



Supplementary Files

Proteomics Computational Analyses Suggest that the Antennavirus Glycoprotein Complex Includes a Class I Viral Fusion Protein (α-Penetrene) with an Internal Zinc-Binding Domain and a Stable Signal Peptide

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Genus	Virus	Abbreviation	glycoprotein	nucleoprotein	RdRp	Zinc-binding
	Wēnlǐng frogfish	WIFAV-1	YP_009551553.1	AVM87642.1	YP_009551555.1	protein Not encoded
Antennavirus	arenavirus 1 Wēnlĭng frogfish arenavirus 2	WIFAV-2	YP_009551607.1	YP_009551604.1	YP_009551605.1	Not encoded
Hartmannivirus	Haartman Institute snake virus 1	HISV-1	AKN10683.2	AKN10684.1	AKN10711.2	Not encoded
	Haartman Institute snake virus 2	HISV-2	AZI72593.1	AZI72594.1	AZI72627.1	Not encoded
	Veterinary Pathology Zurich virus 2	VPZV-2	AZI72595.1	AZI72596.1	AZI72628.1	Not encoded
	Old schoolhouse virus 1	OScV-1	AZI72579.1	AZI72580.1	AZI72620.1	Not encoded
Reptarenavirus	CAS virus	CASV	YP_006590086.1	YP_006590087.1	YP_006590093.1	YP_006590092.1
	University of Giessen virus	UGV	AZI72713.1	AZI72714.1	YP_009508466.1	AZI72641.1
	Golden Gate virus	GGV	YP_006590090.1	YP_006590091.1	YP_006590089.1	YP_006590088.1
	Rotterdam virus	ROUTV	YP_009019194.1	YP_009019195.1	YP_009019197.1	YP_009019196.1
Mammarenavirus (Old World)	Lassa virus	LASV	NP_694870.1	NP_694869.1	AEY85215.1	AEY85214.1
	Lujo virus	LUJV	YP_002929490.1	YP_002929491.1	AFP21519.1	AFP21518.1
	Ippy virus	IPPYV	YP_516230.1	YP_516231.1	YP_516233.1	NC_007906.1
	Wenzhou virus	WENV	YP_009113206.1	YP_009113207.1	YP_009113209.1	AUF72662.1
<i>Mammarenavirus</i> (New World)	Junin Virus	JUNV	ACS12870.1	ACS12871.1	AEB32439.1	AEB32438.1
	Machupo virus	MACV	YP_089665.1	YP_089666.1	YP_089660.1	AIG51561.1
	Guanarito virus	GOTV	ALE15097.1	AAT88083.1	ALE15099.1	NP_899220.1
	Oliveros virus	OLVV	YP_001649210.1	YP_001649211.1	YP_001649214.1	YP_001649215.1

Table S1. Genbank accession numbers used for sequence and structural analyses.

	California (Pichinde) virus	CALV	AAB58485.2	AAD31540.2	AER45496.1	AER45495.1
	Flexal virus	FLEV	YP_001936019.1	YP_001936020.1	YP_001936024.1	YP_001936023.1
	Whitewater Arroyo virus	WWAV	YP_001911113.1	YP_001911114.1	YP_001911120.1	YP_001911119.1
	Ebola virus	EBOV	AAD14585.1	ALT19749.1	AAD14589.1	Not encoded
Ebolavirus	Sudan virus	SUDV	ACR33190.1	AWK96640.1	ALT19784.1	Not encoded
Loomon ng	Bundibugyo virus	BDBV	AKB09565.1	AKB09560.1	ACI28627.1	Not encoded
	Bombali virus	BOMV	ASJ82208.1	QAT98503.1	QAT98511.1	Not encoded
Ma have free	Marburg virus	MARV	CAA78117.1	CAA78114.1	ABA87130.1	Not encoded
Marburgvirus	Ravn virus	RAVV	ABS17551.1	ACD13016.1	ACD13022.1	Not encoded

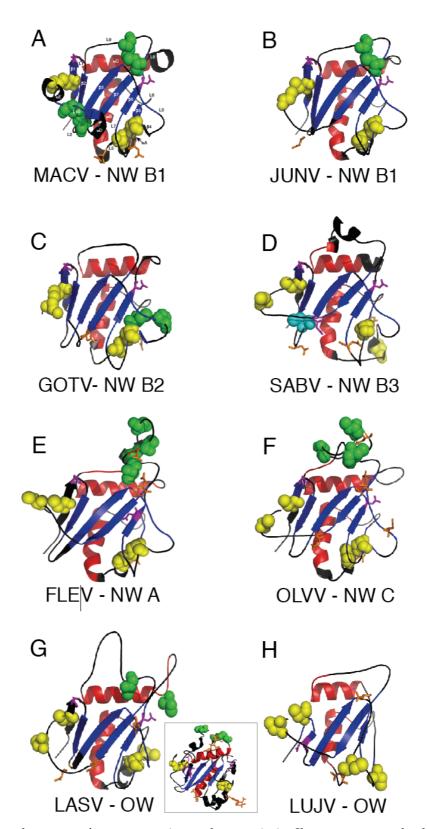


Figure S1. Conserved structure of mammarenaviruses glycoprotein 1. Shown are commonly placed α -helices (red) and a β -sandwich (blue arrows) that comprises the receptor-binding domain. There are two conserved cysteine linkages (yellow) and two conserved N-linked glycans (purple). Virus abbreviations: Machupo MACV, Junin JUNV, Guanarito GOTV, Sabia SABV, Flexal FLEV, Olivaros OLLV, Lassa LASV, Lujo LUJV. Inset: crystal structure of LASV GP1 in the prefusion trimer (PDB 5VK2). Old World OW, New World NW. A, B, C designate sublineages.

			ai pi pz	
	LASV	352	SSKSLQSAGFTAGLTYQQLMTLKDAMLQLDPNAKTW <mark>MDIEG</mark> RPE <mark>DF</mark> VEIAL <mark>Y</mark> QPSSG 408	
old world	TOAA	343	NERAKAPHQFPVGVSPQPER 399	
mammarenaviruses	IPPYV WENV	353 350	AKPKGAGHGMPSGLTWARGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAG	
	JUNV	343	QPEKNGQNLRLANLTFQPAGG 400 QPEKNGQNLRLANLTFQPAGK 399	
	MACV	344	TPEKAGQNIRLSHLT	
	GOTV	343	APEKNGQNIRLSNLSPQPSSG 399	
new world	OLVV	343	PPVKNGGNIRLNPLTDTQEAVIKEAISKLNPDETIW <mark>VDIEG</mark> PPTDPVELALYQPTTG 399	
mammarenaviruses	WWAV	344	IPIRNGGAPLLTTLKYQPESQ 400	
	CALV	343 342	PPVRNGGSPDLKQIP	
	CASV	342	PPVRNGGTPQINPLSPOPNSG 398 PPNKWLKD-DSKKILKPVELETSGGIDDFLSSPSEDSPNELEIIDPRS-LVLSDMAQKLFKNNKEVFIDIEGSATDPVEIALYGVEKN 438	
renterenevimene	UHV	360	VPDLKLS_ESDSSNEMDEYLSSTKEDPMEMEVIDPM-PHLLKVCKIFONKKVFVFVDEGPRDPVEIAFLNPDTS 444	
reptarenaviruses	GGV	360	PPVKGDKK-TEESSKIYIFKPAADEIDEYIRSPES-ASSDSEIPDPRV-LYMANACEDLFKGGDSVFMDIEGTAQDEVEIALENPDTG 444	
	ROUTV	361	APIKPIPA-SSDPSSNEMDEFIKGEKTNEEPEVEVIDPRT-PFLLKACEKIFRBKKPVFLDIEGSPODPVEIAFLNTDSS 438	
	HISV	372	EAKSSPNTEEKNIKTFKINEPKNLQLMRNANNLEREVTKGHRLIVF <mark>VDIEG</mark> SSS <mark>EPNEVAL</mark> GCFFQKND 440	
hartmaniviruses	HISV-2	372	ETESSSNTEGKNVKTFKINQPKNLQLMRNANNTEREVIKAHKLIVF <mark>VDIEG</mark> SSS <mark>EPNEVAI</mark> GC <mark>F</mark> FQKND 440	
	VPZV-2	372	APPSQEDPTVQPTSKNIKTYFFDNVPDVV-GPFHKPDAQSLRLIPKAEKMMTF <mark>IDIEG</mark> SSS <mark>EPNEVAI</mark> ST <mark>F</mark> FIAEE 446	
	OScV-1	373	RHDSRITLSSKNIKERKIANPKSEQHLSFANEKEKLLITGAVKISTFVDIEGSASEPNEVALTSFVTKGG 441	
antennaviruses	WlFAV-1 WlFAV-2	388 372	-NMIEKGEEEQKAQASSGVASVKNYKKSYNAALRAVPNPDNWK-DNMIGYVERNSVFVTQKSEPVMSMDIEGTWDNFREICCLVFDPEPQ 475 VKEVAAAPKSSVRRSPENKQTIAKTSSHLPIDTFLVRKTPESQSSGPFWVIDVEGEAKSPVEICIMKFDPEIG 444	
	WIEAV-2	312	vx	
			β3 α2 η1 α3 β4 α4 β5	
1	LASV	409	-CYIHF <mark>FREPTDLKQFKQDAK<mark>Y</mark>SH<mark>GID</mark>VTDLFATQPGLTSA<mark>V</mark>IDALPRNMVITCQGSD<mark>DI</mark>RKLLESQGRKD<mark>I</mark>KLID 483</mark>	
old world	LUJO	400	-LCLHF <mark>Y</mark> REPTDQKQFKNDSK <mark>Y</mark> CH <mark>GMD</mark> FTQLCSTQPGLTTAVLERLPLGMVITCQGKD <mark>DI</mark> EKL <mark>L</mark> HSQGRRDVKFID 474	
