**AVSFSKEAKY**YQ**LG**CW**GPGLPLY**TL**HR**ST**DKELRVLEDNSAL
 hDPP4 **T**WEV**IG**IEALTS**DY**LYIS**EN**YK**GM**PGGRNLYKIQL**SD**YTK**VT**CL**SC**ELN**PER**CQY**Y**SVSFSKEAKY**YQ**LR**CS**GPGLPLY**TL**HS**SY**NDKGLRVLEDNSAL
 mDpp4 D**R**MLQDVQMP**SK**KLDFI**VL**NET**RF**WYQ**MI**LP**PH**FDK**SK**KYPL**LL**DVYAG**CS**Q**K**AD**AS**FR**LN**WATY**LA**STENIIVASFDGRGSYQ**GD**KIMHAINRR**LG**T
 hDPP4 D**K**MLQNVQMP**SK**KLDFI**IL**NET**K**FWYQ**MI**LP**PH**FDK**SK**KYPL**LL**DVYAG**CS**Q**K**AD**TV**FR**LN**WATY**LA**STENIIVASFDGRGSYQ**GD**KIMHAINRR**LG**T
 mDpp4 **LE**VEDQIEAARQ**F**V**K**MG**F**VD**SK**R**VA**I**W**GWSYGGY**VT**SMVLGSGSG**V**F**K**CGI**AVA**PVSRWEY**YD**SVYTERY**M**GL**PI**PEDNLDHYR**NS**TVMSRAE**HF**KQ**VE**Y
 hDPP4 **FE**VEDQIEAARQ**F**SK**MG**FVD**N**K**R****IA**I**W**GWSYGGY**VT**SMVLGSGSG**V**F**K**CGI**AVA**PVSRWEY**YD**SVYTERY**M**GL**PT**PEDNLDHYR**NS**TVMSRAE**NF**KQ**VE**Y
 mDpp4 **LL**I**H**GTADD**N**VHFQ**Q**SAQIS**K**ALVD**AG**VD**FQ**AMWY**TD**EDHG**IAS**STAHQ**HI**Y**SH**MSHF**LQ**QC**F**SL**H**
 hDPP4 **LL**I**H**GTADD**N**VHFQ**Q**SAQIS**K**ALVD**VG**VD**FQ**AMWY**TD**EDHG**IAS**STAHQ**HI**Y**TH**MSHF**IK**QC**F**SL**P**

FIG. 6

	Official Symbol	NCBI GeneID	Primary source	RefSeq mRNA ID	UniProt ID	Genomic Assembly	Location
Human	<i>DPP4</i>	1803	HGNC:3009	NM_001935.3	P27487	GRCh38	chr2:162,848,755-162,931,052 - strand

FIG. 7

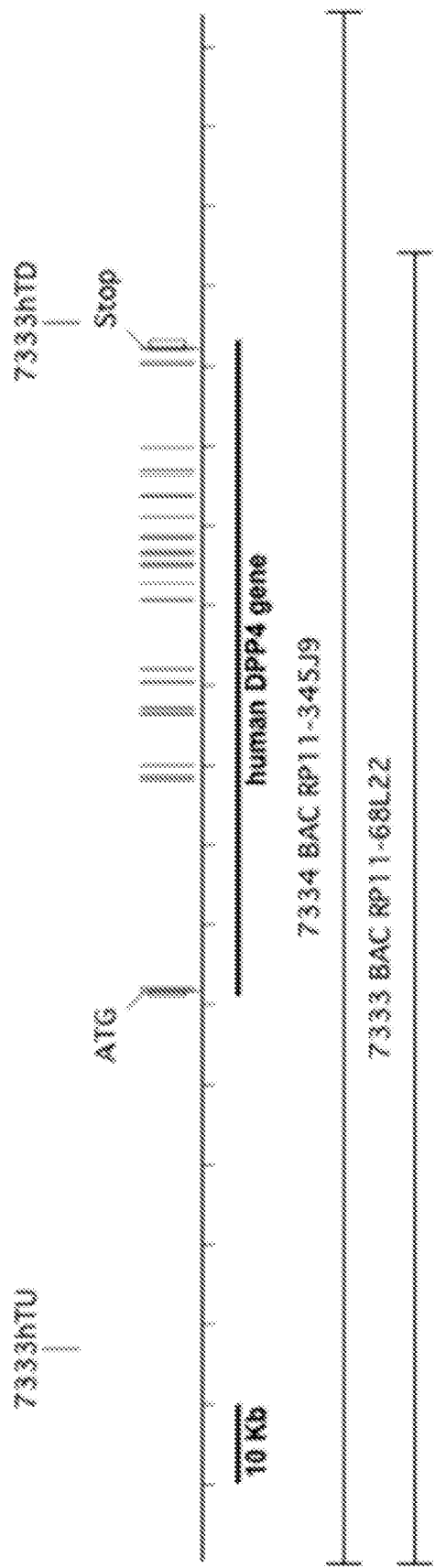


FIG. 8

Human TaqMan Gain of allele assays			Human TaqMan Gain of allele assays		
7333 h1U	Fwd	TGGCTTATTCCTATTCCTCACCTA (SEQ ID NO: 18)	Fwd	7333	TGCAGACTTGTCTTGACATTCATA (SEQ ID NO: 21)
	Probe (BHQ)	TGCTTCCCTCCTCCCTTCIGA (SEQ ID NO: 19)	Probe (BHQ)	hTD	AGCCTCTGCAGACACAGGAATGGC (SEQ ID NO: 22)
	Rev	GGCCTTAGCCAGAAACTG (SEQ ID NO: 20)	Rev		TCGGGCACCTGGGTACTC (SEQ ID NO: 23)

