Title: The cattle fever tick, *Rhipicephalus microplus*, as a model for forward pharmacology to elucidate kinin GPCR function in the Acari



Supplementary Figure 1. The workflow for cloning the putative kinin precursor cDNA from *Rhipicephalus microplus* and verification of the gene structure by sequencing genomic PCR products.

In this figure, within the panels A and B, all lines representing sequences are aligned vertically to the corresponding sequence location. Notice a different scale in bp on the left of each panel.

The solid black lines represent either transcriptome (A) or genomic (B) sequences identified through local NCBI BLAST using the putative kinin precursor (amino acid sequence) from Ixodes scapularis as query. The black arrows denote the direction and relative location of the primers on the template above the primers. The solid orange lines depict the sequenced PCR products obtained in this study. Red lines and boxes represent the deduced full-length cDNA (A) or the kinin gene (B) obtained by assembling the sequenced PCR products. The blue arrows denote the position of primers used for sequencing. The dashed orange line depicts the region of a PCR product which was not sequenced (sequencing was not necessary because the overlapping sequence of ~200 bp at the 5' end was enough to align this product with the PCR product in reaction 4 above). (A) The putative full-length kinin precursor cDNA from R. microplus: Cloning of 5'- and 3'- RACE PCR products. 1-2). A transcript predicted to encode a partial sequence of the putative kinin precursor was used to design a pair of gene-specific primers for the 3'- and 5'- RACE PCRs. The sequences of these 3'- and 5'- RACE PCR products (1-2) were aligned with DNASTAR (Lasergene, Madision, WI) to assemble the full-length cDNA. (3). A pair of primers was designed outside of the open reading frame (ORF) and were used to amplify the cDNA ORF in one product. (B) Amplification of the kinin gene from genomic DNA. (4). First, we amplified an internal fragment of the gene with a pair of gene-specific primers. (5). Secondly, the 3'-end of the kinin gene was amplified with a gene-specific forward primer and a reverse primer located outside of the ORF 3'-end. The sequence of this latter reverse primer was obtained from a genomic contig encoding the 3'-end fragment of the kinin gene (black line). (6). The 5'-end of the kinin gene was amplified using a forward primer which binds to the 5'-end of the cDNA, and with a reverse primer within the ORF. The DNA sequences from the PCR products above (4-6) were aligned with DNASTAR to obtain the sequence of the kinin gene shown in red: boxes represent exons, and the solid line represents the intronic region. The exons were identified by aligning the cDNA sequence with the gene sequence.

5'ACATGGGGAGCAACAGGCGCTGCTAGAGGCCCCATCGACGGCAGCGCGAAGCGTTGGCATCGCCATCGTGTCCAGCACAG805'CAGCCATGGGAACGGTACTGCACCGTCGCGGGGCTGCTGGTGCTAACTTCACCGTCGGGGAATCACTTGTGCTGCTTCTT160

M G T V L H R R G A A G A N F T V G E S L V L L L 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

- 5'
   AGTTCAGTCCATGGGGGCGGCAAGCGGAACGCCGCCGCCGCCATTCGAATCCCTGCTGGACGCCGCCAGCCGGCAATCAGGAGAGGCCAC
   400

   Q
   F
   S
   P
   W
   G
   K
   R
   N
   A
   A
   F
   S
   L
   D
   A
   G
   N
   Q
   F
   S
   P
   W
   G
   K
   R
   N
   A
   A
   F
   E
   S
   L
   D
   A
   G
   N
   Q
   E
   S
   H
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
   T
- 5' CGGCACCGTCTGGCAGCGGATGCCTCGTACAAGGTCC<u>GTCGTCGTCGTCGGACATCGCAGTGAGGGCCCGCCGATTT</u> 480 <u>R H R L A A D A S Y K V R R L H P V D I A V R A A D L</u> 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132
- 5' GTTCAGTCCATGGGGCGGCAAAAGAACGGACGACGACGAAGAGGACAAAGACCAGACGTTCAACCCTTGGGGAGGCAAGAGGG 560 <u>F S P W G G K R T D D K K D Q T F N P W G G K R</u> 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158
- 5'
   CAGGAGACCACTTCGGTTCCTGGGGAGGCAAGAGGGCAAGAGGGCAAGCGGCAGCAGGACAGCAAG
   640

   A
   G
   D
   H
   F
   G
   K
   R
   D
   T
   F
   S
   M
   G
   K
   R
   Q
   D
   S
   K

   159
   160
   161
   162
   163
   164
   165
   166
   167
   168
   169
   170
   171
   172
   173
   174
   175
   176
   179
   180
   181
   182
   183
   184
   185
- 5'
   AACGCCTTCAGTCCGTGGGGAGGYAAGAGAGCCGTCAGAAGCCCGACGGCCAGAAACGACGCCGCTAGGGCCAAGCAGGA
   720

   N
   A
   F
   S
   P
   W
   G
   K
   R
   V
   R
   S
   P
   T
   A
   R
   N
   D
   A
   R
   A
   K
   Q
   E

   186
   187
   188
   189
   190
   191
   192
   193
   194
   195
   198
   199
   200
   201
   202
   204
   205
   206
   207
   208
   209
   210
   211
   212
- 5' GGACGGAGAGGAGGACGAAGAGCGGGAGCTTCGCACCTTGGGGAGGAAGAGGGGGAACCGGGGAAGACCAGGCGTTTCTCC 800 D G E E D E E R S F A P W G G K R G T G E D Q A F S 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238
- 5' CATGGGGAGGAAAAAGGGGCGACGACGGGGATACGTCTTTCACGCCCTGGGGAGGCAAGCGCGATGACCGCTTCAATCCA 880 P W G G K R G D D G D T S F T P W G G K R D D R F N P 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265
- 5' TTGGGGAGGCAAGCGCGGAGCAGACGACCCGTTCAACCCTTGGGGAGGCAAGAGGCAGGATTCGTTCAATCCTTGGGGAG 1040 <u>W G G K R G A D D P F N P W G G K R Q D S F N P W G</u> 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318

5' CGACGTCGAACGGTGAGAAAAGTGGGAGGACGTAACCACTGACGCGAGTCACTGTAGCGAAGCGCCCGTTCGAAAAACAT 1360 <u>T T S N G E K S G R T .</u> 399 400 401 402 403 404 405 406 407 408 409 410

## Supplementary Figure 2. Cloned cDNA sequence and predicted amino acid sequence of putative kinin precursor from *Rhipicephalus (Boophilus) microplus*.

The full-length cDNA sequence is 1,398 bp, with 1,227 bp ORF that encodes a 409 amino acid residue protein. The predicted enzyme cleavage sites are boxed. Seventeen kinin sequences were predicted. See Fig. 3.

1398

Majority	LRXR-AXX	XXXL	(XMSXX	XLXQXVXXSDG	DXXXXSRX	GDXXIRWNISPA	TLQHMRS-	-ESFKR	
	10	20	30	40	50	60	70	80	
0.turicata	MAPAARSSQT	FCTLF	RYLILSISLL	ASYASVEESDO	DSRDDDSFI	EDMVIRWNISPE		REAIAR	69
H.dromedarii							MRS-	-ESFKR	8
D.variabilis							MRS-	-ESFKR	8
A.sculptum	MGLRRRAAAG							-ESFKR	70
R microplus		/GETLMLQLI /GESLVLLLV	L V V LAF 3 S D /I GV T A F D I D	Α₩ΑQΠVVGSDE		GDTLIRWNISPA			78
Ix.ricinus	MELRGHDAOELR	FLWTL	ATTFLMSMG	GLCODVDSGSG	DLGRSSRV	GESFIRWNISPA	TLOHMRS-	-ESFKR	70
Ix.scapularis-mRNA	MELRGHDAQELR	FLWTLI	ATTFLMSMG	GLCQDVDSGSG	GDLGRSSRV	GESFIRWNISPA	TLQHMRS-	-ESFKR	70
Ix.scapularis-gDNA			MSMG	GLCQDVDSGSG	GDLGRSSRV	GESFIRWNISPA	ATLQHMRS-	-ESFKR	47
Majority	OESP-WGGKRN-AAXDS		(SXRHI I AAD	ASYKVRRI HXG	D-OPRD-D	SENPWGGKRXXC	)K		
	90	100	110	120	130	140	150	160	a
			110		150	140	150		102
U.turicata H.dromedarij				- TRUVWITGN ASYKVRRIHDA					202
D.variabilis	OFSP-WGGKRNTAAFF		SHRHOI AAD	ASYKVRRI HHT	G-SPRNAD			-P	64
A.sculptum	QFSP-WGGKRN-AAFD	LLDAPGGD-	H-QVADAA	SSYKVRRVHHT	P-SLRN				116
R.sanguineus	QFSP-WGGKRNTAAFES	SLLDSAGNQ	ESRRHHLAAD	ASYKVRRLHPA	SIGVRDAD	SFSPWGGKRTDD	OKKDKDQTF	NPWGGK	157
R.microplus	QFSP-WGGKRNAAAFES	SLLDAAGNQ	ESHRHRLAAD	ASYKVRRLHPV	/DIAVRAAD	LFSPWGGKRTDD	OKKDKDQTF	NPWGGK	157
Ix.ricinus	QFSP-WGGKRGVLDC	ALPTAHRLS	SGPLYLYKAL	HSPGAMGERRO	DKQPDD-E	TFNPWGGKREND	)К		133
Ix.scapularis-mRNA	QFSP-WGGKKGVLDQ						)K		133
IX.SCOPULATIS-GDNA			DUFLILIKAL	II SF KAMUERKU	JUNQPED-EA	AFINFWOOKKENL	ж		110
Majority						DXER	RSFAPWGGK	RG	
	170	180	190	200	210	220	230	240	0
0 turicata								RDGTHT	117
H.dromedarii	R				DSVR	VKQEDGEEDEER	SFAPWGGK	RG	112
D.variabilis						EF	RSFAPWGGK	RG	76
A.sculptum							VFAPWGGK	R	125
R.sanguineus	RAAAGDREGSWGGKRET		QD-KNSFSP	WGGKRAVRSPT		ARQDDGEEDEER	RSFAPWGGK	RG	232
K.microplus		FSAWGGKK	ZQUSKNAFSP	WGGKRAVKSPI	AKN-DAAK/	AKQEDGEEDEER			250
Ix.scapularis-mRNA						DKEL	SENPWGGK	RGSFSS	151
Ix.scapularis-gDNA						DKEL	SFNPWGGK	RGSFSS	128
	VCEDVAEC			DWCCUDY	(DDCD	TYEVENCOUP			
Majority	-XGEDXAFS	·	·	PWGGKRX			DRFNP	WGGKRE	_
	250	260	270	280	290	300	310	320	0
0.turicata	RSGLDDSSG			SWSEKK-	D	NFNPWGGKKE	ASFNP	WGGKRD	154
H.aromedarii	-AGEDQAFS								117
A sculptum	-AAEDQAF3			PWGGKRD		-FTFAPWGGKRE	DRFNP	WGGKRE	168
R.sanguineus	-TGEDQAFS			PWGGKRG	GDDGD	-TSFTPWGGKRE	DRFNP	WGGKRE	273
R.microplus	-TGEDQAFS			PWGGKRG	GDDGD	-TSFTPWGGKRD	DRFNP	WGGKRE	271
Ix.ricinus	WGGKRDTFG			PWGGKRD	OTFGAWGGKI	RDTFGPWGGKRQ	DKESGFNP	WGGKRE	201
Ix.scapularis-mRNA	WGGKRDTFG			PWGG	KI	RDTFGPWGGKRQ	DKESGFNP	WGGKRE	191
lx.scapularis-gDNA	WGGKRDTFGSWGGKRDT	FGPWGGKRI	DIFGPWGGKR	DTEGPWGGKRD	OTEGPWGGKI	RDTEGPWGGKRQ	UKESGENP	WGGKRE	208
Majority	GPFNPWGGKRE	GSNKEGI	FNPWGGKRG	ADDS-FNPWGG	KR	-EDSFNPWGGKX	XXDTAF	XPWGGK	
	330	340	350	360	370	380	390	400	0
0 turicata	N-ENPWGGKKD		IENPWGGKK-	-DSSTENPWGG				GPWGGK	217
H.dromedarii	GPFNPWGGKRD	GSNKEGI	FNPWGGKRG	ADDS-FNPWGG	GKRG/	ADDSFNPWGGKF	RQD-SF	NPWGGK	215
D.variabilis	GPFNPWGGKRE	GSNKEGI	FNPWGGKRG	ADDS-FNPWGG	GKR	-QDSFNPWGGKF	R−−−ĒSGVF	RPWGGK	178
A.sculptum	GPFNPWGGKRE	GSNKEGI	FNPWGGKRG	ADDS-FNPWGG	GKRG/	ADDAFNPWGGKO	GADAAF	NPWGGK	232
R.sanguineus	GPFNPWGGKRD	GSNKEGI	FNPWGGKRG	ADDS-FNPWGG	KR	-QDSFNPWGGKF	REDGVF	RPWGGK	334
K.micropius				AUUP-FNPWGG	3KK			ADWCCV	332 272
Tx.scapularis_mRNA			VENDARKE	TKDSTESPWGG	KR	-EGPENPWGGKK	GD-SDTAF		263
Ix.scapularis-gDNA	DPFNPWGGKKEDKNAFS	SPWGGKRDQ	NENPWGGKKT	TKDSTFSPWGG	KR	-EGPFNPWGGKK	GD-SDTAF	APWGGK	280