mammarenaviruses	IPPYV	410	-AYIHFYREPTDAKGFKQDSKYSHGIDIGDLFNVQPGL/SAVLELLPPNWVL/CQGSEDFKLLDSQGRRDILUID 464	
	WENV JUNV	407 400	-QYIHF <mark>YREPTDAKQFKQDSKYSHGID</mark> IVDLFKVQPGLTSAVIESLPKGMVLTCQGSE <mark>DIKKLL</mark> DSQGRRD <mark>I</mark> KLID 481 -QYIHCFRKPHDEKGFKNGSR <mark>HSHGIL</mark> MKDIEDAMPGVLSYVIGLLPPDMVVTTQGSDDIRKLFDLHGRRDLKLVD 474	
	MACV	400	-QTILCFREPHDENGERNGSRHSHGHIMEDIEDAMPGVLSTVIGLEPDMVVTTQGSDUIRALEDLEGREDLEUVD 474 -NYILCTREPHDENGERNGSRHSHGMLEKDLESAQPGLLSYVIGLEPDMVVTTQGSDUIRALEDLEGREDLEUVD 475	
	GOTV	400	-NYUHCFRENDERGERMSSRESHGILLENDESAQPGLESIVIGLEPQNHVLITIQSSDUIRELVUHGREDLEXUVD 475 -NYUHCFREPHDEKGFRNGSRESHGILLENDLENAQPGLESYVIGLEPQNSVITVQGADDIKKEFDIHGREDLEXUVD 474	
new world	OLVV	400	-YYIHCERLPHDEKGFRNGSKYSHGILLADIENARSGLISHILIKLPSKLVLACQGSDD-KKIMELNGRPDISTID 474	
mammarenaviruses	WWAV	401	-RYIHCYRRPNDIKSFKDOSKYCHGILLKDVENARPGLISSIIRSLPKSMVFTAQGADDIRKLFDMHGRQDLKIVD 475	
	CALV	400	-NYIHCYRFPHDEKSFKEQSKYSHGLLKDLADAQPGLISSIIRHLPQNMVFTAQGSDDIRLFEMHGRRDLKVLD 474	
	FLEV	399	-KYLHC <mark>YRRPHNEQSFKDQSKF</mark> SH <mark>GLL</mark> KDLESAQPGLVSA <mark>I</mark> IRALPEGMVLTAQGSD <mark>D</mark> LEKLFLMHGRRDLKVVD 473	
1	CASV	439	-QYIHI <mark>F</mark> RLPKDSESFKKASR <mark>H</mark> SH <mark>GLI</mark> ASDMADHINLFIDKNIKS <mark>M</mark> FSAIPKDQIVHCQGS- <mark>DI</mark> KEL <mark>L</mark> KFYGRSD <mark>I</mark> NVAD 516	
reptarenaviruses	UHV	445	-EYIHI <mark>F</mark> RMPKDKDDFKKSSK <mark>H</mark> CH <mark>GLL</mark> LDDMSNHPDLQPDKSIEA <mark>M</mark> FAKIPHDCTILSQGS- <mark>D</mark> IEDC <mark>F</mark> KFFGRKD <mark>I</mark> TVND 522	
	GGV	445	-kFvhif <mark>r</mark> mpkdkdgfkkask <mark>hahglll</mark> ddisdhpdlqtdknieA <mark>f</mark> fskvplsArifCqgs- <mark>di</mark> eeC <mark>l</mark> kffgrkd <mark>l</mark> kptd 522	
	ROUTV	439 441	-EFIHIFRMPKDKENFKKSSKHCHGLLDDISNHPNYSDKNIEAFAKLPSDSQILSQGS-DIEECLKFFGRKDITVND 516	
	HISV HISV-2	441	-EFWMREVI <mark>F</mark> YSSTPGKDYIQQAQ <mark>YCNGLNLDAIENSGKQSSNIFKDAK-SEL</mark> DIYSAVYFYGK <mark>O</mark> VEKF <mark>L</mark> ELCSFKGAKHEVIL 522 -EFWMREVIFYSSTPGKDYIQQAQYCNGLNLDAIENSGKQSSNIFKDAK-SEL	
hartmaniviruses	VPZV-2	447	-EEWHREAVIFISSTFGADIIQQAQICMGAALDAIENSGAQSSNIFADAA-SEIDIISAVIFIGAUVEAFEELCSFRGAALEVIL 522 -KCWLREAV <mark>F</mark> FSSNAGKDYLQNAQ <mark>YCNGLN</mark> LDALEVSGLCSKDIFQEAN-KEIGQFSRVYFYGN <mark>DV</mark> KTFLKLIGFKGNATELKL 528	
	OScV-1	442	-NVMERAVERSSINGSDILLGENE CHEMILIALE VSGLCSDILLGENE VSGLCSDILLGEN- NL 520	
	W1FAV-1		GKGGIDCILWHFPEINMGNDWCHGLDGKGSDYKQAPEOWKEQL-KTENE-AHGGEPICLSGEDVAQVMKSCDIAGVIQEIEPMS 558	
antennaviruses	W1FAV-2		GKGGIKDRFFRQIKSNIGDSSFTHGLNKSKSRDDVDWADDM-REFWVKVHGNVYCKGSRDIKDFLDNLGLSGTILDLEGIH 524	
			α5 α6 η2 β6 β7 α7 β8 α8	
	LASV	484		
1	LASV			569
old world	IPPYV	475 485	IQMSKEASRKFEDQVWDSYKTFCNQHTGIVVTKSKK-GKKEIT <mark>PHCALMD</mark> CIMYESAVNGQLYQEPIRNLLPADMIFRTAAKLSL- VLMSKSEARKFEDEVWDKFGFLCKIHTGHVVEKKKRGNKEEIT <mark>PHCALLD</mark> CLMYEAASTGRFSPGSIRAVLPRDMVFRAVTEKVAL	558
mammarenaviruses	WENV	485	VLMSKSEARREEDEVWDKFGFLCXIFGHVVEKKKRGRKEITPHCALLUCLMYEAASTGRFSPGSIRAVLPRDMVFRAVTEKVAL VMMSKVDARKFENEVWDDLKTLCXMHTGVVXEKKKRGGKQEITPHCALLUCLMYEAATQGSYRTPKLTPLLPTDLVFRXGAPKVTL	56
	WWAV	476	VRISACESTIFELIWKREFEH-CDKKGIVIKSKKKSTPATTMAHCHLLGVMFSAVISGSVSNERPKRHLPIDLIFEFETTVL	56
	CALV	475	VKLSAEQARTFEDEIMERYNGL-ETKKKEVIKKKKGAVQTTANFHCALLDTIMFATVTGWXRDQKPMRCLPIDTLYRNNTDLINL	56
	FLEV	474	VALTSEQARVYEDTVWERFNPLCKKBKGLVIKKKKKGAAPTSTN <mark>AHCALLD</mark> CIMFDATITGYIADAKPQQLLPIDLLYRTENL-IHL	55
new world	OLVV	475	LSFPTDOARF <mark>Y</mark> ESV <mark>V</mark> WEKFGSL <mark>C</mark> TK <mark>B</mark> NGVVLSRKKKGGNSGE <mark>PHCALLD</mark> CLMFOAAFEGNVPSIEPKPLLPSALVFKSESVVAM-	55
mammarenaviruses	MACV	476	IKLASEQARK <mark>F</mark> EEP <mark>I</mark> WSDFGHL <mark>C</mark> KK <mark>B</mark> NGVIVPKKKKKKDKDIPQSSE <mark>PHCALLD</mark> CLMFQSAIAGQPPQTKLEGLLPDALLFTLEAAFTI-	56
	JUNV	475	vkltseqarq <mark>f</mark> dqq vwekyghl<mark>c</mark>ky<mark>h</mark>ngvvvnkkkrekdtpfklasse<mark>ph calld</mark>cinfqsvldgklyeeeptpllppsllflpkayal-	56
1	GOTV	475	vrltgeqsrv <mark>f</mark> eqe <mark>v</mark> wekfghl <mark>r</mark> a ^H ngvlvpkkkskeanstke <mark>phCalld</mark> Cimfqsvldghlpdtvpiqllpntlvfqaksafvm-	56
1	CASV	562	SKWKKKDYNS <mark>Y</mark> HEG <mark>I</mark> LDIVSDILP ^C K ^B SGTVKDKTGALTS <mark>PHCALVO</mark> CUMFACAAKGHITIEDPKPVQ	58
reptarenaviruses	UHV	523	CKWKKEDYNIYHDELLDNYADSIP'YSGAVKDKKGALIAPHCALLCCWFSRKYSG-KNIKCPGPVEV	59
	GGV	523	CKWRREEFMKVHENLLDELSEVPPCASGTVKDKK-GALTAFHCALLCCLMFSRTASGGKKTKDPTPATI	59
	ROUTV VPZ-2	517 529	CKWKKEDYLI <mark>YHEDL</mark> LDNYADSLPCV <mark>H</mark> SGAVKDKKGALMA <mark>PHCALLD</mark> CMMFSRKYSG-KSIKHPEPATI PNWNEREKANYVVKKSSQICTKLSFHSVKLKAKEQDIKLKQLPHCAAEDNQRMYNYLTSKSQICTKLSFHSVKLKAKEQDIK	58
	VPZ-2 OScV-1	529	PNWNEREKANTVVKESSQIITKLSFESVELKAKEQDIKLKQLPHCHAEDNQRMINILTSKFTQTTL PDWRERKEQG <mark>Y</mark> ICS <mark>V</mark> GSIIINKSAIHNLKLKAKPNEMELKQLPHCASEDNMRLHNFVSNTKFTQTTL	59
hartmaniviruses	HISV	524	PDWRERREQGTICSVGSIICHASAIANIKLAAKPNEMELKQLPH_HSEUMHELHNEVSNIKFUTIL PEWKDRAAQGYRLIFSSKLCNKNEFHNIKLKAKEKDVQLKQLPHCASEDNIRMFNYIMNN	58
	HISV-2	523	PENKURANGALITETSULTIMEE BITMINED VIWGIPHCSEDNINENITIMN	58
I	W1FAV-1	559	PTWEERSQCPERAILSID-SCGT SKTNHNKRCKGADKRKHTPHCAEIDSWANIVIAMGKIPAEFS	624
antennaviruses	W1FAV-2		KSWDDINKTQYACILDLE-STQVCSRKDINDKLPQKQNGDINRKHLPHCAEVDCHLICMAMGRVPDEFIKT	59
		520		5.