FIG. 9

MKTPWKVLLG	LLGAAALVTI	ITVPVLLNK	GTDDATADSR	KTYTLTDYLK	NTYRLKLYSL
RWISDHEYLY	KQENNILVFN	AEYGNSSVFL	ENSTFDEFGH	SINDYSISPD	GQFILLEYN
VKQWRHSYTA	SYDIYDLNKR	QLITEERIPN	NTQVWTWSPV	GHKLAYVWNN	DIYVKIEPNL
PSYRITWTGK	EDIIYNGITD	WVYEEVFSA	YSALWWSPNG	TFLAYAQFND	TEVPLIEYSF
YSDESLQYPK	TVRVPPYKAG	AVNPTVKFFV	VNTDSLSSVT	NATSIQITAP	ASMLIGDHYL
CDVTWATQER	ISLQWLRIQ	NYSVMDICDY	DESSGRWNCL	VARQHIE MST	TGWVGRFRPS
EPHFTLDGNS	FYKIISNEEG	YRHICYFQID	KKDCTFITKG	TWEVIGIEAL	TSDYLYYISN
EYKGMPGGRN	LYKIQLSDYT	KVTCLSCELN	PERCQYYSVS	FSKEAKYYQL	RCSGPGLPLY
TLHSSVNDKG	LRVLEDNSAL	DKMLQNVQMP	SKKLDFIILN	ETKFWYQMIL	PPHFDKSKKY
PLLLDVYAGP	CSQKADTVFR	LNWATYLAST	ENIIVASF DG	RSGGYQGDKI	MHAINRR LGT
FEVEDQIEAA	RQFSKMGFVD	NKRIAIWGWS	YGGYVTSMVL	GSGSGVFKCG	IAPVSRWE
YYDSVYTERY	MGLPTPEDNL	DHYRNSTVMS	RAENFKQVEY	LLIHGTADDN	VHFQQSAQIS
KALVDVGVD	QAMWYTD EDH	GIASSTAHQH	IYTHMSHF IK	QCFSLP	(SEQ ID NO: 24)

FIG. 10

Fig. 10A

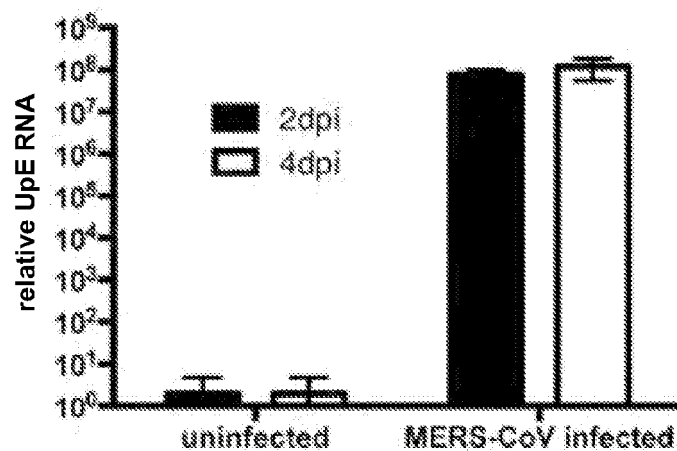


Fig. 10B

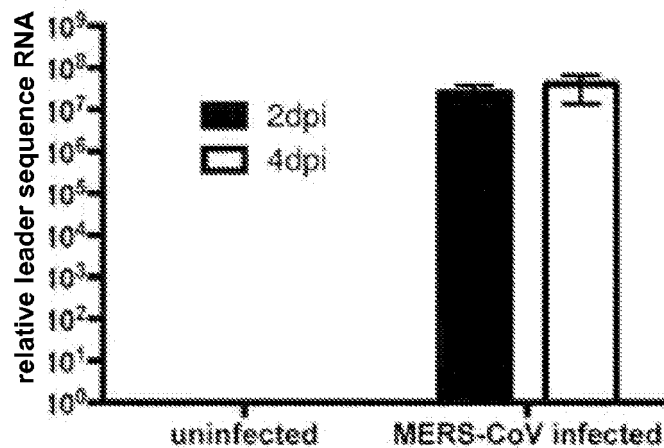


Fig. 10C

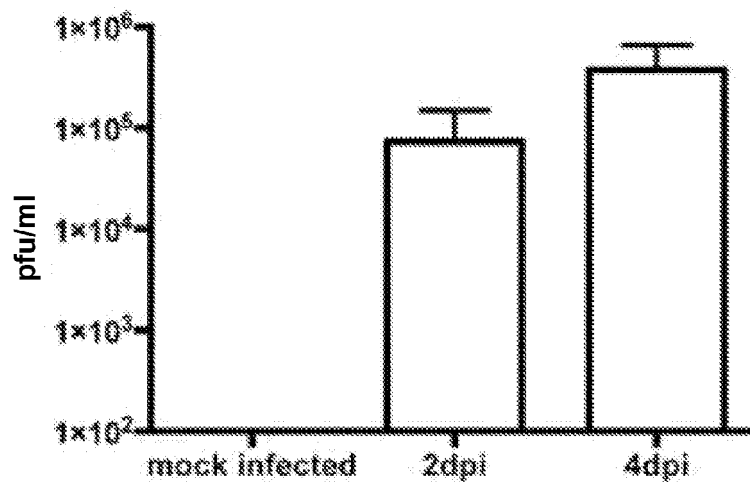


FIG. 10 (CONT)