Majority	RED-VFNPWGGKRD	DXVFSP	WGGKRED		FGXXAD	LEDAXSXRK	KRDSSXSEHK	GTTSXG
	410	420	430	440	450	460	470	480
0.turicata	REN-LFNPWGGKREKS	EMTFNP	WGGKKSE	LA	FSPWM	SASSRI	KRDSTINTDM	IFIQHPK 274
H.dromedarii	REDGVFRPWGGKKD	DNVFRP	WGGKKED	NV	FGPWGGk	REDAGSLRK	KRDSSTSEHK	VTTSHG 276
D.variabilis	KEDKVFGPWGGKRD	DDVFGP	WGGKREQVSS	SSSHSAGRGFP	FGGATEH	IGVDAESLRKI	KRDSSMSEHQ	VTTSYS 251
A.sculptum	RQD-SFNPWGGKRE	DVVFRP	WGGKKED	-NV	′FRPWGGk	KEDN-VFRP	VGGKRQGD	GFKPWG 289
R.sanguineus	KEDNVFRPWGGKKE	DNVFAP	WGGKREDALPS	5LYVGRGFN	IYGGTASH	IGVDAGSLRKI	KRDSSTSEHK	GTTSYG 405
R.microplus	KEDNVFRPWGGKKE	GNVFGP	WGGKREDATPS	5LSVSRALN	IYGGPA <mark>-</mark> -S⊦	IDVDAGSLRKI	KRDSSASEQK	GTTSNG 403
Ix.ricinus	RDN-NFNPWGGKRDNG	NKDSSFSP	WGGKRES		FGVQASDPDS	LEDHSPSRN	KRDSSSRVPK	TKNSAR 338
Ix.scapularis-mRNA	RDN-NFNPWGGKRDNG	NKDSSFSP	WGGKRES		FGVQALDPDS	LEDHSPSRN	KRDSSSRVPK	TKNSAQ 328
Ix.scapularis-gDNA	RDN-NFNPWGGKRDNG	NKDSSFSP	WGGKRES		FGVQALDPDS	LEDHSPSRN	KRD	332
Majority	<u>GKSGST</u> 490							
0.turicata	VOKASPRPI							283
H.dromedarii	GKSASA							282
D.variabilis	GKSGGT							257
A.sculptum	GKREEDT							296
R.sanguineus	GKSGST							411
R.microplus	EKSGRT							409
Ix.ricinus	SAISSVAKTF							348
Ix.scapularis-mRNA	STIRSVAKTF							338
Ix.scapularis-gDNA								332

## Supplementary Figure 3. Multiple amino acid sequence alignment of the deduced kinin precursors from eight tick species using Clustal W method by MegAlign (Lasergene, Madision, WI).

There are two sequences from *Ixodes scapularis*, the first one was deduced from three transcriptome sequences (GBBN01023680.1, GGIX01408871.1, GBBN01027580.1), and the second was deduced from a genome scaffold (DS680282) (Gulia-Nuss and Caffrey, 2016). The amino acid sequence from the latter lacks 23 residues at the N- terminus and also 23 residues at the C-terminus. The sequence deduced from the transcriptome (*Ix. scapularis*-mRNA) misses some internal amino acids within positions 250-293.

Gulia-Nuss, M., Nuss, A.B., Meyer, J.M., Sonenshine, D.E., Roe, R.M., Waterhouse, R.M., Sattelle, D.B., de la Fuente, J., Ribeiro, J.M., Megy, K., Thimmapuram, J., Miller, J.R., Walenz, B.P., Koren, S., Hostetler, J.B., Thiagarajan, M., Joardar, V.S., Hannick, L.I., Bidwell, S., Hammond, M.P., Young, S., Zeng, Q., Abrudan, J.L., Almeida, F.C., Ayllon, N., Bhide, K., Bissinger, B.W., Bonzon-Kulichenko, E., Buckingham, S.D., and Caffrey, D.R., Caimano, M.J., Croset, V., Driscoll, T., Gilbert, D., Gillespie, J.J., Giraldo-Calderon, G.I., Grabowski, J.M., Jiang, D., Khalil, S.M., Kim, D., Kocan, K. M., Koci, J., Kuhn, R.J., Kurtti, T.J., Lees, K., Lang, E.G., Kennedy, R.C., Kwon, H., Perera, R., Qi, Y., Radolf, J.D., Sakamoto, J.M., Sanchez-Gracia, A., Severo, M.S., Silverman, N., Simo, L., Tojo, M., Tornador, C., Van Zee, J.P., Vazquez, J., Vieira, F.G., Villar, M., Wespiser, A.R., Yang, Y., Zhu, J., Arensburger, P., Pietrantonio, P.V., Barker, S.C., Shao, R., Zdobnov, E.M., Hauser, F., Grimmelikhuijzen, C.J., Park, Y., Rozas, J., Benton, R., Pedra, J.H., Nelson, D.R., Unger, M.F., Tubio, J.M., Tu, Z., Robertson, H.M., Shumway, M., Sutton, G., Wortman, J.R., Lawson, D., Wikel, S.K., Nene, V.M., Fraser, C.M., Collins, F.H., Birren, B., Nelson, K.E., Caler, E., Hill, C.A. (2016). Genomic insights into the Ixodes scapularis tick vector of Lyme disease. Nat. Commun. 7, 10507.