Figure S2. Amino acid sequence alignments of the C-termini of nucleoproteins from representative members of the four arenavirus genera. Residues that are conserved (identical or chemically similar) are highlighted in yellow. Virus abbreviations as in Figure 5. Blue springs represent helical structures and blue arrows are beta sheets. Conserved residues in the active site of the endonuclease (DEDDh box) are highlighted in orange and residues that comprise a conserved a metal binding domain are highlighted in green.

a lation and a	LASV			
		1024	EYFQCFKS <mark>I</mark> LLIMNANTLMGRYTHYKSRNLNFKFDMGKLSDDVRI <mark>SERES</mark> NSEA <mark>L</mark> SLTNCTTAMLKNLCFYSQESPQSYDSVGPDTGRLK <mark>F</mark> SLSYKEQVGGNRELYIGDLR	1139
old world	TOJA	1049	dwfkCfkt <mark>i</mark> ll <u>o</u> lnvnhysgrfkhnsrlrinykfdykklyedari <mark>seres</mark> nsea <mark>m</mark> ckl <mark>l</mark> sftkcitstiknicfysdesptsyngagpdtgrlo <mark>fsl</mark> syke <mark>ovggnrelyigdm</mark> k	1164
mammarenaviruses	IPPYV	1010	eyfhcfks <mark>l</mark> llqmdanklsgkyshyksqnlnfrfdhgrlmddsri <mark>seres</mark> nsealska <mark>l</mark> slvncltsalknlcfysqespssytetgpdtgrmk <mark>f</mark> sl <mark>sykeqvggnrelyigdl</mark> r	1125
	WENV	1027	eyfQcfks <mark>l</mark> llqmggnkfsgkfmhhkhnnvnfkfdhskllddvri <mark>seres</mark> nsea <mark>l</mark> ska <mark>l</mark> skalsnctsaalknlcfyseespesftsvgpn7grlk <mark>f</mark> slsyk <mark>e</mark> qvggn rel yigdlr	1142
	JUNV	1021	EFFECFKY <mark>L</mark> LIQGHYDQKLGSYEHRSRSRLGFSSEVLRLKDEVRL <mark>STRES</mark> NSEA <mark>L</mark> ADKSYFTNAALRNLCFYSDDSPTEFTSISSNTGNLK <mark>FGL</mark> SYKEQVGSN <mark>RELYVGDL</mark> N	1136
	MACV	1025	EFFECFKY <mark>L</mark> LIQGDFDQKLGTYEHKSRSRLGLSSEALKVQENARV <mark>STRES</mark> NAEA <mark>L</mark> AKK <mark>L</mark> DRTFFTSAALRNLCFYSEDSPTEFTSVSTNTGNLK <mark>F</mark> GL <mark>SYKEQVGSNRELYVGDL</mark> N	1140
new world	GOTV OLVV	1011 1034	effoCFXTLIQAGFOOLGYTEHNIRSEGLSEEAFRLIKDVRVOHOONSEALADRIDKSFFTAALRILCFYSEESFFTYTCISBVVGHLKYGLSVISVGONBELYGDUN DLFECFXTLIGAGFOOLGYTEHNIRTEGFXELAUVREGGNELE DNSEL ARARIDKSVFSNSLIKLCFYSDESFFTYTCISBVVGHLKYGLSVISVGONBELYGU	1126 1149
mammarenaviruses	WWAV	1034	DEFETTER FRANKEN UNDER FERNEN UND FEINEN UND FEINEN DER STERNE UND VERSTEN STERNE UND VERSTEN SEIN SEUTEN UND VERSTEN UND VERSTEN UND VERSTEN UND VERSTEN UND VERSTEN SEIN SEUTEN UND VERSTEN SEIN SEUTEN UND VERSTEN SEIN SEIN SEUTEN UND VERSTEN SEIN SEIN SEIN SEIN SEIN SEIN SEIN SE	1135
	CALV	998	DYFECFKY LLASDYDNRVGRYDHKSRSRLGFTDAALQIRETSRI SSREDNSES IAKR.DQSFFTNSSLRNLCFYSDESPTERSGVSTNVGRLK GLSYKLOVGONRELYVGDLN	1113
	FLEV	1013	DFFECFKY <mark>I</mark> LVSTGYDNRVGRYDHKKINRLGFKEPALMISEVVRISTRESNSES <mark>I</mark> LKR <mark>L</mark> DKSFFTNSSLRNLCFYSDESATERSCVGTNIGRLKFGLSYKEQVGGNELYVGDLN	1128
	CASV	957	DIFSSFKF <mark>L</mark> LLWAGFNNFQGTYTHHSGPQSSILKLSDKYRKKMMI <mark>SSRVT</mark> NSES <mark>IQERL</mark> LNVSFGAPTLRNILFSTLDMDIKNSEIGPNNKLLQ <mark>FGL</mark> SF <mark>KEQVGGPRELYVGD</mark> SD	1072
reptarenaviruses	UHV	952	EFFSSFKF <mark>L</mark> LLMAGFNDFQGTYTHRSGPQSSFLSVSNKYRGESMI <mark>STRIT</mark> NSEAL <mark>Q</mark> DR <mark>LLAIKFGAPTLRNVLFSTINLDIKSSEVGPNNKPLQ<mark>FGL</mark>AIKEQVGGP<mark>RELIVGDS</mark>D</mark>	1067
	GGV	983	effssfkf <mark>l</mark> llwagfnnfqgtydhrsgpqssflsisnkyrgesml <mark>strvt</mark> nseal <mark>qdrl</mark> iaikygaptlrnilfstlnlemknseigpnnkplq <mark>fgl</mark> aikeqvggp <mark>relyygd</mark> sd	1098
	ROUTV1	982	EYFSSFKF <mark>LLIMAGFNDFQGTYDHRSGPQSSFLSISNKYRGESML<mark>STRVT</mark>NSEALQDRLIAIKYGAPTLRNILFSTLNLEMKDSEIGPNNKPLQFCLAIKEQVGGPRELYVGDSD</mark>	1097
	HISV	846	PDSLEMCLLLRIKNIKNDLRITKQEKGLKQYKFQNKLSSKNTALELLNE KKEKIKNKEIISELTCIDLSEIPNMFALSYKEQVQGTPELYIGDIK	946
hartmaniviruses	HISV-2 VPZV-1	846 852	PDSLEMC <mark>I</mark> LLKIKNIKNDLRITLKQAKGLKQTKFQNKL <mark>SSRN3TAIELINE</mark> TRKEKINNKEIISELTCIDLLSEIPNNN <mark>TAL</mark> SYNBQWGGTRELYIGDIK TDSLEMCLLMKIKSLKDELRIIQKRENCYNQNRFVNKL <mark>SSRN3TAVELINE</mark> TRKAKIKNNEIISELTCSDLLDEIPQPYTALSYNBQWGGTRELYIGDI	946 952
	OScV-1	850		950
	W1FAV-1	947	dfstpaellcrkl <mark>i</mark> okrkdfnkgkanilthkrkeevlrksry <mark>ssrt</mark> tsia <mark>l</mark> mdr <mark>l</mark> kogegttlesrk-gpatlply <mark>tomankeolog</mark> etrelfigdle	1046
antennaviruses	W1FAV-2	940	dhlttagllllkm <mark>c</mark> rkrkrpggkkkeaiQrvedelrrigrrtry <mark>srt</mark> tsaa <mark>l</mark> ksv <mark>i</mark> dseiedphtlacre-aspdfnly <mark>rsi</mark> anks <u>qigg</u> prelfigdin	1041
old world	LASV	1139 1165	TKNFTRLIEDTFEAISLOLSG <mark>SCI</mark> NNEKEFENAILSMFORDEN	1230 1251
	IPPYV	1126	TRATE REVENESS TRUETOR REVENESS TRUETOR T	
mammarenaviruses	WENV	1143	TRUTELED FEATURE TRUE TO LEAD TO THE TRUE TO LEAD TO THE TRUE TO THE TO THE TRUE TO THE TO THE TRUE TO THE TO THE TO THE TRUE TO THE TO THE TO THE TRUE TO THE TRUE TO THE	1216 1233
	JUNV	1127	TRINTRIVEDFSEAVGSSMKYTCINSEKEFERAICOM	1226
	MACV	1137	TKLMTRLVEDFSEV <mark>V</mark> TGSMRFSCLNSEKEFER <mark>A</mark> ICD <mark>M</mark> KMAVNNGD <mark>F</mark> SLS <mark>MDHSUXGP</mark> HMSPAL <mark>F</mark> FTFLAN- <mark>I</mark> NLTEPKSRTR-LNLDPLLNI	1230
	GOTV	1150	TKMMTRLVEDFTEAVANSMNYTCLNSEKEFER <mark>A</mark> ICD <mark>M</mark> KMAVNNGDLCCSLDHSKKGPFMSPALFHAFGA-LKFKISKTGEQ-VDLGPVINV	1216
new world	OLVV	1127	TKLMTRLIEDFSES <mark>V</mark> VSNMNY <mark>SCL</mark> NSEKEFER <mark>S</mark> VMEMKMSVNLGEMNFSLD#SKRGPYMSPVIFAAFLQG-LKLEQGSMCTP-VSVEPIITL	1239
mammarenaviruses	WWAV	1136	TKLTSRLIEDYFESITSESKF <mark>SCL</mark> NNELEFEKAILDM	1224
	CALV	1129 1150	TKLTTRLIEDYSSSIAQMRYTCLNNEKEFERALLD <mark>A</mark>	1202 1217
	CASV	1150	TRUTERLEUTESIVGUMRYCCENNERFERALLU	1217
	UHV	1068	TRLT RVLETSRN LONDRAWD COSCART DE TRL	1157