Fig. 10D

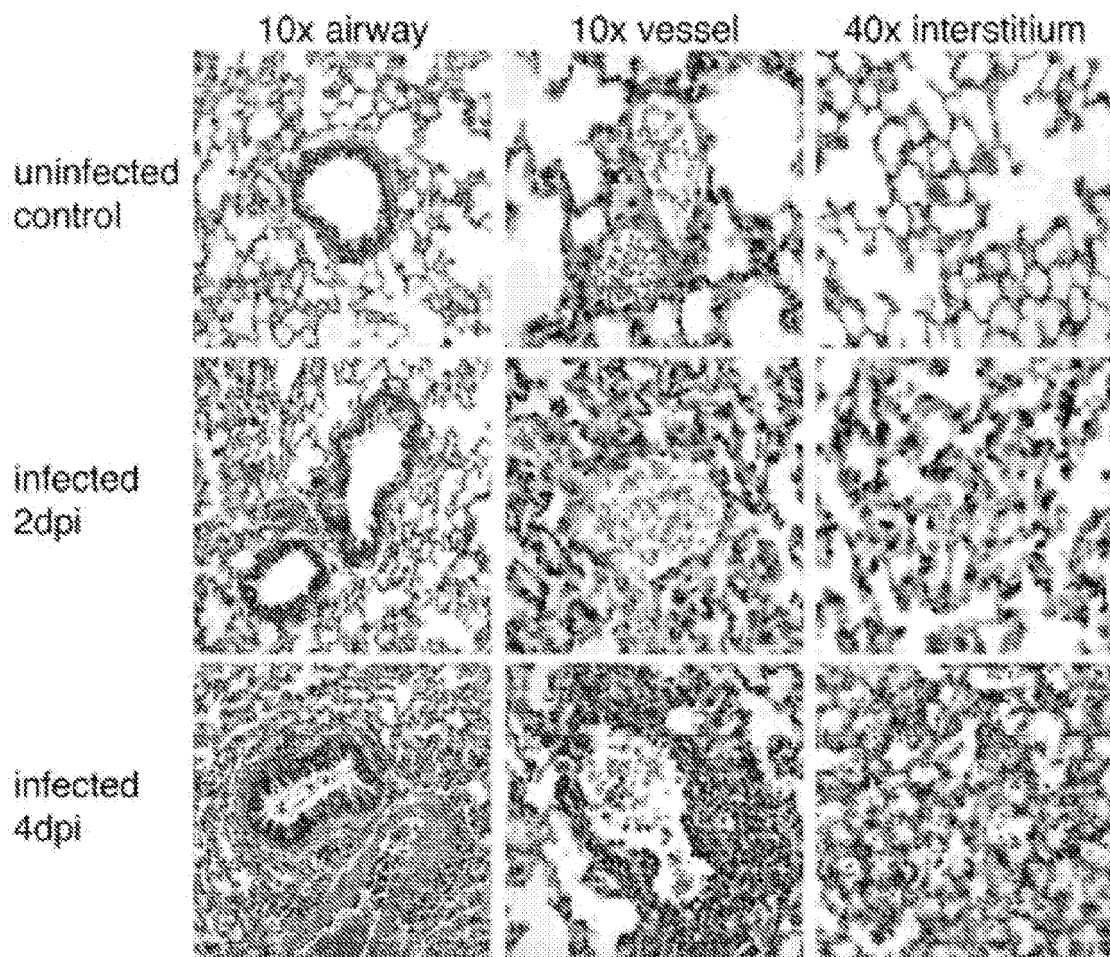


FIG. 11

Fig. 11A