	1 2 2 4 5 6 7 9 0	101111212141515151719102021		224252525272820404142	42 44 45 46 47 49 40 50 51 52 52 54 55	celesteoleole1 estestestestestestestestestestestesteste	70 71 72 72 74 75 76 77 79 70 90
Tauran ). Chanadan	123430783	101112131413101710192021	222324232027202331323.	3 3 4 3 3 3 0 3 7 3 6 3 5 4 0 4 1 4 2	43444340474843303132333433.	30 37 38 33 00 01 02 03 04 03 00 07 08 03	10/1/2/3/4/3/0///0/900
Taxon \ Character							
1 H.dromedarii	7 7 7 7 7 7 7 7 7 7	? ? ? ? ? ? ? ? ? ? ? ? ? ? ?	? ? ? ? ? ? ? ? ? ? ? ? ?	7 7 7 7 7 7 7 7 7 7 7	? ? ? ? ? ? ? ? ? ? ? ? ? ?	? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ?	? ? ? M R S E S F
2 R.sanguineus	MGTVLRRG	A A G A N F A V G E T L I	MLQLLLVVIAFS	S D A W A Q H V V	GSDEARSLLSRG	- G D T L I R W N I S P A A	LOHMRSENF
3 R microplus							
s nemeropius							
4 D.variabilis	7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7 7	7777777777	? ? ? ? ? ? ? ? ? ? ? ? ? ?	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	? ? ? M R S E S F
5 A.sculptum	MG LRRA	A A <mark>G</mark> E T L	L L R V F L V A S V L S	L D V S A Q H M V	G S D E A R S L L S R G -	- G D T L I R W N I S P A T	LQHMRSESF
6 Lricinus	MELRGHD	A O E L R F		MCCLCDDVD	SGSGDLGRSSRV -	- GESELRWNISPAT	
7 by scanularis							
7 IX.scapularis							
8 O.turicata	MAPAARS	SQT FCTLRY	L I L S I S L L A S	Y A S V E	ESDGDSRDDDSF-	- E D M V I R W N I S P D T	
9 DAA34788.1 R.prolix	u ? ? ? ? ? ? ? ? ? ? ?	? ? ? ? ? ? ? ? ? ? ? M I	L L W M V W T I	- AVICKTSQ	GNDIISTSAEG	H N L T T A P S P	LPTAKDNSK
10 Predel2017 C.lectula		7 7 7 7 7 7 7 7 7 7 M L M		- A I S C D T I R	C D D V A S S R P S K S I	- EMAEKNRTVVPG-	
11 AAC47656 1 Ae aem	a 7 7 7 7 7 7 7 7 7 7 7	2 2 2 2 2 2 2 2 2 2 M A M					E C C
11 AAC47030.1 Ae.aegy							
12 EDS35029.1 C.quinqu	<u>, 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7</u>	? ? ? ? ? ? ? ? ? <b>? M P R L</b>	<b>v L H L v L</b>			G S D E L A R I I	<mark>N G</mark> C
13 NP 524893.2 D.mel	la ? ? ? ? ? ? ? ? ? ?	? ? ? ? ? ? ? ? ? M A K I	V L C M V L L A F <mark>G</mark>	R Q V Y G A S L V	P A P I S E Q	- D P E L A	
14 XP 013117801.1 S.ca	IML-IS	YYI MFAVRA		/ Y N Y V K A V	<b>E</b>	- T R D L Q	
-							
	81 82 83 84 85 86 87 88 83	a an a tas as as as as as as as not or	04030403040304030304030403		42:1242:1242:4242:4343:1343:1343:	13113713113914114.14714:14714314114714814	2202124232423242424242424242
Taxon \ Character							
1 H.dromedarii	K R O F S P - W G	GKRNAALLESLL	DSPGNOESRRHH		ADASYK VR	RLHPA GVR	
2 Pranquineur							
2 R.sanguineus							
3 R.microplus		GKRNAAAFESLL	D A A G N Q E S H R H R		ADASYK VR	R L H P V D - I A V R	A A D L F S P W
4 D.variabilis	K R Q F S P - W G	G K R N T A A F E S L L	D S P G D Q Q S H R H Q	2 L A	A D A S Y K V R	R L H H T G S P R	N A D S F S P -
5 A.sculptum	K R O F S P - W G	GKRN-AAFDYLL	DAPCCDHO	V A D	AASSYKVR	RVHHTPSLR	N
6 Laicinus							
- internus							
7 Ix.scapularis							KUPEDEAFNPW
8 O.turicata	A R P F V P R W G	NQIQ					G D A A V G K P Y
9 DAA34788.1 R.prolixi	ι <mark>G</mark> Ι R		L K E N E	LA A E D	LEDEEDLVNDKIK	R T N N R G N F A G N	P R M R F S S W
10 Predel2017 C lectular	P			E F			PKMPESSW
11 AAC47656 1 AA							
11 AAC47050.1 Ae.aegy							
12 EDS35029.1 C.quinqu	HE W	SKQN VISEILL	<u> </u>		V C A V Y E W N K		
13 NP 524893.2 D.mela	a -   -   -   -   -   -   -	· <b>T C E L Q L</b>	SKY R R F I	LQAILSFED	V C D A Y S S R	<b>P</b>	
14 XP 013117801.1 S.cal	k	<b>T</b> CE <b>THL</b>	NKYRRFL	LQAILSFED	VCEAYN TR	N L V I P	
	Lad ad a bad ad ad ad ad						Ladadada Ladadadadad
	1621631641651661671681651	7017117217317417917617717817918018118	2183184185186187188185190193192193	194199196197198199206207207	02020202020202020212121212121212	1@1218192@22222222222222222222222	23@32323234323@323@32383240
Taxon \ Character							
1 H.dromedarii	GKRTDD	KKDKDQTFWC	GKR				
2 Risanguineus							
2 D microslus							
3 R.micropius							RAVKSPIAKN-
4 D.variabilis							
5 A.sculptum							
6 Lricinus			CKRCTFSS				P
7 lu ana aula ala							
7 Ix.scapularis							<b>R</b>
8 O.turicata	NYRDVWI-	- Y G K K D A H F N P W G	GKR				
9 DAA34788.1 R.prolix	ки <mark>G</mark> – – – – – – – –	K R A K F S S W G	GKRV				
10 Bredel2017 C lectula							
To Frederzoff C.iectura			V N N				
11 AAC47656.1 Ae.aeg	IYI						
12 EDS35029.1 C.quinqu	u						
13 NP 524893.2 D.me							
14 XB 012117801 1 5 cm							
	al						
	2424242424242424242424	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	62626462686268697072727	272727272727280828	2828428282828429492929292929	296353633060303030304030603080	
Taxon \ Character	242424242424242424	+ + + + + + + + + + + + + + + + + + +	62626262626262627072727	 274727072707280828	2828482868286896929292929499	2969359898080303030808080	
Taxon \ Character	242424242424242424242424	1950525252525250525052505250662	6262646466666666676772727	27¢727¢727¢728¢828	2838289808280809093929392939	294929494040303040304030403040	NREDRFNP
Taxon \ Character	24242424424424424424	1950525252525959505258596062 0 G E E D E E R S F A P 0 G E E D F F R S F A P	62626462646264627472727	27¢7\$7\$7¢7\$7¢7\$8¢8\$8	282842828282828290929292929292929	29292929293060303030304030603060 D G D - T S F A P W G G	S1613131313141316131613181326
Taxon \ Character 1 H.dromedarii 2 R.sanguineus	24242424424424424424	\$ <b>C</b> E E D E E R <mark>S F A P <b>C</b> E E D E E R <b>S F A P</b></mark>	626262666626669707272727	27272727272727280828 0 A F S P W G C K 0 A F S P W G C K	282848986828689969292929499 K R D R G D	294929499040303030304090403080 D G D _ T S F A P W G G D G D _ T S F T P W G G	516131313131316131816 K R E D R - F N P K R E D R - F N P
Taxon \ Character 1 H.dromedarii 2 R.sanguineus 3 R.microplus	2424242424242424242424 D S V R V K C E D D A A R A R O D D D A A R A K C E D	¢5¢5\$5\$5\$5\$5\$5\$5\$5\$5\$5\$5\$6¢6\$ → G E E D E E R S F A P → G E E D E E R S F A P → G E E D E E R S F A P → G E E D E E R S F A P	62626266697072727 WGGKRGTGED WGGKRGTGED WGGKRGTGED		282848286848999292929499 <b>X</b> R D <b>R G</b> D <b>R G</b> D	29622292999660303030303030603060 D C D T S F A P W C C D C D T S F T P W C C D C D T S F T P W C C D C D T S F T P W C C	S101313131313191918181920 K R E D R - F N P K R E D R - F N P K R D D R - F N P
Taxon \ Character 1 H.dromedarii 2 R.sanguineus 3 R.microplus 4 D.variabilis	24242424242424242424242424242424242424	\$\mathbf{G}\$ E E D E E R S F A P       \$\mathbf{G}\$ G E E D E E R S F A P         \$\mathbf{G}\$ G E E D E E R S F A P       \$\mathbf{G}\$ G E E D E E R S F A P         \$\mathbf{G}\$ G E E D E E R S F A P       \$\mathbf{G}\$ E R S F A P         \$\mathbf{G}\$ G E E D E E R S F A P       \$\mathbf{G}\$ E R S F A P	62626465666266967072727	27472707070707080828         28           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K           20         A         F         S         P         W         G         G         K	282664949628787899999999999999999999999999999999	2929292930603030303030306030603060 D C D T S F A P W C C D C D T S F A C P W C C E E D T S F T P W C C F C C C T S F T P W C C	S1013131313131313161316131613161320 K R E D R F N P K R E D R F N P K R D R F N P K R D R F N P
Taxon \ Character 1 H.dromedarii 2 R.sanguineus 3 R.microplus 4 D.variabilis 5 A.sculptum	2424242424242424242424 D S V R V K C E D D A A R A R D D D D A A R A K C E D	42525252525252525252525255255556662 0 G E E D E E R S F A P 0 G E E D E E R S F A P 0 G E E D E E R S F A P 0 G E E D E R S F A P 0 F A P	6262646646662669707777777777777777777777777777777	27272727272727272472426252 0 A F S P W G C K 0 A F S P W G C K	k R D R C D R C D R C C R C C	29692969606080.80.80.80.40.90608080 D C D - T S F A P W C C D C D T S F T P W C C D C D T S F T P W C C E E D T S F A P W C C E C C C C T F A P W C C	\$1\$131313141\$161316132 K R E D R F N P K R E D R F N P K R D D R F N P K R E D R F N P K R E D R F N P
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum       6     Lricinus	I         I	0         E         D         E         R         S         F         A         P           0         C         E         D         E         R         S         F         A         P           0         C         E         D         E         R         S         F         A         P           0         C         E         D         E         R         S         F         A         P           0         C         E         D         E         R         S         F         A         P           0         C         E         D         E         R         S         A         P           0         C         E         D         E         R         S         A         P           0         C         E         R         S         F         A         P           0         C         E         R         S         F         A         P           0         V         T         F         A         P         P         P         P         P         P         P         P         P         P	62626026026026020707272727 W G G K R C A G E D W G G K R C G G E D W G G K R C G G E D W G G K R C A G E C W G G K R C A A E D W G G K R C A A E D W G G K R C R	272727272727272826828         2           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           3         A         F         S         P         G         G         K           4         F         S         P         W         G         G         K           4         F         S         P         W         G         G         K           0         R         F         S         P         W         G         G         K           0         T         F         G         W         G         G         K	22322222222222222222222222222222222222	2292229299000 30.30.30.40.40.90.40.30.40 D C D C T S F A P W C C D C D T S F T P W C C C D C T S F T P W C C C D C T S F T P W C C C C C E T F A P W C C D C D C C E T F A P W C C	S1G1313131415161318192G K R E D R F Y P K R E D K E S C F Y P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Is canularis	Image: Constraint of the	42925353525252525252525252525556663 0 G E E D E E R S F A P 0 G E E D E E R S F A P 0 G E E D E E R S F A P 0 G E E D E E R S F A P 0 G E C D E E R S F A P 0 G E C D E E R S F A P 0 G E C D E E R S F A P 0 G E C D E E R S F A P 0 G E C D E E R S F A P 0 G E C D E E R S F A P 0 G E E E R S F A P 0 G E E E R S F A P 0 G E E E R S F A P 0 G E E E R S F A P A P 0 G E E E R S F A P A P 0 G E E E R S F A P A P A P A P A P A P A P A P A P A	62636469666267672727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A E D W G C K R G A A E D W G C K R C A A E D W G C K R	27272727272727282828 2 0 A F S P W G G K 0 A F S P W G G K	k R D R C D R C C R C C R C C R C C R C C R C C	D C D T S F A P W C C D C D T S F A P W C C D C D T S F A P W C C D C D T S F T P W C C D C D T S F T P W C C D C D T S F A P W C C D C D C C E F A P W C C D C D C C E F A P W C C D T F C P W C C	11013131314151613181920 K R E D R F Y P K R E D R F Y P K R D D R F Y K R E D
Taxon \ Character I H.dromedarii R.sanguineus R.sanguineus R.microplus D.variabilis A.sculptum I.ricinus I.ricinus I.ricinus I.ricinus I.ricinus I.ricinus	Image: Constraint of the	45555555555555555555555555555555555555	626364090000000000000000000000000000000000	27-272767278768688 0 A F S P W C C K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K 0 A F S P W C C K K K 0 A F S P W C C K K K K K K K K K K K K K K K K K	Laisesseepepeeeeeeisisseeee R C D R C D R C S R C C R C C R C C R C R C R C R C R C R	299929999000 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	910131313141919191913181926 K R E D R F V K R D R E S G F V K R D D K E S G F V
Taxon \ Character 1 H.dromedarii 2 R.sanguineus 3 R.micropius 4 D.variabilis 5 A.sculptum 6 Lricinus 7 Ix.scapularis 8 O.turicata	D         S         V         R         V         R         E         D           D         S         V         R         A         R         E         D           D         A         A         R         A         R         E         D           D         A         A         R         A         R         E         D           D         A         A         R         A         R         E         D           D         A         A         R         A         R         C         D           D         A         R         A         R         A         C         D         D           D         A         R         A         R         A         C         D         D         A	42562 32525254254254254254254254254254254254254	C C C C C C C C C C C C C C C C C C C	274727672767368888           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         A         F         S         P         W         C         K           0         T         G         R         W         G         K           0         T         G         G         S         W         G         K           0         S         S         G         S         W         W         G         K	2838488888888969992939499 K R D R G D R G D R G S R C C R R R K	ISOURCE CONTRACTOR IN THE INFORMATION INTERVALUE	AIGLIAIAIAIAIAIAIAIAIAIAIAIA X R E D R F Y P X R E D R F Y P X R D D R F Y P X R E D R F Y P X R 0 D K E S G F Y P X R 0 D K E S F F Y P X R 0 D K E S F F Y P
Taxon \ Character           Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ik.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi	D         X         R         Y         K         E         D           D         S         Y         R         Y         K         E         D           D         A         A         R         K         E         D           D         A         R         A         K         E         D           D         A         R         A         K         E         D           D         A         R         A         K         E         D           D         D         T         R         K         E         D           D         G         T         H         T         R         L           D         G         T         H         T         R         L	45565555555555555555555555555555555555	6263640292642642642742727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A E D W G G K R A W G G K R W G G K R W G G K R S G D C G K R S G K R R R S G K R R R S G K R R R R R R R R R R R R R R R R R R	274727272727272402828.           2014         7         5         7         8         6         6         6         8         8         8         8         7         8         9         4         7         8         7         8         7         8         7         8         7         8         7         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         7         8         8         7         8 <td>2838-283828538285909393939393939393939393939393939393939</td> <td>2:9:9:2:9:9:9:0(0) 10.10:0(0) 0(0) 0(0) 0(0) D C D T S F A P W C C D C D T S F T P W C C C D T S F T P W C C C D T S F A P W C C C D T S F A P W C C D C D T S F A P W C C D C D T F C P W C C D T F C P W C C D T F C P W C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C C P D T T F C P W C C C C P D T T F C P W C C C C P D T T T T T T T T T T T T T T T T T T</td> <td>91013131314191013181926 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R E A S F P</td>	2838-283828538285909393939393939393939393939393939393939	2:9:9:2:9:9:9:0(0) 10.10:0(0) 0(0) 0(0) 0(0) D C D T S F A P W C C D C D T S F T P W C C C D T S F T P W C C C D T S F A P W C C C D T S F A P W C C D C D T S F A P W C C D C D T F C P W C C D T F C P W C C D T F C P W C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C D D T F C P W C C C C P D T T F C P W C C C C P D T T F C P W C C C C P D T T T T T T T T T T T T T T T T T T	91013131314191013181926 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R E A S F P