reptarenaviruses	GGV	1099	TKLITEVLEETSEN IGNELNNSCLNSDKKFSNFMKRIARSFFENEIVLSMDHSKWGPFNSPLQYHLMFEA-MESINDTDGRR-LDFSFAKTI	1188
	ROUTV	1098	TKLITRVLEETSRNIGNKINNSCLNSDKKFSS <mark>F</mark> MKRIPASFFENEIVLSMDESKWGPFNSPLOYHLMFEA-MEGINDIDGKR-LDFSFAKTI	1187
	HISV	951	<mark>TKIATKIAEE</mark> FAKQ <mark>I</mark> KDINPISCLYDHSSETL <mark>I</mark> RKH <mark>V</mark> RNCQLAKNAIVDLKFEDISNINDEQLSSVMTQSEEYL <mark>FGSLDHSKAGP</mark> LSMPSL <mark>F</mark> AD-MMDIFNDAIGIVGTLKNDLSLISDI	1065
hartmaniviruses	HISV-2	947	TKIATKIAEEFARQIKDINPISCLYDHSSETL <mark>I</mark> RKH <mark>V</mark> RNCQLARNASIDIKYEDILNINDEQLSSIMTQNEEYL <mark>F</mark> GS <mark>LDHSKWGP</mark> LSMPSL <mark>F</mark> AD-MMDIFNDAVGIVGTLKNDLSLISDI	1065
narananynaboo	VP2V-1	1141	SKISTHIVEEFAKQIKDINFISCIYDHSSETLIIRHVANCQNMRNTMLRFTPEELMDLNEDQLSSVFVENEDYLFGSLDHSKMGFLSNPSIFAD-MMDLFNSVLELVGKGENDLSLISEI	1071
	OScV-1 WlFAV-1	953 1047	TKIATRIVEEFAKQIKDINPISCLYDHASENLIRKHVUNCQTVNDNILDUNYEDILDINDEQISSULVEKEEF <mark>LFGSLDHSKNGPI</mark> SMPSLFAL-IMDTPNDCMTLVDPNKDNIDIISDI TXIVTKRMEEIGRRITTCLDNSCINDHKAEDSFRDLLTGSISHITD	1069 1132
antennaviruses	W1FAV-2	1042	TKLIFERLE VCRGLTPLFSSSCINNFERDSFRDLLKTSLTQCRQSILCHTLDFSNNGFTQCVDAFIYLIMELAGEQNGHVDD	1127
old world	LASV	1231	LMMRHMMYEIPFNVWTAMMKSFIKAGLGLERKTCGSTEDFFYSNTQCGVVPSHISSILMGGGTHMYEDFYALISERFINYAISCICGGTEDAYYS I CMWRHWYEVPFNVHAITKSFVRGIG GOOGUCGSTEBFFSFIFSHDBGIVPSHISSILMGGGTHMYENGVGITERKTINYIKI, I CMSTANA	1330
mammarenaviruses	LUJV IPPYV	1252 1217	<mark>lsweveryvev</mark> penvinaitksfvkrolgioogvintkt <mark>e</mark> fifse <mark>l</mark> dbgivpseissil <mark>dmogsilmasdy</mark> yglitek <mark>f</mark> inytikllfrgelksftss Isweieklvevpenvvtammrsyikrklgimkdtsotitesiffsefergvipsefssvl <mark>dmogsilmetsdfygliserf</mark> inyalrivsotite	1351 1316
Indifinal chavituses	WENV	1234	LOWENDERVEY INVISIONED INKIGUNSIONNUM INVISIONNUM INVISIONUM INVISIONUM INVISIONUM INVISIONUM INVISIONNUM	1316
	JUNV	1227	LKWHLHKVVEVPINVAEAYCVGKLKASIGIMGCDCTSVGEEFFHQYLQSRDQVPSHIMSVLDMGQGILHNTDLYGLITEOFLCYALDLLVDVIPVTYTS	1327
	MACV	1231	LKWHLEKTVEVPFNVAQAYCIGKLKRSLGIMECQCSSLTEEFYESYLQIQDEIPSHIMSVLDMGQGILENLSDLYALITEOFLNYVIHKLFDIDVTSYTSS	1331
new world	GOTV	1217	LKW <mark>HLHKAVE</mark> VPISVAEAYCTGMLKRRLGIMSLSCQSVC <mark>E</mark> EFFHQK <mark>L</mark> LLEEGVPSHIMSVL <mark>DMGQGILH</mark> NS <mark>SDI</mark> YGLITEQ <mark>FI</mark> NYCLDFLFDVIPVSYTS <mark>3</mark>	1317
mammarenaviruses	OLVV	1240	<mark>l</mark> sw <mark>iihkvye</mark> vpynvihaymtgmikrqlgimspgesskt <mark>e</mark> afihrl <mark>l</mark> vdereplshvmsvl <mark>dmgqgiih</mark> nt <mark>stl</mark> yglvteq <mark>fi</mark> nyamrilydvsmtsfts <mark>s</mark>	1340
manmarchaviruscs	WWAV	1225	LNWHLRKLVEVPIVVIAYLKGYTKGGGIADRMSNTICENFIFNWFARGVVPSHISSVLDWGQGILHNTODYGGVTEQFINICLEQCFDVKMSAYTS	1324
	CALV	1203 1218	LLWHIBYMYEVPFNVVEAYMKGFLKRGLGMMDKGGCTIAEEFMFGYFEKGKVPSBISSVLDMGQGILHNTDLYGLITEQFINYALELCYGARFISYTSS LNWHIBKMYEVPFNVVRAYMKGYIKRCTGVMEKNSMIMVEDFMEKOFETGVVPSBISSVIDMGQGILHNVSDFYGLVTEOFINYCIKLCYDTPCLSYTSS	1302 1317
	CASV	1163	LKWHLFRAVEVPVTILEDIYQTWTISLINNERR-PDRESSYTYFINOLKTKYLKTHDMKUFSQLHSYFDMGGELHTTCLYGLASEYLCKKVMELFNLLSMNTS	1271
reptarenaviruses	UHV	1158	LKWHLFKAVETPQILAEDVAMSALDISIGRRVRDKAKERTF <mark>E</mark> TFMLES <mark>V</mark> LSNKGLPSQIHSWFDM6QGILHHTSDLYGALASE <mark>VI</mark> TLKIRELFGLRCSTMNTS	1260
reptarenaviruaca	GGV	1889	LKW <mark>HLFXAVE</mark> TPQILAEDVILSSLDVSLGRRDRQIGKERTFETFMVDAVLSNKPVPSQIHSWFDMGQGILHHTSDLYGSLASE <mark>VI</mark> TKKIKEIFGVRSSTMNTS	1291
	ROUTV	1188	LKW <mark>H</mark> LF <mark>KAVE</mark> TPQILAEDVILSSLDISLGRRDRQIGKERTF <mark>E</mark> TFMVDA <mark>V</mark> LSNKPVPSQVHSWF <mark>DMGQGILHHTSDL</mark> YGSLASE <mark>VI</mark> TKKIKDIFGVRSSTMNTS	1290
	HISV	1066	LWK <mark>HVLAKVE</mark> ISSEYAEYLIKNDNTELKTSIEPVEINLLENTIDVYANKL <mark>LKEGKLG-MQTYPYDMGQGILHGWSD</mark> IWAGKTEE <mark>FI</mark> WDFIKNHITDFT-DVYNCVTS	1170
hartmaniviruses	HISV-2	1066	LWKHVLKKVEISSEYAEYLIKNDNTELKTSIEPIEMNLLENTTDYAKKLLKEGKLG-MQTYPYDMGQGILEGWCDIWAGKTEEFIWEFIKNHITDFV-DVYNCVTS	1170
	VPZV-1 OCSV-1	1072 1070	<mark>lwsrytkkye</mark> vsseyveylikrknytelktsinelannelgnet <mark>p</mark> tyatkl <mark>l</mark> eegklg-fotypy <mark>dnggsilhgwodi</mark> wagktee <mark>yi</mark> wkiikdhlydft-dsyncyts Lwkrtikryevsseyveylvkkenydlktscrsvigndlegks <mark>d</mark> nyagdl <mark>lk</mark> knelg-logypf <mark>dmggsilhgwsdlwagkteefi</mark> wsfikdnlkdys-dvyncyts	1176 1174
	W1FAV-1	1133	LKRHLMKRVE IPHLYIERLIRKKLSGGTMTDIEEVVSKR <mark>L</mark> QQDE-P-WVACPFDMGQGILENHSDILGALTEEFICERAAATTCVEKGMSENSITFRSMNTS	1232
antennaviruses	WlFAV-2	1128	LKR <mark>HMMRRVE</mark> IPFSCSEAVMKKVILGQPLKPH <mark>E</mark> EHIKSR <mark>LM</mark> QGE-P-WINSVF <mark>DNQQGILHNHSDL</mark> LGCMTEE <mark>FI</mark> CEKSCRKTEEKLGLEMHSITVKSMNTS	1227
old world	LASV	1331	DOQISLFDQSLTELLQROPEEFRTLIEFFYYYDDQLNFT"CPISVIGRFVAEFSCRFFVMGDEVPLLTFTVAAALMN KCKEPRQLAETIDTIDQSVAIG/PULLCNLQKKTIML DOQISLFDKELSAFIBDOFEELLCFLAYHYYT, SQLUNFY'PISSLCEFVAEFSCRFFVMGEVDFVMGEVDL/MFTVAAALMN KCKEPRQLAETIDTIDQSVAIG/PULCNLQKKCTM	1447
		1331 1352 1317	ddqislfdkelsatlrddteellcflnyhyy <mark>ls</mark> sq <mark>inkfysp</mark> ässlcefva <mark>efksrf</mark> fwægee <mark>vp</mark> lit <mark>kf</mark> vaaslenvkcktph <mark>q</mark> ls <mark>et</mark> vdtivd <mark>q</mark> caan <mark>gvpi</mark> nicni <mark>l</mark> qkrcin <mark>l</mark>	1447 1468
old world mammarenaviruses	LUJV	1352		1447
	LUJV IPPYV WENV JUNV	1352 1317 1334 1328	9 OLELDRELSATLADOTELLCFLWYTYT.SOLUTY'P' PSIGLEFYAETERFYNGEFYGLUT VAAGLMY'RGEFYGLG TYDYTU'G CAALGYPTICULGUC TU 9 OLELDRELTLADTOPEFLI'LLEFNNY, ODLUT CP SVORTVAETERFYNGEFYGLUT VAAGLMY KACHPYGLATTUTI GANLGYPYNGU VAUGU 9 OLELDRUT	1447 1468 1433 1450 1445