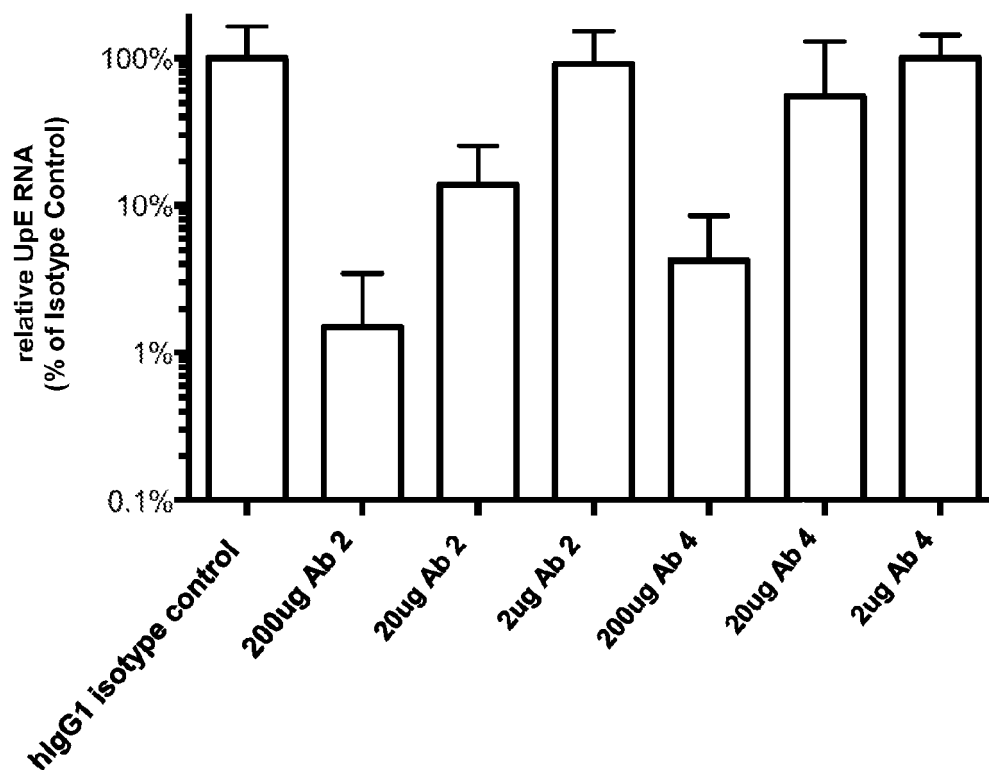


Fig. 11B

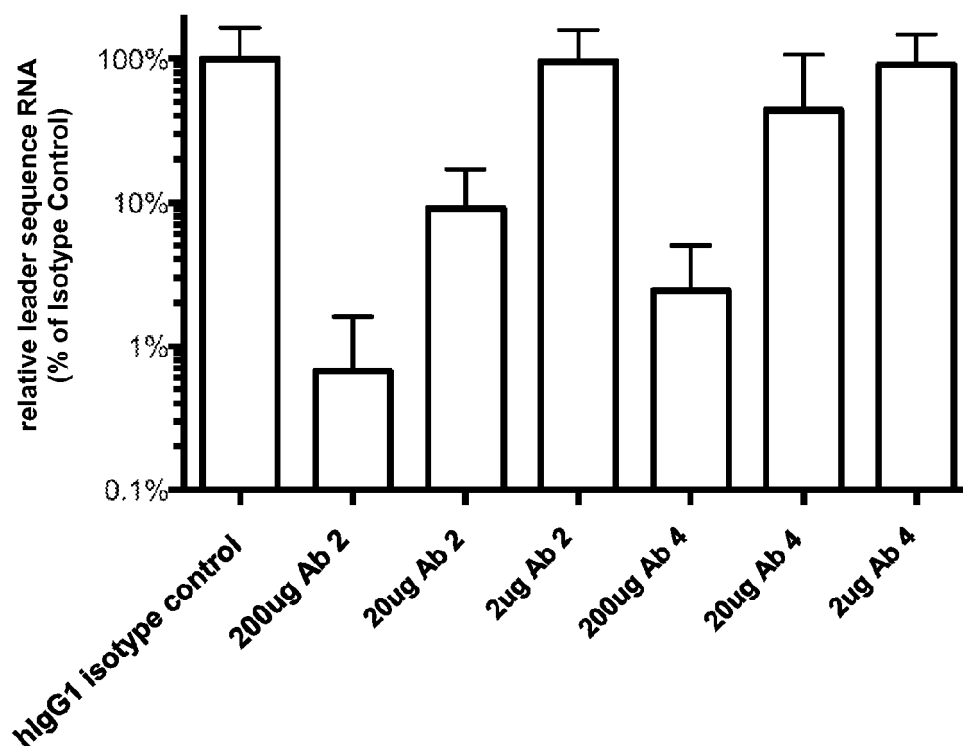


FIG. 11 (CONT)