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.micropius       4     D.variabilis       5     A.sculptum       6     I.ricinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixt       10     Prede2012 C.fectual	2 2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	0       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       R       S       F       A       P         0       E       E       R       S       F       A       P         0       E       R       S       F       A       P         0       T       F       G       P       P       P         0       T       F       G       P	626364696662667672727 W G G K R G A G E D W C G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R W G G K R W G G K R F F F I P E D K R A	272727272727282828.28.           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         T         G         A         K         S         P         W         G         K           0         T         G         A         C         K	x : x : x : x : x : x : x : x : x : x :	22222222222222222222222222222222222222	1013131310191013131019101313101000       X     R       D     R       F     N       K     R       D     R       F     N       K     R       D     R       F     N       K     R       D     R       S     R       D     K       K     R       D     K       K     R       D     K       K     R       D     K       K     R       D     K       K     R       K     K        K     K
Taxon \ Character           H.dromedarii           R.sanguineus           R.microplus           A.microplus           A.microplus           B.variabilis           S.A.sculptum           B.Urricata           DAA34788.1 R.prolixi           Prede12017 C.lectula           II. AAC4756.1 A.eagery	D         S         W         N         W         K         D         S         W         N         W         K         D         E         D         D         S         W         N         W         K         D         E         D         D         A         N         N         W         N         D         D         D         A         N         N         N         N         N         D         D         D         A         N         N         N         N         D	45565555555555555555555555555555555555	62636467672672777 W G C K R G A G E D W G C K R G A G E D W G C K R G A A E D W G C K R G A A E D W G C K R W G G K R W G G K R W G G K R E F S E N N E A E D	27472727272727240828.8           200         A         F         S         P         W         G         K           201         F         G         A         W         G         K           201         F         G         A         G         K         C         K           201         F         G         A         G         K         C         K         D         F         G         A         G         K         D         G         K         D         D         F         G         A         G         K         K         D         D         S         G         A         G         K         K         D         D         S         G         M         G         K         K         D         D         S         G         S         M         G         K         K	2838-28382828296329329393939 K R D R G D R G D R G D R G C R R R R R R R R T D E E G V W W M G S R R E H	D         C         D         T         S         F         A         P         W         C         C           D         C         D         T         S         F         T         P         W         C         C           D         C         D         T         S         F         T         P         W         C         C           D         C         D         T         S         F         T         P         W         C         C           D         C         D         T         S         F         T         P         W         C	91013131314191013181926 X R E D R F P P X R D D K E S G F P X R D D K E S G F P X R A K F S S X R A K F S S
Taxon \ Character       H.dromedarii       2 R.sanguineus       3 R.microplus       4 D.variabilis       5 A.sculptum       6 Lricinus       7 Iz.scapularis       8 O.turicata       9 DAA34788.1 R.prolixi       10 Predel2017 C.lectula       11 AAC47656.1 A.e.aey       12 FDS302.9 L.Guidmont	D         S         V         R         V         K         0         E         D           D         S         V         R         V         K         0         E         D           D         A         A         A         K         K         D         E         D           D         A         A         K         K         D         E         D           D         A         K         K         K         D         E         D           D         A         K         K         K         K         D         E         D           D         A         K         K         K         K         E         D           D         B         H         T         R         D         A         A         K         B         A	0       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       F       A       P       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       F       F       G       <	62636469966266697672727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A E D W G G K R E Y E I P E D K R A E F S E N A F A E D E D G A A F A A F D	274797072767368888           204         F         9         W         G         K           204         F         5         9         W         G         K           205         F         6         9         W         G         K           205         F         6         9         W         G         K           205         F         G         9         W         G         K           205         G         S         W         G         K         K         K         G         K           205         G         S         W         G         K	I SIS SIS SIS SIS SIS SIS SIS SIS SIS S	229292999000 30303040930603060 D G D T S F A P W G G D G D T S F T P W G G E E D T S F T P W G G D G D G T S F A P W G G D G D G G E T F A P W G G D G D G G E T F A P W G G D T F G P W G G D T F F F F F G F F G F F G F F G F F G F	1013131310191013181926       X     R       Z     R       X     R       D     R       Y     R       Z     R <t< td=""></t<>
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum       6     I.ricinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixi       10     Predel2017 C.lectulai       11     AAC47656.1 Ac.asgv       12     ED535029.1 C.quinqu       13     NB 646602.DV	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       T       G       P       I         0       G       E       I       S       G       T       D       G       P       I         0       G       E       I       S       G       T       D       G       P       I         0       G       F       G       G       D       G       P       I       I       F       G       P       I       I       G       I       I       I       I       I       I       I       I       I       I       G       I	62636467672672777 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A E D A A A A A A A A A A A A A A A A	274727672767686888           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         T         F         G         W         G         K           0         T         F         G         W         G         K           0         T         F         G         W         G         K           0         T         S         G         S         W         G         K           0         S         S         G         S         W         G         K           0         S         S         G         S         W         G         K	X = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D C D         T S F A P W C C           D T F C P W C C           D T F C P W C C           D T F C P W C C           D T F C P W C C           D N F F N P W C C           D N F F N P W C C           D N F F N P W C C           D N F F N P W C C           D N F N P W C C           D N F N P W C C           D N F N P W C C           D N F N P W A A           N N F N P N A           N N F N P N A           N N F N P N A           N N F N P N A           N N D D E D D D D N	
Taxon \ Character           1. H.dromedarii           2. R.sanguineus           3. R.micropius           4. D.variabilis           5. A.sculptum           6. Lricinus           7. Ix.scapularis           9. D.turicata           9. DAA34788.1 R.prolix           10. Predel2017 C.lectula           11. AAC47656.1 Ae.aegy           12. EDS35029.1. C.quinque           13. NP 524893.2 D.mela	D         S         W         R         V         K         E         D           D         S         W         R         V         K         E         D           D         A         A         R         A         K         E         D           D         A         R         A         K         E         D           D         A         R         A         K         E         D           D         G         T         H         T         R         U           D         G         T         H         T         R         U         U           A         R         A         R         D         D         I	essessessessessessessessessessessessess	6263640300000 K R G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R A A E D W G G K R W G G K R E Y E I P C A E N A G C C C C C C C C C C C C C C C C C C	2         2         7         2         7         2         7         2         7         2         4         8         5         7         W         G         C         K         7         8         7         8         7         0         G         K         7         8         7         7         4         7         8         7         8         6         7         7         4         7         8         7         7         6         7         7         6         7         7         6         7         7         6         7         7         6         7         7         6         7	Image: Second	2292329294000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectular           11         AAC47656.1 Ae.asys           13         NP 524893.2 Dmelt           14         XP 013117801.1 S.cal	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       E       P       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       T       D       G       P       I         0       G       E       C       S       G       T       D       G       P       I         0       G       E       C       S       G       T       D       G       P       I         0       G       F       G       G       T       D       G       P       I         0       G       G       T       G       G       T       D       G       P       I       I       G       G       G       I       G	62636467672672777 W G G K R G A G E D W G G K R G A G T G E D W G G K R G A A E D W G G K R G A A E D W G G K R A A E D W G G K R A A E D W G G K R W G G K R E Y E I P E D K R A E F S E N E A E A E D F D G A E N A Y G D G	2772727272727272808828           20         A         F         S         P         W         C         K           20         A         F         S         P         W         C         K           20         A         F         S         P         W         C         C           20         A         F         S         P         W         C         C           20         A         F         S         P         W         C         K           20         A         F         S         P         W         C         K           20         A         F         S         P         W         C         K           20         T         F         G         A         W         C         K           20         T         S         G         S         W         G         K           20         S         S         G         S         W         G         K           20         S         S         G         S         W         G         K           20         S         G         S	X = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2	2:9:9:3:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:0	1     1
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ik.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectulai           11         AC47565.1 Ac.acgy           12         EDS35029.1 C.quinqui           13         NP 524893.2 D.meli           14         XP 013117801.1 S.cal	D         X         R         Y         K         E         D           D         S         Y         R         Y         K         E         D           D         A         A         R         K         E         D           D         A         R         A         K         E         D           D         A         R         A         K         S         E         D           D         A         R         A         K         S         E         D           D         G         T         H         R         C         D         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         T         C         C         C         C         T         C         C         C         T         C         C         C         C         C         C         C         C         C         C         C	4505 5525 55 45 45 45 45 45 25 45 50 60 6 2 0 C E E D E E R S F A P C E E D E E R S F A P C E E D E E R S F A P E R S F A P F C P F C P E S F A P F C P F	626364026626626627072727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R A A A E D W G G K R A A A E D W G G K R A W G G K R B F F F F F F F F F F F F F F F F F F F	2         7         7         7         7         7         7         7         7         8	263262826282629293939493 K R D R C D R C D R C D R C D R C C R C C R R R R R R R R R R H H H H H H H H H H H H H	2:99239930000 30303040 9000 0000 D C D C T S F A P W C C D C D T S F T P W C C C D C T S F T P W C C C D C T S F T P W C C E E D S F T P W C C D C D T S F T P W C C D C D T S F T P W C C D C D T S F T P W C C D C D T S F C P W C C D T F C P W C C C C D T F C P W C C C C D T F C P W C C C C D T F C P W C C C C C C C C C C C C C C C C C	