	LUJV IPPYV WENV JUNV MACV	1352 1317 1334 1328 1332	DOJISLIPKELSATIADOTELLCFLWYNYL SOLLIFYCPISSLCEFVARFYRFYWCEFYLLTY UVAALHWYKKREPOLSTUDTUD CAALGYPINICUL (XKCTU DOJISLISHFFILMDDOFELLVFLFWHYL SOLLWY COPYNAFFIAF YWGEFYLLYFYWSASLHWYKKREPOLAFTIDTIIO CAALGYPYNLLAM GOWSYNCH DOJISLIFDSDLTSLEDKGDEFLLIEHWYL DMLWFI OPISYWGFYAFFIAF FYWGEFYLLTY UVAALHWYKKREPOLAFTIDTIIO CAALGYPYNLCHM (ORTIAL DOJISLKIFCLAD-ENFQORTELLEMWYFHFI DAKLWY I DWLWYCAFYAFFIAF FYWGEFYLLTY UVAALHWYKKREPOLAFTIDTIIO CAALGYPYNLCHM DOJISLKIFCLAD-ENFQORTELLEMWYFHFI DAKLWY I DWLWYCAFYAFFIAF FYWGEFYLLTY UVAALHWYKKREPOLAFTIDTIIO CAALGYPINICUL SENNUL DOJISLKIFCLAD-ENFQORTELLEMWYFHFI DAKLWY I DWLWYCAFYAFFIAFFIAFFYWGEFYLLTY UVAALHWYKKREPOLAFTIDTIIO CAALGYPINICUL SENNUL DOJISLKIFCLAD-ENFQORTELLEMWYFHFI DAKLWY SENNU	1447 1468 1433 1450 1445 1448
mammarenaviruses	LUJV IPPYV WENV JUNV MACV GOTV	1352 1317 1334 1328 1332 1318	DOLELORELARIADOTELLOCIANTYC, SOLLET VY PISLECTARIA TY WEET SULTY WALENY (WALENY KICKPPG US TVOTTU GAALGY DICHLAGKECH) DOLELORENTIADTOPELLICTENTY DOLENT CP SUVGEVALES OF VYMEET SULTY WALENY KICKPPG ALT TVOTTI DAVIG VIG VIG VIG VIG VIG VI DOLELORENTIADKOEDELCILEFENT, DOLENT CP SUVGEVALES OF VYMEET SULTY VAALENY KICKPPG ALT TVOTTI DAVIG VIG VIG VIG VIG VIG VIG OVULLET-LOL-ENTODENTLEHVICHET, SOLLET CP SUVGEVALES OF VYMEET SULTY VAALENY KICKPPG ALT TVOTTI DAVIG VIG VIG VIG VIG VIG VIG DOVELSED SULTY VIG	1447 1468 1433 1450 1445 1448 1436
	LUJV IPPYV WENV JUNV MACV GOTV OLVV	1352 1317 1334 1328 1332 1318 1341	DOJELOPKELSATEADOTELLCELAYTYTYL SOLLIN YCP (SELCEYARTSOR FYNGEYVLLTY VAALEN (KKYPPOLS TYDTYD CCALGY) THICKLAKKE THI DOJELISENTETLIDDOTELLCELAYTYTYL SOLLIN YCP (SELCEYARTSOR FYNGEYVLLTY VAALEN (KKYPOLS TYDT) CCALGY SYNCHWARTHL DOJELISENTETLIDKODEDFLILLEHNYL DOMLING I DE SYNGEYVLETKE FYNGEFVLLTY VAALEN (KKYPOLS TIDTI ID SYNGEYVLUKM GONTAL DOJELISENTETLIDKODEDFLILEHNYL DOMLING I DE SYNGEYVLETKE FYNGEFVLLTY VAALEN (KKYPOLS TIDTI ID SYNGEYVLUKM GONTAL DOJELIK LPCLDKODEDFLILEHNYL DIG SKLIN YCP (SYNGEYVLETKE FYNGEFVLLTY VAALEN (KKYPOLS TIDTI ID SYNGEYVLUKM GONTAL DOJELIKLPSKKODEDFLILEHNYL DIG SKLIN YCP (SYNGEYVLETKE FYNGEFVLLTY VAALEN (KKYPOLS TIDTI ID SYNGEYVLUKM GONTAL DOJELIN KLYSK	1447 1468 1433 1450 1445 1448 1436 1460
mammarenaviruses new world	LUJV IPPYV WENV JUNV MACV GOTV OLVV WWAV	1352 1317 1334 1328 1332 1318 1341 1325	D QIELD KREARTADOTELLCFLAYTYT, SOLLTY'P PISLCETVARY OR FVNGET VELTY VAALUM (KRETPE US TVOTTU CAALUM VANDU (KRETPE US TVOTTU (KRETPE US TTU (KRETPE US TVOTTU (KRETPE US	1447 1468 1433 1450 1445 1448 1436 1460 1444
mammarenaviruses new world	LUJV IPPYV WENV JUNV MACV GOTV OLVV	1352 1317 1334 1328 1332 1318 1341	DOJELOPKELSATLADOTELLCTLATITYTYL SOLLIN TYP BISLCETVALTIGE FVMGETVLLTI VAALIM, KKREPPOLSTUTU CAALGA DITICU CAUGUS TUTU CAALGA DI CHELLOCALI CONTRUCTURE CAUGUS TUTU CAUGUS TUT	1447 1468 1433 1450 1445 1448 1436 1460
mammarenaviruses new world	LUJV IPPYV WENV JUNV MACV GOTV OLVV WWAV CALV	1352 1317 1334 1328 1332 1318 1341 1325 1303	DOLLEDKELSATLADOTELLCTLATITYTY, SOLLIN TYP, SOLLET VALET OR FVMGET VLLTT VAALAN, KKREPPOLST VUT OCAALGY DI CHLAKKETH DOLLEDKELSATLADOTELLCTLATITYTY, SOLLIN TYP, SOLLET VALET OR FVMGET VLLTT VAALAN, KKREPPOLAT TUD CAALGY DI CHLAKGOV DUKTAL DOLLEDKELSATLAKORDELCILLEFHNI, DOLLNT TP, SVUGRVALEKOR FVMGET VLLTT VAALAN, KKREPPOLAT TUD CAALGY DI CHLAKGOV DOVULLTELGAKORDELCILLEFHNI, DOLLNT TP, SVUGRVALEKOR FVMGET VLLTT VAALAN, KKREPPOLAT TUD CAALGY DI CHLAKGOV DOVULLTELGAKORDELCILLEFHNI, DOLLNT TP, SVUGRVALEKOR FVMGET VLLTT VAALAN, KKREPPOLAT TUD COALGY DI CHLAKGOV SUKUKI DOVULLTELGAKORDELCILLEFHNI, DALLNT TP, SVUGRVALEKOR FVMGET VLLTT VAALAN, KKREPPOLAT TUD COALGY DI CHLAKGOV SUKUKI DOUTSTIKLEPHNLDOLLGFUMLELICTBDI SKRINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPPOLAT TUD COALGY DI CHLAKGOV SUKUKI DOUTSTIKLEPHNLE-DOLLGFUMLELICTBDI SKRINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPPOLAT TUD COALGY DI CHLAKGOV SUKUKI DOUTSTIKLEPHNLE-DOLLGFUMLELICTBDI SKRINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DI SVUGRVALEKOR DOUTSTIKLEPHNLE-DOLLGFUMLELLCTBDI SKRINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DI SVUGRVALEKOR DOUTSTIKLEPHNLE-DOLLGFUMLELLCTBDI SKRINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DI SVUGRVALEKOR DOUTSTIKLEPHNLENKINGKINTET DI DURINTY P, SVUGRVALEKOR FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DI SVUGRVALEKOR DOUTSTIKLEPHNLEDKENNEKINGKINTY DI DURINTY P, SVUGRVALEKOR FVMGET FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DI SVUGRVALEKOR DOUTSTIKLEPHNDELSINGKUKELLONGT DURINT DURINTY P, SVUGRVALEKOR FVMGET FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DURINT DOUTSTIKLEPHNDELSINGKUKELLONGT DURINT DURINTY P, SVUGRVALEKOR FVMGET FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DURINT DOUTSTIKLEPHNDELSINGKUKELLONGT DURINT DURINTY P, SVUGRVALEKOR FVMGET FVMGET FVMGET LLTT VAALAN, KKREPOLAT TUD COALGY DURINT DURINT DURINT DURINT DURINTUK DURINT DURINT DURINT DURINTUK DURINT DURING DURINT DURIN	1447 1468 1433 1450 1445 1448 1436 1460 1444 1422
mammarenaviruses new world	LUJV IPPYV WENV JUNV MACV GOTV OLVV WWAV CALV FLEV HISV HISV-1	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318	© QIELD KRELSATLADOTELLCFLATTYTY, SOLLITY (P) SOLLITY (P) VOREFY SLLTY VAALUM (KRETPE US, TVOTTU (CAA, UP) SILCHLAGKE TH © QIELD KRELSATLADOTELLCFLATTYTY, SOLLITY (P) SOLCETVALTE OR (VMGETY SLLTY VAALUM (KRETPE US, TVOTTU (CAA, UP) SILCHLAGKE TH © QIELD KRELSATLAKOREDELCILEFENT, DHLITY (P) SVORTVALTE OR (VMGETY SLLTY VAALUM (KRETPE US, TVOTTU (CAA, UP) SILCHLAG (OP) SVORTVALTA © QUELT STRUCTO	1447 1468 1433 1450 1445 1448 1436 1460 1444 1422 1436 1278 1278