Fig. 11C

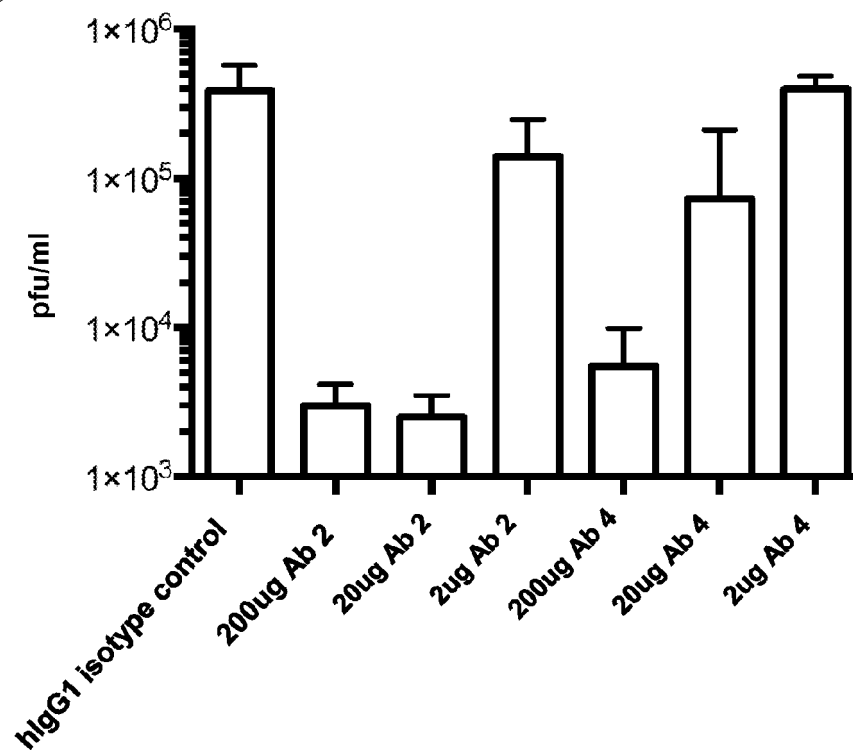


FIG. 12A

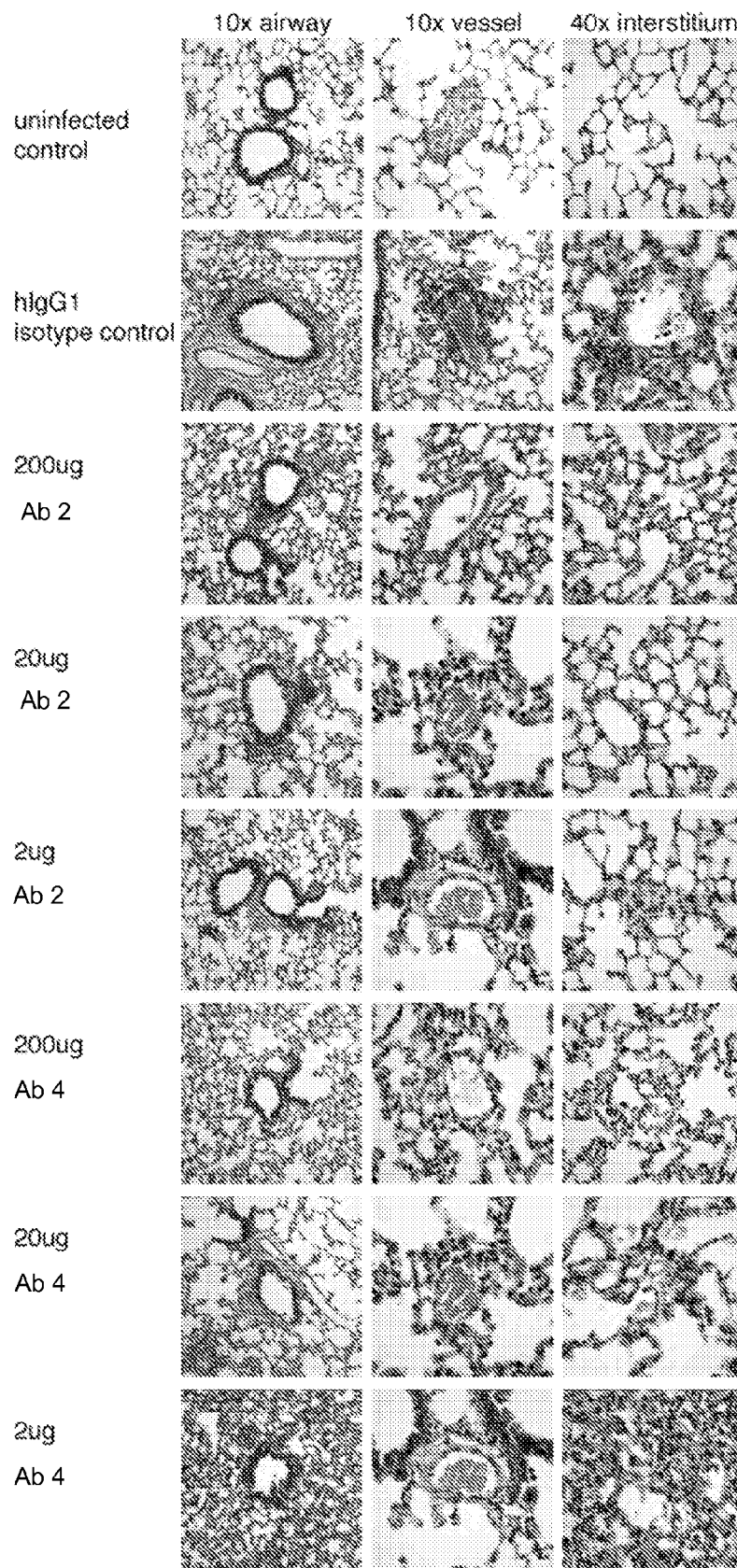


FIG. 12B

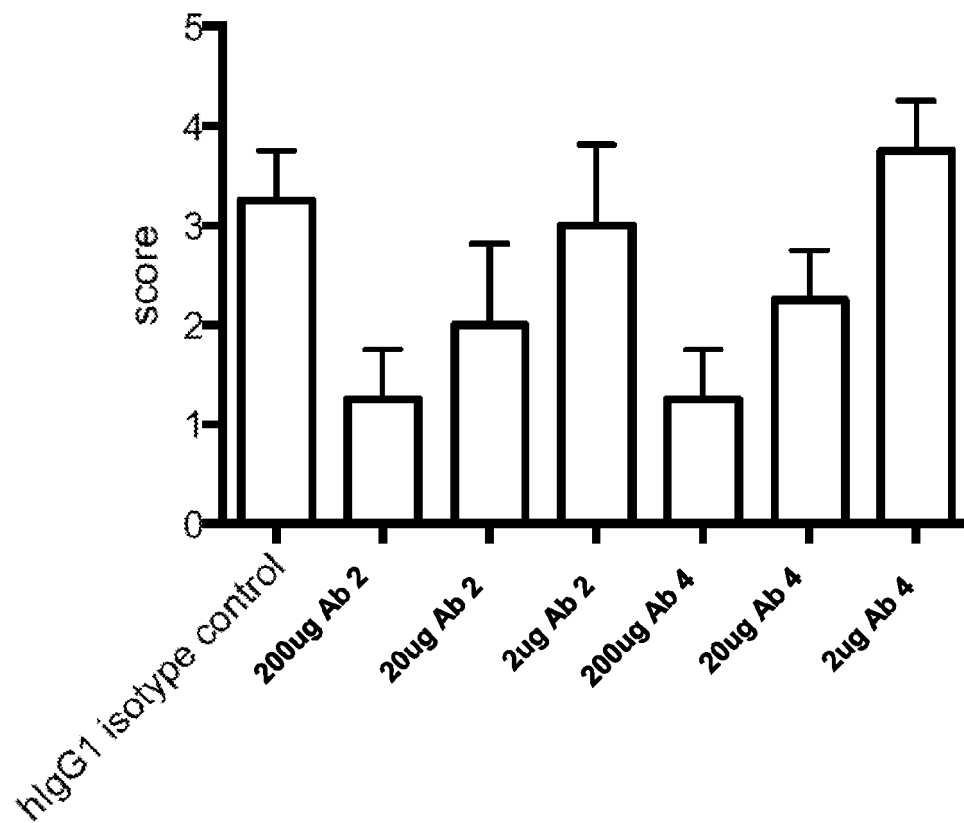