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix-scopularis           8         O.turicata           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 52499.2 Dmell           14         XP 013117801.1 S.cal           Taxon \ Character	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	456535353535459545252656663 0 G E E D E E R S F A P 0 G E E E R S F A P 0 G E E E E R S F A P 0 G E E E R S F A	62636469666266767272727 W G G K R G A G E D W C G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R B A A E D W G G K R B E Y E I P E D K R A I E Y E I P E D K R A I E Y E I P E D K R A I E Y E I D G A E N A F D C G K R C C K R C C C C C C C C C C C C C C	2772727272727280838.8           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         A         F         S         P         W         G         K           0         T         G         A         F         S         P         W         G         K           0         T         G         A         F         S         W         G         K           0         T         S         G         P         W         G         K	2232432434434443448445653535354	2999299990603030304070603060 D C D T S F A P W C C D C D T S F P P W C C D C D T S F P P W C C D C D T S F P P W C C D C D C C F F P P W C C D C D C C F F P P W C C D T F C P W C C C D T F C P W C C C D T F C F W C C C D T F C F C F C F C C D T F C F C F C C C D T F C F C F C C C C C C C C C C C C C C	10131313101310191013181920         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       D       R       S       G       F       P         K       R       D       R       S       G       F       P         K       R       D       K       E       G       F       P         K       R       D       K       E       G       F       P         K       R       A       F       S <t< td=""></t<>
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum       6     Lricinus       7     Ik.scapularis       8     O.turicata       9     DAA34788.1 R.prolix       10     Prede12017 C.lectula       11     AAC47656.1 A.e.segy       12     EDS35029.1 C.quingu       13     NP 524893.2 D.meli       14     XP 013117801.1 S.cal       Taxon \ Character     1       1     Hcdromedarii	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	495053953954509505050663         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       E       D       E       R       S       F       A       P         0       F       C       P       T       F       C       P       1         0       F       C       T       S       C       D       C       P       1         0       F       S       C       T       D       C       P       1         0       F       S       C       T       D       C       P       1         0       F       S	626364030662666267072727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R G A A E D W G G K R G W G G K R W G G K R F F F S E M H E A E D D F D G A E A A G D C A E A A C D C A	274797072767980838.           204797072767980838.           204875390072767980838.           204875390072767980838.           204875390727679808.           204875390727679808.           204875390727679808.           2048757990727679808.           2048757990727679808.           2048757990727679808.           2048757990727679808.           2048757990727679808.           204875799072779808.           20497579907279808.           20497579907	2333433492826292932939493 K R D R G D R G D R G S R G C R G D R	2:99239995060 303050603060 3060 D G D G T S F A P W G G D G D T S F T P W G G G D G D T S F T P W G G G D G D T S F T P W G G E E D T S F A P W G G D G D G G E T F A P W G G D G D G G E T F A P W G G D G D T F G P W G G D T F G P W G G C T F F G P F F F F F F F F F F F F F F F F	91013131314191013181920 <b>X</b> R E D R F <b>Y</b> <b>X</b> R <b>X</b> D R <b>Y</b> <b>X</b> R <b>X X</b> <b>Y</b> <b>X</b> R <b>X X</b> <b>Y</b> <b>Y</b> <b>X</b> R <b>X X</b> <b>X X X</b> <b>X X X</b> <b>X X X</b> <b>X X X</b> <b>X X X</b> <b>X X</b> <b>X X X</b> <b>X X</b> <b>X X X</b> <b>X X</b> <b>X</b> <b>X X</b> <b>X X</b> <b>X</b> <b>X X</b> <b>X</b> <b>X</b> <b>X X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b>
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.micropius       4     D.variabilis       5     A.sculptum       6     Lircinus       7     Ix.scapularis       8     O.turicata       10     Predel2017 C.lectula       11     AAC47656.1 Ac.aegy       12     EDS35029.1 C.quinqu       13     NP 25493.2 Dmell       14     XP 013117801.1 S.cal       Taxon \ Character     1       1. H.dromedarii     2	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	4595552525454595452525556662 0 G E E D E E R S F A P G E E D E E R S F A P C E E D E E R S F A P E R S F A P F G P F G P E S G T D C P I F G P F G	62636463666266767272727 W G G K R G A G E D W G C K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R W G G K R F F F F F R R N R E A E F F S E N R E A E D F F G G A E N A C D F O	274727672767868888           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         W         G         K           2         A         F         S         W         G         K           2         A         F         S         W         G         K           0         T         G         A         F         S         W         G         K           0         T         G         A         F         S         W         G         K           0         T         G         A         W         S         W         G         K           0         T         S         S         W         G         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K         K	123364808062302323334900         K       R         D	299939999000 303030000 3000 3000 3000 D G D T S F A P W G G D G D T S F T P W G G D G D G G E T F A P W G G D G D G G E T F A P W G G D G D G G E T F A P W G G D T F G P P P T T A F D T F G P P P T T A F D T F G P P P T T A F D T F G P P P T T A F D T F G P W G G T P P P T T A F D T F G P W G G T F C F P P T T A F D T F G P W G G T F C F P P T T A F T F G P W G G T F C F P P T T A F T F G P W G G T F C F P P T T A F T F G F W G G T F C F F F F F F F F F F F F F F F F F	1013131314191613161926 K R E D R F P K R E A S F P K R E A K F S S N P F R H Y A F R H Y A F R H Y A
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum       6     I.ricinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixi       10     Predel2017 C.lectula       11     AAC47656.1 Ae.asy       12     EDS35029.1 C.quinqu       13     NP 524893.2 D.mela       14     XP 01311780.1 S.cal       Taxon \ Character     1       1     H.dromedarii       2     R.sanguineus	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49569539539539549549549549549549549549549549549549549	6263646969697072727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A E D W G C K R G A A E D W G G K R W G G K R W G G K R E Y E I P E D K R A E P D G A E A A G D C A E A A G D C A C A A C A C C C A	274797077776784838           204777776784838           204777776784838           2047777777778784838           20477777777778784838           20477777777777778784838           20477777777777778784838           204777777777777777777878838           204777777777777777777777777777878838           204777777777777777777777777777777777777	X         R         D           R         G         D           R         G         D           R         G         D           R         G         D           R         G         D           R         G         C	2:992392993060 30303040 3060 3060 D G D G T S F A P W G G D G D T S F T P W G G C D G D T S F T P W G G C D G D T S F A P W G G C D G D T S F A P W G G D G D G C E T F A P W G G D G D T F G P W G G D T F G P W G G D T F G P W G G P A D Q F F I B B P A D Q F E P A D Q F I B C D T F I B P Q G S F I B P A I A S F I B P Z G G K R E S F I B P W G G K R E S F I B P W G G K R E	91013131314191013181920 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R D D K E S G F P K R A K F S S F R P P K R S F F R P Y A F G P Y P 005370737373747376737673767
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.micropius       4     D.variabilis       5     A.sculptum       6     I.ricinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixi       10     Prede2017 C.lectulati       11     AAC4755.1 Ae.aegy       12     EDS35029.1 C.quinqu       13     NF 22489.2 Dmeil       14     XP 013117801.1 S.cal       Taxon \ Character     1       1     H.dromedarii       2     R.smiquineus       3     R.micropius	2 2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	4505352535454545452545454545454545454545454	626364636463646376727277 W G G K R G G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R A A E D W G G K R A A E D W G G K R E Y E I P E S F N R A V G D G F D G A E N A V G D G F D G A E N A V G D G F D G A E N A V G D G F D G A E N A V G D G F D G A E N A V G D G	274727672767284888           204         F         5         P         G         G         K           204         F         S         P         G         G         K           205         F         S         P         G         G         K           205         F         G         P         G         G         K           205         F         G         P         G         K         G         K           205         F         G         P         G         G         K         K         G         K           205         F         G         P         W         G         K         K         S         S         W         G         K         K         S         S         W         G         K         K         S         S         W         G         K         K         S	x : x : x : x : x : x : x : x : x : x :	D         G         D         S         F         A         P         W         G         G           D         G         D         T         S         F         A         P         W         G         G           D         G         D         T         S         F         A         P         W         G         G           D         G         D         T         S         F         A         P         W         G	101313131019101313191020         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       K       A       S       F       P       P         K       K       A       S       F       P       P         S       K       R       A       F       S       S         S       F       R       H       A       F       S       S         S       F       R       A       F       S       S       S       F       R       A         F       C       H       Y       A       F       S       S       S       S       S       S       S
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum       6     I.ricinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixi       10     Predel2017 C.lectulai       11     AC47656.1 Ae.asy       12     ED535029.1 C.quinqu       13     NP 524893.2 D.melai       14     XP 01317801.1 S.cal       Taxon \ Character     1       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       G       F       A       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       P       F       G       F       G       F <td< td=""><td>62636467676777777 W G C K R G A G E D W G C K R G A G E D W G C K R G A A G E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G G K R W G C K R G A A E D C G K R G A A E D W G G K R E F S E N N E A E D D F D G A E N A C D G 2322232425262223263333</td><td>274797472767940838.           2047777767940838.           204777777777940838.           20477777777777940838.           204777777777777777777777777777777777777</td><td>2838-8888682888896932939-893           K         R           Q         0           R         D           R         D           R         D           R         D           R         D           R         C           R         C           R         T           D         E           E         M           C         E           H         -           E         M           C         E           H         -           E         M           C         E           M         D           X         R           D         X           X         D</td><td>2:99292999000 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0</td><td>91013131314191013181926 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R A K F S S K R A K F S S F R P A F F R P Y A F R P Y A F R P Y A</td></td<>	62636467676777777 W G C K R G A G E D W G C K R G A G E D W G C K R G A A G E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G G K R W G C K R G A A E D C G K R G A A E D W G G K R E F S E N N E A E D D F D G A E N A C D G 2322232425262223263333	274797472767940838.           2047777767940838.           204777777777940838.           20477777777777940838.           204777777777777777777777777777777777777	2838-8888682888896932939-893           K         R           Q         0           R         D           R         D           R         D           R         D           R         D           R         C           R         C           R         T           D         E           E         M           C         E           H         -           E         M           C         E           H         -           E         M           C         E           M         D           X         R           D         X           X         D	2:99292999000 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	91013131314191013181926 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R A K F S S K R A K F S S F R P A F F R P Y A F R P Y A F R P Y A