mammarenaviruses new world mammarenaviruses	LUJV IPPVV WENV JUNV MACV GOTV OLVV WWAV CALV FLEV HISV HISV-1 CASV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272	DOJELSENKELSATLADOTELLCELATINTYL SOLLIN TYPE SOLLET VARTERER FVWGETVELLT VAALAN, KCKEPPEDS TVOTUO CAALGO PILCELAGEN TH DOJELSENKELSATLADOTELLCELATINTYL SOLLIN TYPE SOLCET VARTERER FVWGETVELLT VAALAN, KCKEPPEDA TVOTI DO AALGO PILCEN LQKECTH DOJELSENKELSEN TALAKGEDELCILEFENT, DOLLIN TYPE SVUGEVAREN FVWGETVELLT VAALAN, KCKEPPEDA TVOTI DO AALGO PILCEN GOVERTAL DOVELKEFUED	1447 1468 1433 1450 1445 1445 1446 1446 1444 1422 1436 1278 1389
mammarenaviruses new world mammarenaviruses	LUJV IPPYV WENV JUNV MACV GOTV OLVV WMAV CALV FLEV HISV-1 CASV HISV-1 CASV UHV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261	© QIELD KRELSATLADOTELLCTLATITYL SOLLITY (* 19 SOLLETYLATIS OR I TWOETS (* LLT) VAALUM (KRETPE US TWOTTO) CAA US * DICKLAUGKETH O QIELD KRELSATLADOTELLCTLATIS (* 19 SOURS * 20 K) (* 19 SOURS * 20 K) (* 19 K) (* 10	1447 1468 1433 1450 1445 1448 1446 1444 1422 1436 1278 1278 1389 1377
mammarenaviruses new world mammarenaviruses	LUJV IPPVV WENV JUNV GOTV OLVV OLVV CALV FLEV HISV HISV-1 CASV UHV GGV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261 1292	DOJELSENELSATLADOTELLCTATITYTY, SOLLINY CYC PSOLCEY VARTER FYWGETY PLICIT VAALAN, KCKEPPG UST, TVOTTO CAALGY PSILCHLQKKCTHL DOJELSENETTLADTOPEELLCTATIENT, SOLLINY CYC PSOLCEY VARTER FYWGETY PLICIT VAALAN, KCKEPPG UST, TVOTTO CAALGY PSILCHLQKKCTHL DOJELSENETLADKGEDEFLITLEENNY, DHLNY CYP, SVUGRVAREK FYWGETY PLICIT VGAALAN, KCKEPPG UST, TVOTTO CAALGY PSILCHLQKKTHL DOVELKTERGEDKGEDEFLITHEENNY, DHLNY CYP, SVUGRVAREK FYWGETY PLICIT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHLQKKTHL DOVELKTERGEDKGEDEFLINKVERFEL JANGE TIEKY VAGATAR FYWGETY PLICIT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHLQKKTHL DOVELKTERGEDKGEDEFLINKVERFEL JANGE TIEKY VAGATAR FYWGETY PLICIT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHLQKGTH SUKRY DOVELKTERGET FOR SULLAFE TIE SUKRY PSILCHT SUKRY DOJETTLENGFELENGEL SUKRY DOJEN SUKRY PSILCHT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHT SUKRY DOJETTLENGFELENGEL SUKRY PSILCHT SUKRY PSILCHT VGAALAN, KCKEPPG UST, TUTTO CAALGY PSILCHT VGAALAN, KCKEPG UST, TUTTO CAALGY PSILCHT VGAALAN, KCKEPG UST, TUTO CAALGY PSILCHT VGAALAN, KCKEPG US	1447 1468 1433 1450 1445 1446 1446 1446 1444 1422 1436 1278 1278 1379 1377 1408
mammarenaviruses new world mammarenaviruses	LUJV IPPVV WENV JUNV MACV GOTV OLVV WWAV CALV FLEV HISV HISV HISV UHV GGV ROUTV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261 1292 1291	© QIELD KELSATLADOTELLCTURTYL, SQLEITYLP SOLETYLP (* 1995) QIELD KELSATLADOTELLCTURTYL, SQLEITYLP SOLETYLP (* 1995) QIELS KELSATLADOTELLCTURTYL, SQLEITYLP SVGERVARTSCR (* VMGED * JLLIY VAASLEN (KCHPP GJ, TVDTI) G, AAN GOF SVGEN (KKHTLA QIELS DSUTSLB	1447 1468 1433 1445 1445 1448 1446 1444 1422 1436 1278 1389 1377 1408
mammarenaviruses new world mammarenaviruses reptarenaviruses	LUJV IPPVV WENV JUNV GOTV OLVV OLVV CALV FLEV HISV HISV-1 CASV UHV GGV	1352 1317 1334 1328 1332 1318 1341 1341 1341 1341 1341 1341 1341	DOJELSENELSATLADOTELLCTATITYT OOLNEY TYP SOLLET YN PF WOERY ALER YN WOERY ALER YN WAALAN, KKERP DUS TYD TUD CAALGY ALGY MORY AL LLAK DOJELSENET KLADDOTELLCTATITYT OL DOLNEY TYP SOLLET YN WOERY ALER AF YWGETY LLAK YN WAALAN, KKERP DUS TYD TUD CAALGY MURY MORY AL LLAK DOJELSENET KLADFROEDERLIAK FENT AD MAN T DP SYNGEY ALER AF YWGETY LLAK YN WAALAN, KKERP DUS TTD TUD CAALGY MURY MORY AL LLAK DOWLL FLOLD	1447 1468 1433 1450 1445 1448 1436 1444 1422 1436 1278 1278 1389 1377 1408 1407 1284
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses	LUJV IPPYV WENV JUNV GOTV OLVV WWAV CALV FLEV HISV-1 CASV UHV GGV ROUTV VP2V-1 OSCV-1 OSCV-1	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261 1292 1291	D QILLIDKELSATLADOTELLCTLINTYL SOLLIDY P SOLCETVALTOR VANCES VLDT VAALUM (KCEPP GLGT VUTTU GLAN GUP SUTCHLIGKETH SQILLISKETILDDOTELLCTLINTYL SOLLIDY P SOLCETVALTOR VANCES VLDT VAALUM (KCEPP GLGT VUTTU GLAN GUP SUTCHLIGKETH SQILLISKETILDKGEDELCILEFHNY, DELNIC P SVGRVALTOR VANCES VLDT VAALUM (KCEPP GLAT TOPII) GVAN GUP SUTCHLIGVETH SQUELSTSTELLO	1447 1468 1433 1445 1445 1448 1446 1444 1422 1436 1278 1389 1377 1408
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses	LUJV IPPYV WENV JUNV MACV GOTV OLVV WWAV CALV FILEV HISV-1 CASV UHV GGV ROUTY VPZV-1 OSCV-1	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1271 1272 1261 1292 1291 1177 1175	DOJELSENELSATLADOTELLCTATITYT OOLNEY TYP SOLLET YN PF WOERY ALER YN WOERY ALER YN WAALAN, KKERP DUS TYD TUD CAALGY ALGY MORY AL LLAK DOJELSENET KLADDOTELLCTATITYT OL DOLNEY TYP SOLLET YN WOERY ALER AF YWGETY LLAK YN WAALAN, KKERP DUS TYD TUD CAALGY MURY MORY AL LLAK DOJELSENET KLADFROEDERLIAK FENT AD MAN T DP SYNGEY ALER AF YWGETY LLAK YN WAALAN, KKERP DUS TTD TUD CAALGY MURY MORY AL LLAK DOWLL FLOLD	1447 1468 1433 1445 1445 1448 1446 1444 1422 1436 1278 1278 1278 1377 1408 1407 1282