FIG. 13

FIG. 13A

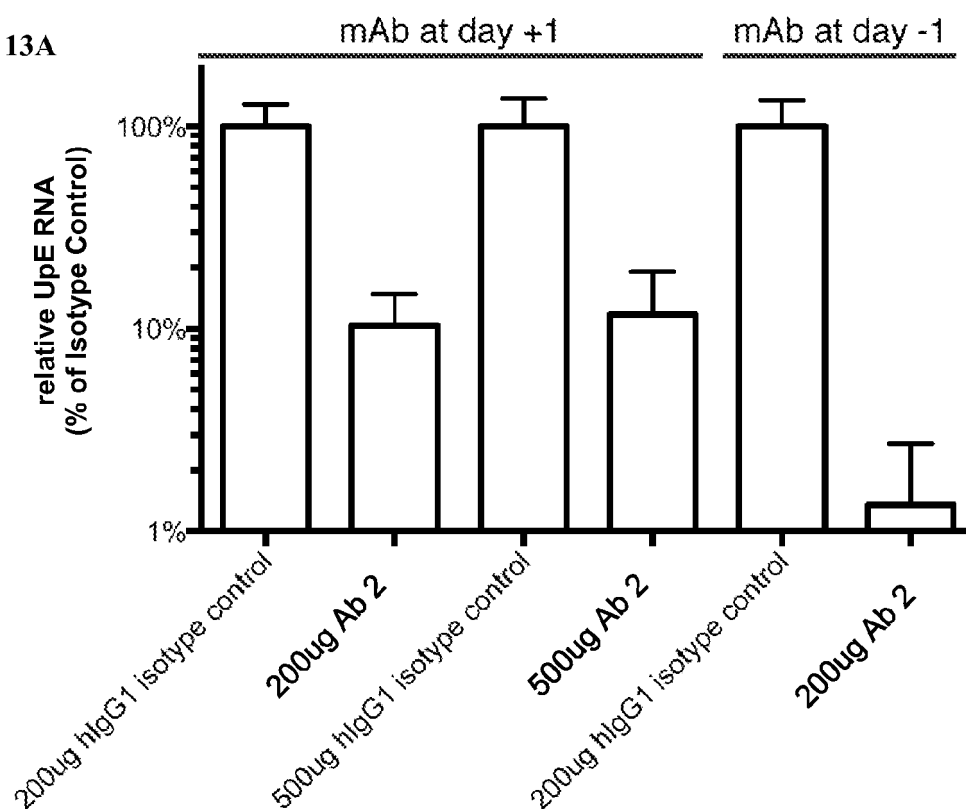


FIG. 13B

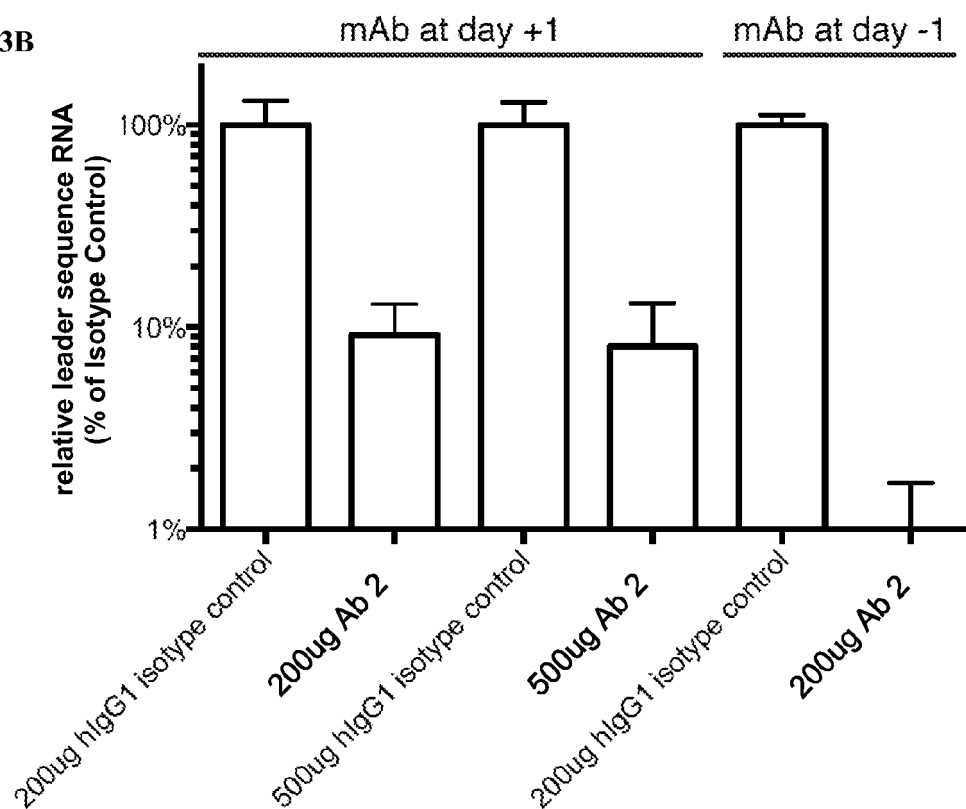


FIG. 13 (CONT)