Taxon \ Character       1     H.dromedarii       2     R.sanguineus       3     R.micropius       4     D.variabilis       5     A.sculptum       6     Lircinus       7     Ix.scapularis       8     O.turicata       9     DAA34788.1 R.prolixi       10     Predel2017 C.lectula       11     AAC47656.1 Ac.aegy       12     E053502.9 L.C.quinqu       13     NP 324893.2 Dmel       14     XP 013117801.1 S.cal       Taxon \ Character     1       1     H.dromedarii       2     R.sanguineus       3     R.microplus       4     D.variabilis       5     A.sculptum	2 2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	450535253545454545252556062 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 C E E D E E R S F A P 0 F A P	626364050000000000000000000000000000000000	2         2         7         2         7         2         7         2         7         2         4         7         5         7         4         6         8         8         8         7         7         8         7         8         7         8         7         7         8         7         7         7         8         7         7         7         8         7         7         7         8         7         7         7         7         7         7         7         7         7         7	Image: Second control of the second control	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	1013131314191613181926         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       K       F       S         K       R       A       F       F       S         K       R       A       F       S       S         S       R       R       F       S       S         F       R       N       F       S       S         F       R       R       N       F       S         S       R       R       N       F       S       S         F       R       Y       A       A       F       S <tr< td=""></tr<>
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.acgy           12         EDS35029.1 C.quinqu           13         NP 25489.2 Dmeti           14         XP 013117801.1 S.cal           7         Ix-scapuineus           8         Ruricroplus           4         D.variabilis           5         A.sculptum           6         J.variabilis	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       D       E       R       S       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       G       T       F       G       P         0       G       F       G       P       F       G       P       F         0       G       F       G       F       G       P       F	62636467672672727 W G C K R G A G E D W G C K R G A G E D W G C K R G A G E D W G C K R G A A E D W G C K R G A A E D W G C K R A A E D Z C Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	274797472767980838.           200         A         F         S         P         W         G         K           201         F         G         A         W         G         K         K         D         F         G         A         G         K           201         F         G         A         W         G         K         K         C         K	2232435459462282859993223394595 K R D R G D R	2:99:29:29:29:29:09:00:00:00:00:00:00:00:00:00:00:00:00	91013131314191013181926 K R E D R F P P K R D D K E S G F P K R D D K E S G F P K R A K F S S S P P K S F F R P P A F R P P P P P P P P P P P P P P P P P P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         Rmicropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectularis           11         AAC47656.1 A.e.aey           12         ED53502.9 L.C.quinqu           13         NP 524893.2 D.me4           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         Rmicroplus           4         D.variabilis           5         A.sculptum	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	45055555555555555555555555555555555555	626364050000000000000000000000000000000000	27 47 72 76 72 76 70 80 83 88           2 0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 A F S P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 B F G P W G G K           0 F M P W G G G           0 F M P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G           0 F N P W G G	X         R         D           R         C         D           R         C         D           R         D         C	2292329294040.30.30.30.40.40.2	91013131314191013181926 K R E D R F V K R A D R F V K R A D R F V K R A A K F S S K R A K S F R H Y A K S S F R H Y A K S S F R H Y A K S S K R A K S F R H Y A K S S K S S K R A K S F R H Y A K S S K S S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 52499.2 Dmeli           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       T       D       G       P       I         0       G       F       G       P       G       F       G       P       I       F       G       P       I       F       G       P       I <td< td=""><td>626364676767677777 W G C K R G A G E D W G C K R G A G E C W G C K R G A G E C W G C K R G A A E D W G C K R A A E D 2 0 2 0 2 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0</td><td>2772727272727272802838.           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           0         F         G         A         F         S         W         G         K           0         T         F         G         P         W         G         K           0         T         S         G         F         W         G         K           10         S         S         G         S         W         S         W         N         N           10         S         S         G         S         W         N         N         N           10         F         S         W         N         N         N         N         N         N<!--</td--><td>2x32x4x5x400x603032x32x30x403         X       R         D      </td><td>2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0</td><td>91013131314191013181926 X R E D R F P P X R D D K E S G F P X R D D K E S F P X R A K F S S S N P X R A K F S S F R H Y A F C H Y A F C H Y A</td></td></td<>	626364676767677777 W G C K R G A G E D W G C K R G A G E C W G C K R G A G E C W G C K R G A A E D W G C K R A A E D 2 0 2 0 2 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0	2772727272727272802838.           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           0         F         G         A         F         S         W         G         K           0         T         F         G         P         W         G         K           0         T         S         G         F         W         G         K           10         S         S         G         S         W         S         W         N         N           10         S         S         G         S         W         N         N         N           10         F         S         W         N         N         N         N         N         N </td <td>2x32x4x5x400x603032x32x30x403         X       R         D      </td> <td>2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0</td> <td>91013131314191013181926 X R E D R F P P X R D D K E S G F P X R D D K E S F P X R A K F S S S N P X R A K F S S F R H Y A F C H Y A F C H Y A</td>	2x32x4x5x400x603032x32x30x403         X       R         D	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	91013131314191013181926 X R E D R F P P X R D D K E S G F P X R D D K E S F P X R A K F S S S N P X R A K F S S F R H Y A F C H Y A F C H Y A
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA3d788.1 R.prolixi           10         Predel2017 C.lectularis           11         AAC47556.1 A.e.aegy           12         EDS3020.1 C.quinquing           13         NP 524893.2 D.mela           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         Rmicroplus           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapluaris           8         O.turicata	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	4505352535454545454545454545454545454545454	626364050662607072727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R G A A A E D W G G K R G A A A E D W G G K R G A A A E D W G G K R G F B C A A E D C C C R A A A C D C C C R A A A E D C C C R A A A E D C C C R A A A E D C C C R A A A C D C C C R A A A A C D C C C R A A A A C D C C C R A A A A C D C C C R A A A A C D C C C R A A A A C D C C C C R A A A A C D C C C C C C C C C C C C C C C C C C C	2         2         7         7         7         7         7         7         8	X         R         D           R         C         D           R         D         C           R         D         C           R         D         C           R         D         C           R         D         C           R         C         C           R         T         D         E           R         T         D         E           R         T         D         E         C           R         T         D         E         C           R         T         D         E         C         N           R         T         D         E         C         N           R         T         D         C         S         S           R         D         C         S         S         S           R         D         C         S         K         D           R         R         D         C         S         K           R         C         C         S         K         D	2:99:29:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	8101313131314191013181920 <b>X</b> R E D R F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>E S 0</b> F <b>V</b> <b>X</b> R <b>0</b> D K <b>0 0 0 0 0 0 0 0 0 0</b>
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 52489.2 Dmel           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixis	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	0       E       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       T       D       G       P       I         0       G       T       S       G       T       D       G       P       I         0       G       S       G       T       D       G       P       I	6263646767676777777 W G G K R G A G E D W G G K R G A G E D W G G K R G A A E D W G G K R A A E D D F D G A E N A G A D F D G A E N A G A E D Z 3226232425262526262626333 F M P W G C C K G G A F M P W K K J D D S G K	272727272727282838.8           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           2         A         F         S         P         G         G         K           0         T         F         G         P         G         G         K           0         T         S         G         F         N         G         G         K           10         S         C         S         W         D         D         F         N         N         N           10         S         P         T         S         N         N         N         N         N         N         N         N         N         N         N         N         N         N	x = x + x + x + x + x + x + x + x + x +	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	91013131314191013181926 X R E D R F P P X R F P P P X R F P P P P P P P P P P P P P P P P P P
Taxon \ Character           1. H.dromedarii           2. R.sanguineus           3. R.micropius           4. D.variabilis           5. A.sculptum           6. Lricinus           7. Ix.scapularis           8. O.turicata           9. DAA34788.1 R.prolix           10. Predel2017 C.lectula           11. AAC47656.1 A.e.aey           12. ED5302.9.1. C.quinquinqui           13. NP 524893.2 D.mela           14. XP 013117801.1 S.cal           Taxon \ Character           1. H.dromedarii           2. R.sanguineus           3. Rmicropius           4. D.variabilis           5. A.sculptum           6. Licinus           7. Ix.sculptum           7. Ix.sculptum           8. O.turicata           9. DAA34788.1 R.prolix1	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	UP SOLS \$25,253,253,253,253,253,253,253,253,253,2	62636463646364636437472727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R G A A E D W G G K R G A A A E D W G G K R G A A A E D W G G K R G A A A E D D F D G A E A A Y G D G Z 22223242324232423242334333 F M P W G G K G K G A F M P W G G K A A Y G D G Z 222423242324232423242334333 F M P W G G K G K G A F M P W G G K A A Y G D G Z 222423242324232423242334333 F M P W G G K G K G A F M P W G G K A A Y G D G Z 222423242324232423242334333 F M P W G G K G K G A F M P W G G K A U D D N G K	274797077776780838.           2876777776780838.           28767777778787838.           2876777778787838.           2876777778787838.           2876777778787838.           28767777778787838.           287677777777778787838.           287677777777777777777777777777777777777	X         R         D	2:99:29:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	81013131314191013101920         N       R       E       D       R       F       D       P         N       R       E       D       R       F       D       P       P         N       R       D       R       F       D       P       P       P         N       R       D       R       F       D       P       P       P         N       R       D       R       F       D       P       P       P         N       R       D       D       R       E       S       F       P       P         N       R       D       D       K       E       S       F       P       P         N       R       D       D       K       E       S       F       P       P       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NF 224893.2 Dmeli           14         XP 013117801.1 S.cal           13         NF 24493.2 Dmeli           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           9         DAA34788.1 R.prolixi           10         Prede12012 C.lectual           11         AAC67565.1 Ae.aem	2 2 2 2 2 3 4 2 4 2 4 2 4 2 4 2 4 2 4 2	49569539539549595695295696623         0       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       T       D       G       P         0       G       E       S       G       T       D       G       P         0       G       S       G       T       D       G       P       E         0       G       S       G       T       D       G       P       E       E       E       E       S       G       T       D       G       P       E       E       E       E       C       T       D       D       D       D       E       <	B       B	2         2         7         2         7         2         7         2         4         8         5         7         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           2         A         F         S         P         W         G         K           0         T         F         G         P         W         G         K           0         T         F         G         P         W         G         K           0         T         F         G         P         W         G         K           0         K         F         S         W         M         M         M         M         M         M         M         M         M         M         M         M         M         M	Image: Second	2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:	1013131310191013113101920         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       R       E       D       R       F       P         K       K       E       S       G       F       P         K       K       A       S       F       P       R         S       K       R       A       F       S       S       S         S       F       R       K       F       S       <