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses	LUJV IPPYV WENV JUNV GOTV OLVV WWAV CALV FLEV HISV-1 CASV UHV GGV ROUTV VP2V-1 OSCV-1 OSCV-1	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261 1292 1291 1177 1175 1233	DOJELSENTELBATLBDOTELLCTLIVETYL SOLLITY OF BISLCETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOTTO CAAROF AN GOVENEN. DOJELSENTELBOEKOBEDELLTLEENTIK DULINET OF SUVGETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOTTO CAAROF AN GOVENEN. DOVENENTELBOKOBEDELLTEENTIK OMLINET OF SUVGETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOTTO CAAROF AN GOVENEN. DOVENENTELGOKOBEDELLTEENTIK OMLINET OF SUVGETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOTTO CAAROF AN GOVENEN. DOVENENTELGOKOBEDELLTEENTIK OMLINET OF SUVGETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVENEN. DOVENENTELGOKOBEDELLIVENENTIK OMLINET OF SUVGETVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVENEN. DOVENENTELGOKOBEDELLIVENENTIK SKINST VEP SVORTVALTERE FVWGETVELDEN VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVENEN SERVIKL DOJETTIKLFYNSLDOLODENLLIKCFERET SKINST VEP SVORTVALTERE FVWGETVELDE VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVENEN SERVIKL DOJETTIKLFYNSLSOLDOENLLIKCFERET SKINST VEP SVORTVALTERE FVWGETVELDE VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVENEN SERVIKL DOJETTIK SKINST SKINST VEP SVORTVALEN SERVIK FVWGETVELDE VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN GOVEN SERVIK DOJETTIK SKINST SKINST VEP SVORTVALEN SKINST VEP SVORTVALEN VAASLEN KOKEPPELGE VAASLEN KOKEPPELGE TVOALAN TUDTO CAAROF AN STORT SKINST SK	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses	LUJV IPPVV WENV JUNV MACV GOTV WMAV CALW FLEV HISV-1 CASV UHV ROUTV VPZV-1 OSCV-1 WIFAV-2	1352 1317 1334 1328 1328 1341 1325 1303 1318 1171 1272 1261 1272 1291 1177 1175 1233 1228	D QISLISMELSATLADOTELLCTURITYL SQLUITY PY PS GLCETVART OR FUNCES PLLTY WAALUM (KCEPP GLG TVDTUD CAA GOP SUICHLONG CHEL QISLISMETTIADTOPEELLCTURIENT, DHLUTY PS GLCETVART OR FUNCES PLLTY WAALUM (KCEPP GLG TVDTUD CAA GOP SUICHLONG CHELL QISLISMETTIAD	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses	LUJU V LUJV V IPPYV V VENV JUNV MACV GOIV CALV FLEV HISV-1 HISV-1 HISV-1 UNV VPZV-1 OSCV-1 WLFAV-2 LASV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1171 1272 1261 1292 1291 1177 1175 1233 1228	DOJELISENELISATIA—DOTELLICTURITYL SOLUTYL"P SOLUTYL"P VOIGENERISELTY VAALUM (KKEPPGLST VUTTU CAALUM CAN UT SUUGAULUKELLUKELUKEL DOJELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISENELISE	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses	LUJV IPPVV WENV JUNV MACV GOTV WMAV CALW FLEV HISV-1 CASV UHV ROUTV VPZV-1 OSCV-1 WIFAV-2	1352 1317 1334 1328 1328 1341 1325 1303 1318 1171 1272 1261 1272 1291 1177 1175 1233 1228	D QISLISMELSATLADOTELLCTURITYL SQLUITY PY PS GLCETVART OR FUNCES PLLTY WAALUM (KCEPP GLG TVDTUD CAA GOP SUICHLONG CHEL QISLISMETTIADTOPEELLCTURIENT, DHLUTY PS GLCETVART OR FUNCES PLLTY WAALUM (KCEPP GLG TVDTUD CAA GOP SUICHLONG CHELL QISLISMETTIAD	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world	LUJV HPPVV WENV JUNV MACV GOTV GOTV GOTV WWAN WWAN WWAN CALV FLEV HISV-1 CASV UHV VEZV-1 OSCV-1 WIFAV-2 LASV LASV LASV LASV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1272 1261 1292 1292 1292 1292 1292 1293 1277 1175 1233 1228 1448 1469 1434 1390	D QIELD KELSATLADOTELLCTLATITY D, SQLEITY PP SQLEETY ALT CONFYRMED FILLTY VAALAN KICKTEP GUST TVUTU GAAN GOF SURVING KERLE QIELS KELSATLADOTELLCTLATITY D, SQLEITY PP SQLEETY ALT CONFYRME FILLTY VAALAN KICKTEP GUST TVUTU GAAN GOF SURVING KERLE QIELS D SULVESS ALT CONFYRMENT ALT CONFYRMENT ALT CONFYRME FILLTY VAALAN KICKTEP GUST TVUTU GAAN GOF SURVING KORTAL QUST KELSATLA	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world	LUJV LUJV WENV WENV JUNV MACU OLV WWAV CALV HISV LUSV CASV WEV-1 OSCU-1 WIFAV-2 LASV LUJV LUJV LUJV LUJV JUNV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1371 1171 1272 1261 1292 1291 1177 1175 1233 1228 1448 1469 1434 1390 1246	D QIELED MELEBATEADOTELLCTLATITYL SQLEITYLP SQLEITYLP (************************************	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world	LUJV LUJV WENV MACV GOTV GOTV OLVV MVAV CALV MVAV CALV HISV-1 CASV UHV GGV UHV UHV UHV GGV UHV WIFAV-1 WIFAV-2 LASV LLJV IFFY-2 LASV LUJV IFFY-2 MACV	1352 1317 1334 1328 1318 1341 1325 1303 1318 1171 1171 1272 1261 1291 1177 1251 2233 1228 1448 1469 1434 1390 1246	D QIELD MELGATLADOTELLCTLATITY D, SQLEITY OF P SOLCEY ALT COR F VIGEO F 2LLT VAALEMY (KCHPP GG, TVDTUD CAA GO P SUICHLAGKECH QIELD MELGADELA	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world	LUJU LUJU IPFYV WENV JUNY MACV GOTY OLVV WKAN CALV WKAN CALV HISV-1 URV GGV WEV-1 WEV-1 WIFXV-2 LUJV WIFAV-2 LLASV LUJV URV MACV-2 JUNY MACV GOTY OLVV	1352 1317 1334 1328 1332 1318 1325 1303 1318 1171 1272 1261 1292 1291 1177 1175 1233 1228 1448 1469 1434 1390 1246 1449	D QIELD DELEMATLADOTELLCTLATITYL SQLEITYLP SOLCETYLP (PROCESS (LITY VAALUM (KKEPP GLEIT VAALUM (KKEPP G	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world mammarenaviruses	LUJV LUJV WENV WENV MACV GOTV OLVV OLVV MVAV CALV MVAV CALV MVAV CALV MVAV CALV UNV UNV UNV UNV UNV UNV UNV UN	1352 1317 1334 1328 1318 1341 1325 1303 1318 1171 1171 1272 1291 1175 1233 1228 1448 1463 1449 1434 1390 1246	D QILLIDKELARTLADOTELLCTLATITY D, SQLLIFY PF SQLCETVALEYOR FVWGETVLLIV VAALUM YKREPP GGT TVDTUD GAAR GUP SUTKULAUGUS THE QILLIDKELARTLADOTELLCTLATITY D, SQLLIFY PF SQLCETVALEYOR FVWGETVLLIV VAALUM YKREPP GGT TVDTUD GAAR GUP SUTKULAUGUS THE QILLIDKELAD	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world mammarenaviruses new world	LUJU LUJU IPFYV WENV JUNY MACV GOTY OLVV WKAN CALV WKAN CALV HISV-1 URV GGV VFZV-1 WFXV-1 WIFAV-2 LUJV WIFAV-2 LUJV URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV GEV GEV GEV GEV GEV GEV GEV	1352 1317 1334 1328 1332 1318 1321 1325 1303 1318 1171 1271 1271 1272 1292 1291 1297 1275 1273 1228 1448 1469 1434 1394 1445	D QILLIDKELSATLADOTELLCTLATITY