FIG. 13C

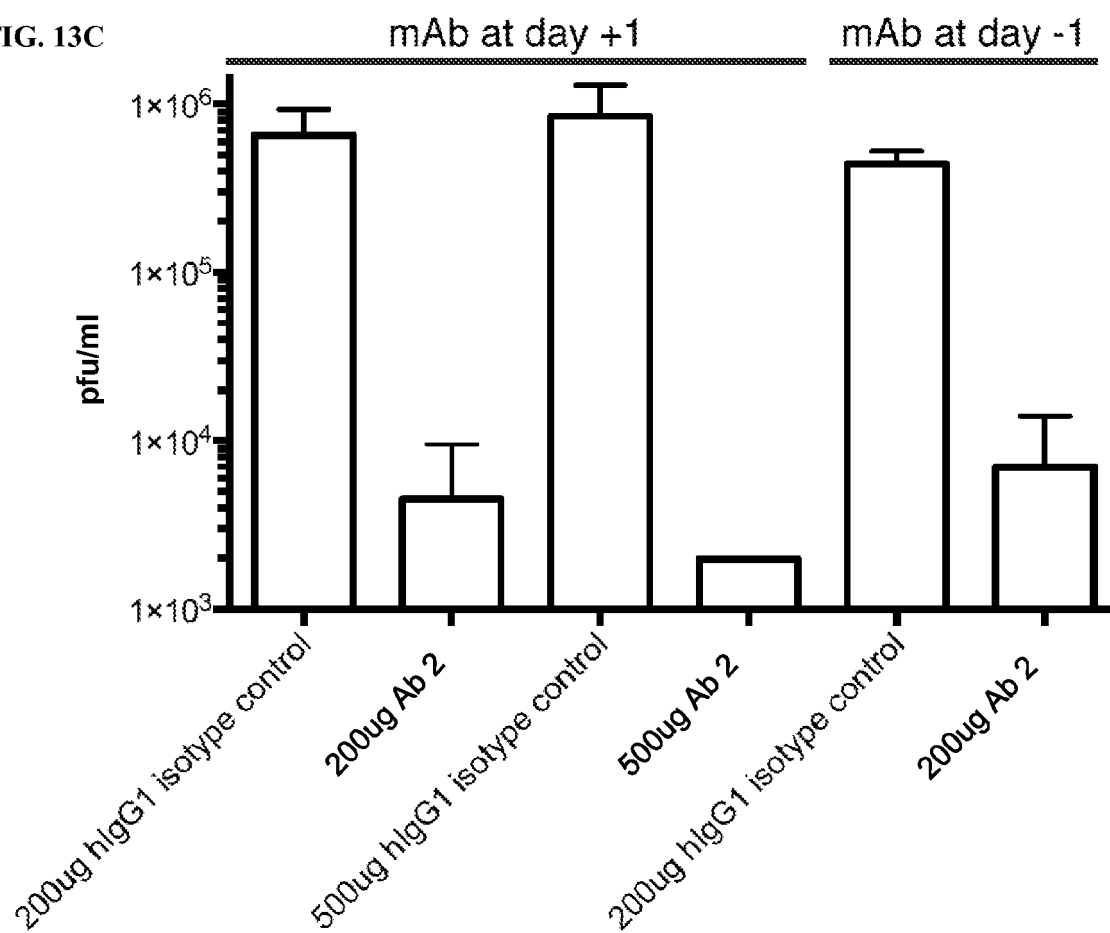


FIG. 14

FIG. 14A

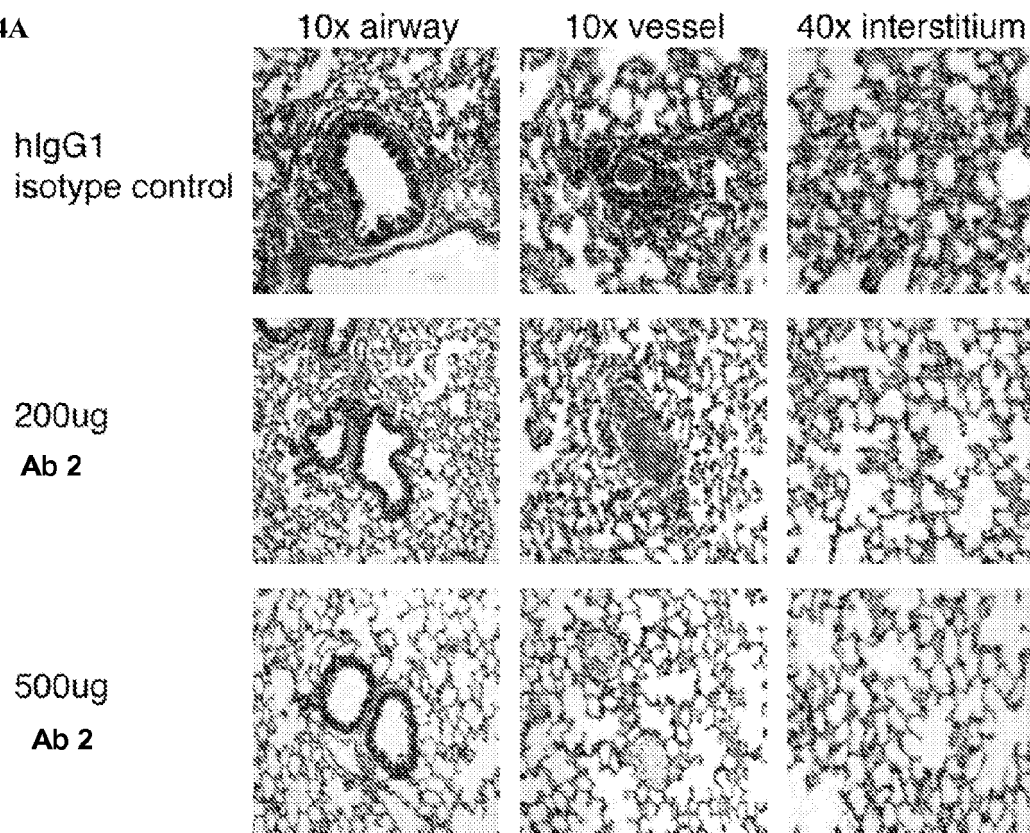


FIG. 14B