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolix           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         E05302.9.1.C.quinquinqui           13         NP 524893.2 D.mela           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         Rmicroplus           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.sculptar           9         DAA34788.1 R.prolix1           9         DAA34788.1 R.prolix1           10         Predel20127 C.lectula           11         AC47656.1 Ae.aegy	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	495053535353535353555552535255565653         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E D E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E E R S F A P         0 G E R A S         0 G E R A S         0 G E R A S         0 G E R A S         0 G E R A S         0 G E R A S         0 G R A S <td>62636463646364636437472727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A E D W G G K R B A A E D W G G K R B A A E D W G G K R B A A E D W G G K R B A A E D F N G A E A A E A E D D F D G A E A A Y G D G Z 32242324252622222334333 F N P W K K I D D N G K Y V D G K R</td> <td>272727672767280838.8           200         A         F         S         P         W         C         K           200         A         F         S         P         W         C         K           200         A         F         S         P         W         C         C           200         F         G         A         F         S         W         C         C           200         F         G         A         F         S         W         G         C           200         F         G         A         F         S         W         G         K           10         K         F         S         W         G         G         K           10         A         F         M         P         W         G         G           10</td> <td>X         R         D        </td> <td>2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:</td> <td>81013131314191013181920         K       R       D       R       F       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P</td>	62636463646364636437472727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A E D W G G K R B A A E D W G G K R B A A E D W G G K R B A A E D W G G K R B A A E D F N G A E A A E A E D D F D G A E A A Y G D G Z 32242324252622222334333 F N P W K K I D D N G K Y V D G K R	272727672767280838.8           200         A         F         S         P         W         C         K           200         A         F         S         P         W         C         K           200         A         F         S         P         W         C         C           200         F         G         A         F         S         W         C         C           200         F         G         A         F         S         W         G         C           200         F         G         A         F         S         W         G         K           10         K         F         S         W         G         G         K           10         A         F         M         P         W         G         G           10	X         R         D	2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:	81013131314191013181920         K       R       D       R       F       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ac.aegy           12         EDS35029.1 C.quinqu           13         NF 224893.2 Dmel           14         XP 013117801.1 S.cal           Taxon \ Character         1           14.dromedarii         2           2. R.sanguineus         3           3. R.micropius         4           4. D.variabilis         5           5. A.sculptum         6           6         Licinus           7         Ix.scapularis           0         Prede12012 C.lectula           10         Prede2012 C.lectula           11         AC47656.1.Ac.aegy           12         EDS35029.1 C.quinqu	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	495653525353543954545454545454545454545454545454	e 2 + 2 + 2 + 2 + 2 + 2 + 2	27272727272727287288888888888888888888	Image: Constraint of the	D       G       D       S       F       A       P       W       G       C         D       G       D       T       S       F       A       P       W       G       C         D       G       D       T       S       F       A       P       W       G       C         D       G       D       T       S       F       T       P       W       G       C         D       G       D       T       S       F       T       P       W       G       C         D       G       G       T       F       A       P       W       G       C <td< td=""><td>1       1</td></td<>	1       1
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AC47656.1 A.e.aeyy           12         ED535029.1 C.quinqu           13         MP 24499.2 Dmeli           14         XP 013117801.1 S.cal           7         Ix.scapularis           7         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AC47656.1 A.e.aey           2         R.scapularis           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           10         <		49:00:5 3:5:3:5:3:5:3:5:3:5:5:5:5:5:5:5:5:5:5	626364639966269897072727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A G E W G C K R G A A E D W G C K R G A A A E D W G G K R E Y E I P E D K R A E Y E I P E D K R A F N P W G C R A A Y G D G 2322423742526232425336333 F N P W G C R A A Y G D G A E N A Y G D G F N D G A E N A Y G D G C A E N A Y C D G A E N A Y C D G C A E N A Y C D G C A E N A Y C D G A E N A Y C D G A Y C A Y C D G A Y C A Y C A Y C A Y C A Y C A Y C A Y C A Y C A Y C A Y C A Y C A Y C A	2727272727272728788888           287872772778788888           2878778778788           2878778778788           2878778788           2878778788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           2878788           2878788           2878788           2878788           2878788           287878            287878	x + x + x + x + x + x + x + x + x + x +	2:99:29:99:90:00:00:00:00:00:00:00:00:00:00:00	91013131314191013181926 K R E D R F Y P K R E D R F Y P P K R E D R F Y P P K R E D R F Y P P K R E D R F Y P P P K R E D R F Y P P P P P P P P P P P P P P P P P P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 A.e.aey           12         EDS35029.1 C.quinqu           13         NF 254893.2 D.meli           14         XP 013117801.1 S.cal           Taxon \ Character         1           14         Advarabilis           5         A.scupturus           8         R.microplus           4         D.variabilis           5         A.scupturus           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixis           10         Prede12017 C.lectula           11         AAC47656.1 A.e.aey           12         EDS35029.1 C.quinqu           13         AS24756.1 A.e.aey	2 2 2 2 2 3 4 2 4 2 4 2 4 2 4 2 4 2 4 2	495653953954959565265560662         0       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       D       E       R       S       F       A       P         0       G       E       R       S       G       D       C       P       I         0       G       E       R       S       G       T       D       G       P         0       G       F       G       D       G       P       I       D       I       D       I       D       G       P       I       I       D       I       D       I       I       D       I       I       D       I       D       I       D       I       D       I       D       I       D       I       D       D	6263640300000000000000000000000000000000	2         2         7         2         7         2         7         2         2         2         3		D       C       D       S       F       A       P       W       C       C         D       C       D       T       S       F       A       P       W       C       C         D       G       D       T       S       F       A       P       W       C       C         D       G       D       T       S       F       A       P       W       C       C         D       G       D       T       S       F       A       P       C	1013131314191613181926         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       A       F       S       F       M       P         K       R       A       K       F       S       S       S       K       R       K       F       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 52489.2 Dmela           14         XP 013117801.1 S.cal           7         Ix-scapularis           8         A.sculptum           4         D.variabilis           5         A.sculptum           6         Hridmus           7         Ix-scapularis           9         DA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           7         Ix-scapularis           9         DA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS3502.1 C.quinqu		4950535353535353595053526536555050662         0       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       E       R       S       F       A       P         0       E       E       D       S       T       D       C       P       I         0       E       I       S       I       D       D       C       P       I         0       I       E       I       S       I       D       D       R       A       P         0       I       I       S       I       I       D       I       I       A       A         0       I       E<	626364639966269897072727 W G C K R G A C E D W G C K R G A C E D W G C K R G A C E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G G K R A A E D W G G K R A A E D Y Y D Q R A E A A A A A A A A A A A A A A A A A	27272767980838.           2747976767980838.           287679777767980838.           28767977777787080838.           2876797777787080838.           28767977777787080838.           2876797777787080838.           28767977777787080838.           28767977777787080838.           2876797777777800838.           2876797777777777777777777777777777777777	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	P:ge929999000 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         b.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ac.aegy           12         EDS35029.1 C.quinqu           13         NF 254893.2 D.mel           14         XP 013117801.1 S.cal           Taxon \ Character         1           14.dromedarii         2           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         Ascuptum           6         Lricinus           7         It.scapularis           8         O.turicata           9         DAA34788.1 R.prolixis           10         Prede12017 C.lectula           11         AC47656.1 Ac.aegy           12         EDS35029.1 C.quingu           13         NF 24893.2 D.melar	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4956535253535439545955555656662         9 G       E       D       E       R       S       F       A       P         0 G       E       D       E       R       S       F       A       P         0 G       E       D       E       R       S       F       A       P         0 G       E       D       E       R       S       F       A       P         0 G       E       D       E       R       S       F       A       P         0 G       E       D       E       R       S       G       P       I         0 G       E       I       S       G       T       D       G       P         0 G       F       I       S       G       T       D       G       P         0 G       F       I       S       G       T       D       G       P       I         0 G       F       I       S       G       T       D       G       P       I         0 G       F       I       I       G       D       R       I       I       D       P </th <th>626364         626364         626364         626364         626364         7072727           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         A         E         D           W         G         K         R         A         A         E         D           W         G         K         R         A         A         E         D           E         Y         E         I         P         E         N         R         K         A           I         F         D         G         A         E         N         A         C         G         A           Z         2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/</th> <th>2         2         7         2         7         2         7         2         7         2         2         2         3</th> <th>K       R       D      </th> <th>2:9992999000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</th> <th>1013131314191613181926         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       A       F       S       F       M       P         K       R       A       F       S</th>	626364         626364         626364         626364         626364         7072727           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         A         E         D           W         G         K         R         A         A         E         D           W         G         K         R         A         A         E         D           E         Y         E         I         P         E         N         R         K         A           I         F         D         G         A         E         N         A         C         G         A           Z         2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/	2         2         7         2         7         2         7         2         7         2         2         2         3	K       R       D	2:9992999000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1013131314191613181926         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       A       F       S       F       M       P         K       R       A       F       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         D.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 52489.2 Dmela           14         XP 013117801.1 S.cal           7         Ix.scapularis           8         A.sculptum           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           2         EDS35029.1 C.quinqu           3         N.Brittins           9         D.A34788.1 R.prolixi           10         Prede12017 C.lectula	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49505352353535353535555555555555555555555	626364639966269897072727 W G C K R G A G E D W G C K R G A G E D W G C K R G A A G E D W G C K R G A A E D W G G K R G A A E D W G G K R A A E D Y Y D Q Q R A E N Y Y D Q D K Y S S S S Y A A A A A A A A A A A A A A A A A A A	27272727272727240838.8           200         A         F         S         P         G         C         K           200         A         F         S         P         G         C         K           200         A         F         S         P         G         C         K           200         A         F         S         P         G         G         K           200         A         F         S         P         G         G         K           200         F         G         A         C         K         K         C         K           200         F         G         A         K         C         C         K           200         F         G         A         C         C         K	X         R         D	2:99:29:99:90:00:00:00:00:00:00:00:00:00:00:00	91013131314191613181926 K R E D R F Y P K R D D K E S G F P K R D D K E S G F P K R D D K E S G F P K R A K F S S F R H Y A F G H Y A