C. SQLENTY P. SQLENTY P. WORL PLANT FOR FUNCE PLANT WAALEN KICKPP QLAT TUTU CAAL OF AN OFF YOUR STRUCTURE QUERT NAME OF AN OFF YOUR STRUCTURE OF AN OFF YOUR STRUC	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world mammarenaviruses new world	LUJV LUJV WENV MACV GOTV OLVV OLVV WWAV CALV WAV CALV WAV CALV WAV CALV WAV CALV WAV CALV WAV CALV WENV CALV VEZV CALV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV VEZV	1352 1317 1334 1328 1332 1318 1341 1325 1303 1318 1171 1271 1272 1291 1277 1175 1233 1228 1448 1469 1439 1439 1449 1445 1445	D QILLIDKELARTLADOTELLCTLATITYL SQLLITY PY SQLLETYLEY PY WORE YLLTY YVAALMY YVAALMY KKYPP GUS TVUTTU GAAM GOF SUNNIN KKYPT QILLIDKELARTLADOTELLCTLATITYL SQLLITY PY SQLLETYLEY PY WORE YLLTY YVAALMY KKYPP GUS TVUTTU GAAM GOF SUNNIN GOF SUNNIN KKYPT QILLIDKELAD	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world mammarenaviruses new world	LUJU LUJU IPFYV WENV JUNY MACV GOTY OLVV WKAN CALV WKAN CALV HISV-1 URV GGV VFZV-1 WFXV-1 WIFAV-2 LUJV WIFAV-2 LUJV URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 URV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV VFZV-1 GEV GEV GEV GEV GEV GEV GEV GEV	1352 1317 1334 1328 1332 1318 1321 1325 1303 1318 1171 1271 1271 1272 1292 1291 1297 1275 1273 1228 1448 1469 1434 1394 1445	D QILLIDKELSATLADOTELLCTLATITY C. SQLENTY P. SQLENTY P. WORL PLANT FOR FUNCE PLANT WAALEN KICKPP QLAT TUTU CAAL OF AN OFF YOUR STRUCTURE QUERT NAME OF AN OFF YOUR STRUCTURE OF AN OFF YOUR STRUC	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
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mammarenaviruses new world mammarenaviruses reptarenaviruses hartmaniviruses antennaviruses old world mammarenaviruses new world mammarenaviruses	LUJU LUJU IEPFV WENV MACV GOTV OLVV WWAV CALV MISV-1 CASV URV GGV WESV-1 CASV URV URV URV URV URV WIFAV-2 LASV LLUJV IFAV-2 LLUJV IFAV-2 LLUJV ULV WIFAV-2 ULV WIFAV-2 ULV ULV ULV ULV ULV ULV ULV ULV	1352 13517 1334 1328 1328 1328 1341 1325 1341 1325 1341 1325 1341 1325 1341 1325 1341 1325 1341 1325 1242 1292 1291 1271 1272 1291 1292 1291 1292 1291 1293 1293 129	D QILLIDKELARTLADOTELLCTLATING SQLUETY OF PSULCEY ARE CAR FUNCES PLATE VALUE (VALUE	1447 1468 1433 1450 1445 1446 1436 1446 1442 1436 1278 1278 1278 1389 1377 1408 1407 1284 1384
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Figure S3. Amino acid sequence alignments of the L protein enzymatic domain from representative members of the four arenavirus genera. Virus abbreviations as in Figure 5. Residues that are conserved (identical or chemically similar) are highlighted in yellow (not required for polymerase activity) or green (required for polymerase activity).

-1-1	LASV	1	MGNKQAKAPESKDSPRA-SLIPDATHLGPQF	30
old world	LUJV	1	MGQRHSSGSGQPNPK-PSDSDHEARRSELHSDASHLGPLN	39
mammarenaviruses	IPPYV	1	MGQNQSRDKQKAIQNQPKDTGNRADIIPDATGMGPEF	37
	WENV	1	MGNKVPKENKPATPPPYRAPVIPDTSHLGPTF	32
	JUNV	1	MGNCNGASKSNQ-PDSSRATQPAAEFRRVAHSSLYGRYN	38
	MACV	1	MGNCNKPPKRPP-NTQTSSNQPSAEFRRTAPPSLYGRYN	38
new world	GOTV	1	MGNSKSKSNPSSSSESQKGAPTVTEFRRTAIHSLYGRYN	39
	OLVV	1	MGSKSSKSSGFENVPSLGLSHTNQPRVSLIREARPSLYGRYN	42
mammarenaviruses	WWAV	1	MGLRYSKEVRDRYGDKE-PEGRIPITLNMPQTLYGRYN	37
	CALV	1	MGLRYSKEVRKRHGDED-VVGRVPMTLNLPQGLYGRFN	37
	FLEV	1	MGLRYSKAVRDRYGERE-TVGRVPMTLNLPQGLYGRFN	37
	CASV	1	MSMCINGTNSIGISNEVVLSLTLISSLTTLILLIINTITMFGLKALTLKKRLSF	54
reptarenaviruses	UHV	1	MSTSTSIGLTTEIISIVTFILVIVLVVIQIVSCVTMLSLKGVTLKKRLRF	50
roptatonamaooo	GGV	1	MSGSTAIGLTTEVISIITFILVIAIFVIEIVSCVTMMTLKAITLKKRLSF	50
	ROUTV	1	MSESTAIGLTTEVISIITFILVVIIFIVVIVNCVAMMTLKAITLKKRLMF	50
	LASV	31	CKSCWFENKGLV-ECNNHYLCLNCLTLLLSVSNRCPICKMPLPTKL	75
old world	LUJV	40	CKSCWKSKKALV-KCYDHYLCLNCLSLLMGITPRCPFCYRELPKNL	84
mammarenaviruses	IPPYV	38	CKSCWFERRSLV-ACNNHYLCMNCLTLLLSVSERCPICKLPLPQKL	82
	WENV	33	CKSCWFESKGLV-ACSNHYLCMNCLTLLLSASDRCPICKLPLPTKL	77
	JUNV	39	CKCCWFADTNLI-TCNDHYLCLRCHQGMLRNSDLCNICWKPLPTTI	83
	MACV	39	CKCCWFADTNLI-TCNDHYLCLRCHQTMLRNSELCHICWKPLPTSI	83
	GOTV	40	CKCCWFADKNLI-KCSDHYLCLRCLNVMLKNSDLCNICWEQLPTCI	84
new world	OLVV	43	CKCCWFQNKNLV-ECSDHYLCLKCISSMLRRGQNCEICGKPIPTHI	87
mammarenaviruses	WWAV	38	CKSCWFANKGLL-KCSNHYLCLKCLTLMLGRSDYCGICGEVLPKKL	82
	CALV	38	CKSCWFVNKGLI-RCKDHYLCLGCLTKMHSRGNLCEICGHSLPTKM	82
	FLEV	38	CKSCWFANKGLI-ACSDHYLCLNCLTRMLSRSEFCEICNRPLPTKI	82
	CASV	55	CTACGKNSSLVKLPCKHK-CCIQCPLANLKCPICYEPCLWCEKADGSLESLSLMKK	109
reptarenaviruses	UHV	51	CQGCGKNASLVVLPCKNS-VCMECALKMRCPVCFEPCLWCENPDGSLTSLALVNR	104
replatenaviruses	GGV	51	CQGCGKNASLVILPCKNK-VCMECALKMRCPVCYEACLWCENPDGSLSSLALINK	104
	ROUTV	51	CQGCGKNASLVILPCKNK-VCMECALKMRCPVCYEACLWCENPDGSLSSLALINK	104
	LASV	76	RPSAAPTAPPTGAADSIRPPPYSP 99	
old world	LUJV	85	DLAEAPSAPPL 95	
mammarenaviruses	IPPYV	83	KLTSSPSAPPSPSPPPYSP 101	
	WENV	78	RLSRTPSAPPSDTP 91	
	JUNV	84	TVPVEPTAPPP 94	
	MACV	84	TVPVEPSAPPP 94	
	GOTV	85	TVPEEPSAPPE 95	
new world	OLVV	88	AVTTAPTAPPEP 99	
mammarenaviruses	WWAV	83	VFENSPSAPPYEA 95	
	CALV	83	EFLESPSAPPYEP 95	
	FLEV	83	IFEESPSAPPYEP 95	
	CASV	110	NLQELP 115	
	UHV	105	EMGASGTTTRV 115	
reptarenaviruses	GGV	105	ERNKVRDNLPEP 116	
	ROUTV	105	ERNKHRDNPPEP 116	
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Figure S4. Amino acid sequence alignments of Zinc-binding (matrix) proteins from representative members of the mammarenavirus and hartmanivirus genera. Residues that comprise zinc-binding domain 1 are highlighted in yellow. Residues that comprise zinc-binding domain 2 are highlighted in orange or blue . A transmembrane domain in the Z protein of reptarenavirus is high-lighted in grey. Reptarenaviruses and antennaviruses do not encode a Z protein.