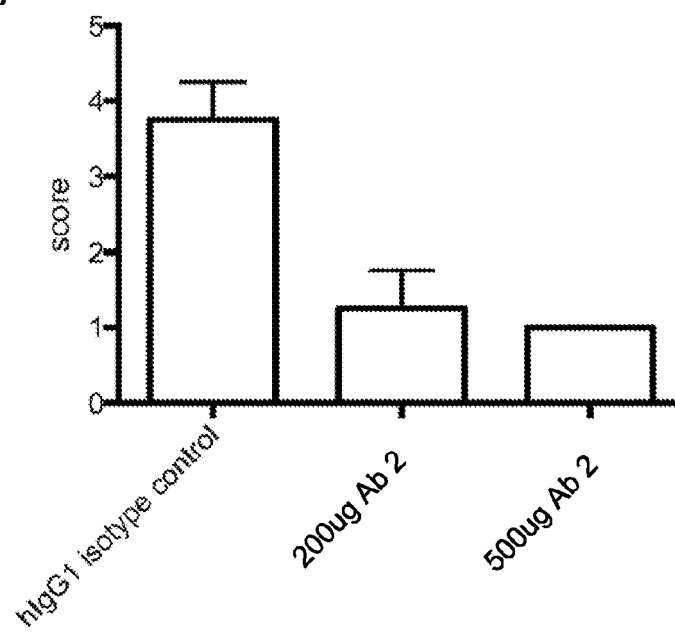


FIG. 15

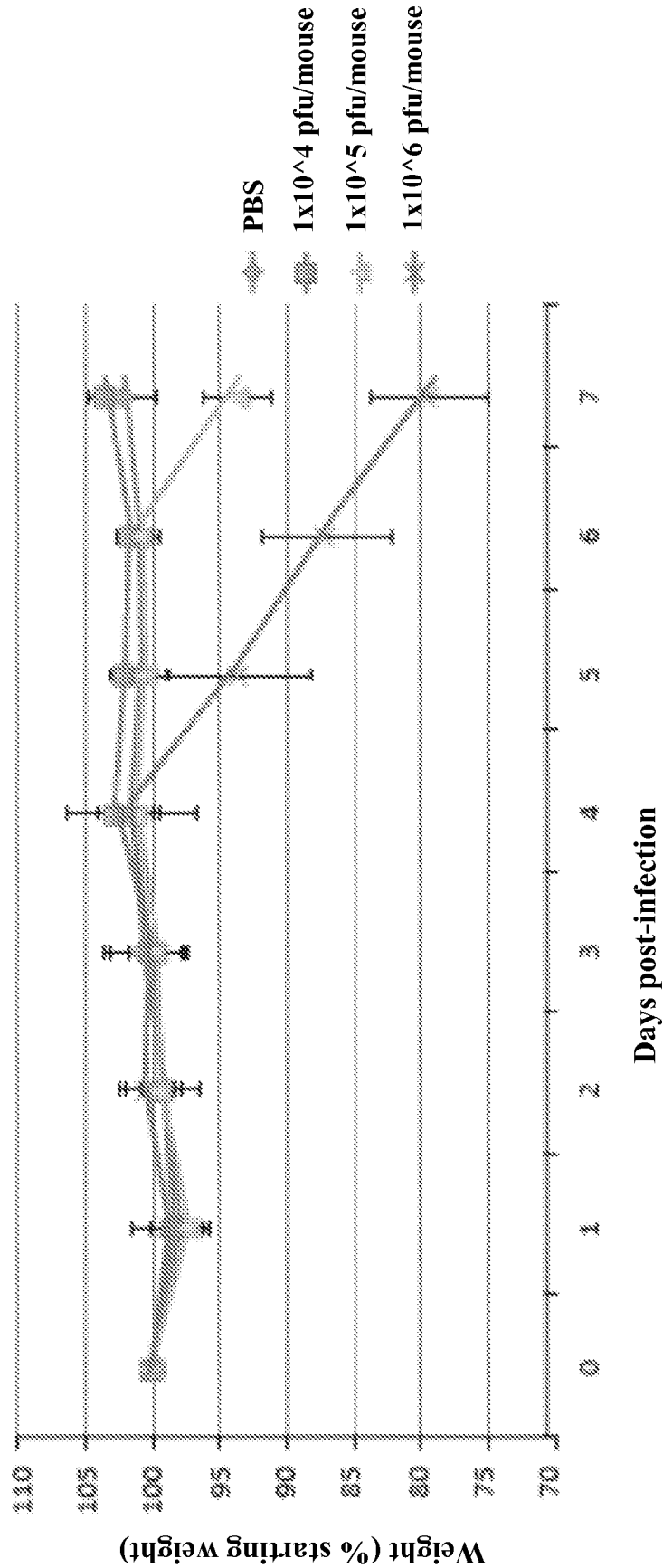


FIG. 16

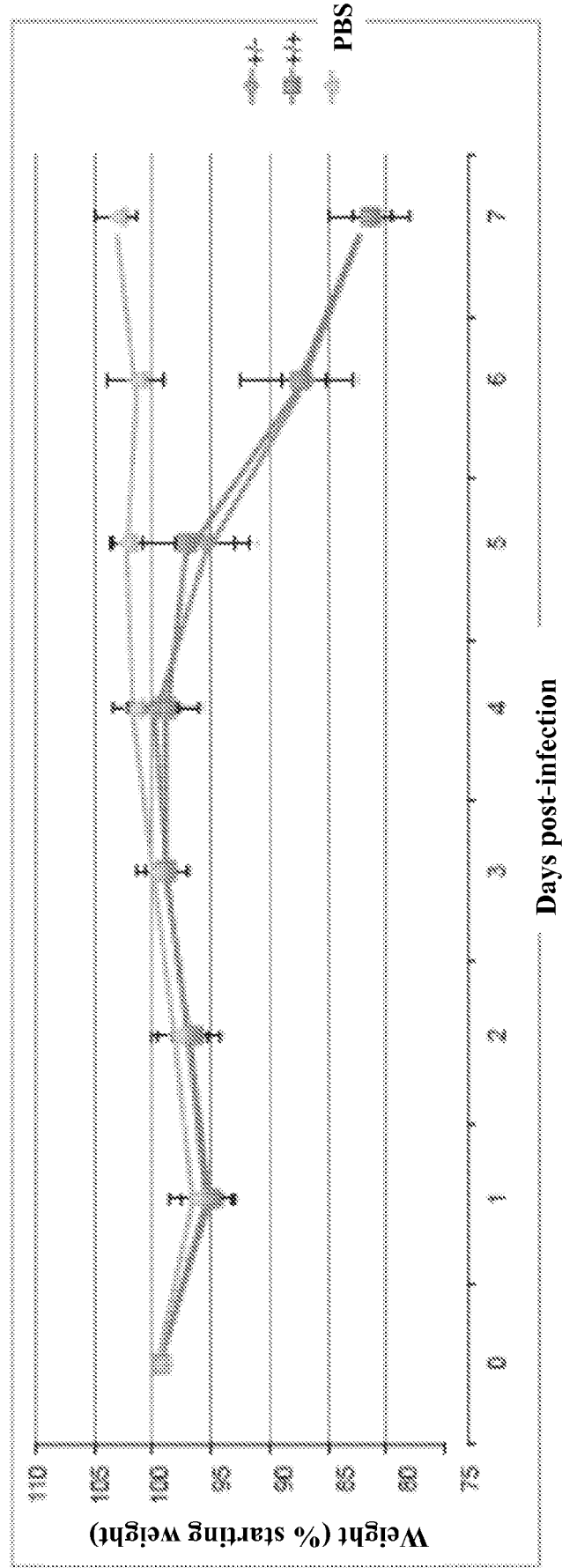


FIG. 17