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC4755.1 A.e.aey           12         EDS35029.1 C.quinqu           13         NF 224893.2 Dmeli           14         XP 013117801.1 S.cal           Taxon \ Character         1           14.dromedarii         2           2         R.sanguineus           3         Rmicroplus           4         D.variabilis           5         A.scuptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC4756.1 A.e.aey           12         EDS35029.1 C.quinqu           13         NF 24893.2 D.melar	2 2 2 2 2 3 2 4 2 4 2 4 2 4 2 4 2 4 2 4	4956535535353535353535555555555555555555	6263640300000000000000000000000000000000	27         27         27         27         27         27         27         27         27         27         27         27         28<	Image: Second	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	1013131314191613181926         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       K       F       F         K       R       A       F       F       S         K       R       A       F       F       S         K       R       A       F       S       S         F       R       H       Y       A         A       Y       Y       A       A       D         A       K       S       S       A       D       D         A       K       R       K       S       A       D       D         A       K       S       S       A       D       D
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 52489.2 Dmela           14         XP 013117801.1 S.cal           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           13         NP 52489.2 Dmelar           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix-scapularis           0         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinquinquinguinguingu	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49505352353535353555555555555555555555555	62636463646364636437472727 W G C K R G A G E D W G C K R G T G E D W G C K R G T G E D W G C K R G A A E D W G G K R A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A E D Y G G K R A A A A E D Y G G K R A A Y G G R A E N A Y G G R A E D Y G G K R A A Y G R A E D Y G G K R A A Y G R A E D Y G G K R A A Y G R A E D Y G G K R A A Y G R A E D Y G G K R A A Y G R A E D Y G G K R A Y A Y A Y A Y A Y A Y A Y A Y A Y A	27272727272727242838.8           287472772772727274284838.8           28747277277274284838.8           28747277277274284838.8           28747277277274284838.8           28747277277274284838.8           28747277277274284838.8           28747277277277274284838.8           28747277277277274284838.8           28747277277277277274284838.8           28747277277277277274284838.8           28747277277277277274284838.8           28747277277277277274284838.8           28747277277277277274284838.8           287472772772772772772848838.8           287472772772772772772848838.8           287472772772772772848838.8           287472772772772772848888.8           2874727727727727728488888.8           2874727727727727728488888888888           287472772772772772848888888888888888888	2x3:xx + xx	P:ge929999000 0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	91013131314191013181926 K R E D R F 9 P K R D D K E S G F 9 P K R D D K E S G F 9 P K R D D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S G F 9 P K R 0 D K E S 0 F 9 P K R 0 D K
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC4755.1 A.e.aey           12         EDS35029.1 C.quinqu           13         NF 224893.2 Dmeli           14         XP 013117801.1 S.cal           Taxon \ Character         1           14.dromedarii         2           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.scuptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AC4756.1 A.e.aey           12         EDS35029.1 C.quinqu           13         AS24786.1 A.e.aey	2 2 2 2 2 3 2 4 2 4 2 4 2 4 2 4 2 4 2 4	45:05:55:55:55:55:55:55:55:55:55:55:55:55	62636403642642642642742727 W G G K R G G K G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A E D W G G K R A A E D W G G K R B F R P W G K R F R P W G G K I A C D F R P W G G K I A C D F R P W G G K I A C D F R R A E D C C C R R A I A C D F R R A E D C C C R R A I A C D F R R A E D C C C R R A I A E D F R R A E D F R R A E N A V G D G R R A E D F R R P W G C C R R A E D C C C R R A E N A V G D G R R A E D C C C R R A E N A V G D G R R A E D F R R P W G C C R R A E D C C R R A E N A V G D C R R A E D C C R R A E N A V G D C R R A E D C C R R A E N A V G D C R R A E D C C R R A	27 47 72 76 72 76 70 40 48 38.           20 A         F         S         P         W         G         K           20 A         F         S         M         W         G         K           20 F         G         K         F         S         W         G         K           20 F         G         K         F         S         W         G         K           20 F         G         K         F         S         W         G         K           20 F         G         K         F         S         W         G         K           21 S         K         F         S         W         G         K	Image: Second	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	1013131314191013101926         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       R       F       P         K       R       D       K       F       F       P         K       R       D       K       F       F       P         K       R       A       F       F       S       S         K       R       A       F       F       S       S         F       R       H       Y       A       A       F       S         S       R       K       K       S       F       S       S       S         F       R       H       Y       A       A       F       S       S         F       R       H       Y       A       A       D       D         I       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix-scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C-lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 52489.2 Dmela           14         XP 013117801.1 S.cal           7         Ix-scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           12         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix-scapularis           0         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C-lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinquinguinguinguinguinguinguinguingui	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49505352353535353535555555555555555555555	62636463646364636437472727 W G C K R G A G E D W G C K R G A G E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G G K R W G G K R F S P F	272727272727272424838.8           287472772772727424838.8           2874727727727424838.8           2874727727727424838.8           2874727727727424838.8           2874727727727424838.8           2874727727727424838.8           2874727727727424838.8           2874727727727727424838.8           2874727727727727424838.8           2874727727727727727424838.8           2874727727727727727424838.8           2874727727727727727424838.8           2874727727727727727424838.8           2874727727727727727424838.8           2874727727727727727277244838.8           28747277277277277277247484838.8           28747277277277277277244838.8           287472772772772772772474888.8           287472772772772772772772474888.8           28747277277277277277277277247888.8           287472772772772772772772772772772772772772	X       R       D       Image: Comparison of the second	P:99:39:99:99:00:0:0:0:0:0:0:0:0:0:0:0:0:	91013131314191013181926 K R E D R F 9 P K R D D K E S G F 9 P K R D D K E S G F 9 P K R D D K E S G F 9 P K R G A D D S K R A K F 9 S S 0 P K R S 5 F R H Y A F G H Y A F G H Y A F G H S 5 F R H A A F G A D D S K R A A D S K R A A D S K R A D D
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede2017 C.lectula           11         AAC47656.1 A.e.aegy           12         ED535029.1 C.quinqu           13         NP 524893.2 D.mel           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolix           10         Prede12017 C.lectula           11         AAC4756.1 A.e.agy           12         ED535029.1 C.quinqu           13         AC4756.1 A.e.agy	2 2 2 2 2 3 2 4 2 4 2 4 2 4 2 4 2 4 2 4	4950539539549595059505950505050505050505050505050	626364636662667672727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A A E D W G G K R A A E D C T A C A A A A E D W G G K R A A A E D C T A C A A A A E D W G G K R A A A E D C T A C A A A A A E D W G G K R A A A E D C T A C A A A A A E D W G G K R A A A E D C T A C A A A A A E D W G G K R A A A E D C T A C A A A A A E D V G G K R A A A E D S T A C A A A A A E D S T A C A A A A A A A A A A A A A A A A A	27         27<	Image: Second	2:99:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0	1013131314191013101926         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       R       F       P         R       R       D       K       F       S         R       R       D       K       F       S         R       R       A       M       F       S         S       R       R       K       F       S       S         F       R       H       A       F       S       S       S         S       R       K       S       S       A       D       M         S       R       R       S       S       A       D       M         S       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 524893.2 Dmela           14         XP 013117801.1 S.cal           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           12         R.saicroplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           21         EDS5502.9.1 C.quinqu           13         NP 524893.2 D.melar <t< th=""><th>2 2 2 2 2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4</th><th>49:00:5 3:5:5:3:5:3:5:3:5:5:5:5:5:5:5:5:5:5:5</th><th>626366         62666         62666         7072727           W         G         K         R         G         K         E         D           W         G         K         R         G         K         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         E         D         W         G         K         R         A         E         D           E         Y         E         D         K         R         A         C         D         G         C         K         R         A         C         D         G         C</th><th>274797077776786838.8           2876777767867838.8           28767777767867838.8           287677777878788           287677777878788           2876777778788           2876777778788           28767777778788           28767777778788           2876777777778788           287677777777777777777777777777777777777</th><th>2x32x3x3x4x4x4x4x4x4x4x4x4x4x4x4x4x4x4x4</th><th>P:99:92:99:99:90:00:00:00:00:00:00:00:00:00:00:</th><th>31013131314191013181926         K       R       E       D       R       F       P       P         K       R       E       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       K       E       S       F       P         K       K       A       K       F       S       S       F       P         S       D       K       S       F       S       S       F       F       S       S         S       D       K       S       S       F       S</th></t<>	2 2 2 2 2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4	49:00:5 3:5:5:3:5:3:5:3:5:5:5:5:5:5:5:5:5:5:5	626366         62666         62666         7072727           W         G         K         R         G         K         E         D           W         G         K         R         G         K         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         E         D         W         G         K         R         A         E         D           E         Y         E         D         K         R         A         C         D         G         C         K         R         A         C         D         G         C	274797077776786838.8           2876777767867838.8           28767777767867838.8           287677777878788           287677777878788           2876777778788           2876777778788           28767777778788           28767777778788           2876777777778788           287677777777777777777777777777777777777	2x32x3x3x4x4x4x4x4x4x4x4x4x4x4x4x4x4x4x4	P:99:92:99:99:90:00:00:00:00:00:00:00:00:00:00:	31013131314191013181926         K       R       E       D       R       F       P       P         K       R       E       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       K       E       S       F       P         K       K       A       K       F       S       S       F       P         S       D       K       S       F       S       S       F       F       S       S         S       D       K       S       S       F       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scapularis           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 324893.2 Dmel           14         XP 013117801.1 S.cal           Taxon \ Character         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 224893.2 D.melait           14         XP 013117801.1 S.cal           7         Ix.capuluris	2 2 2 2 2 3 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49:00:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3	C 26263646364636463647672727 W G G K R G A G E D W G G K R G T G E D W G G K R G T G E D W G G K R G T G E D W G G K R G A A E D W G G K R A A E D W G G K R F N P W G G K R F N P W G G K I U Y Y D Q D G F S S S G Y Y Y D Q D K F S S S G Y Y Y D Q D K F S C P Y Y D Q D K F S C P F S C P	2         7         7         7         7         7         8	x         x	D       G       D       S       F       A       P       W       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       G	8       R       E       D       R       F       P       P         R       R       D       R       F       P       P       R       P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NF 25489.2 Dmela           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         AAC47656.1 Ae.aegy           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           2         EDS35029.1 C.quinqu           13         NF 524893.2 D.melan           14         XP 013117801.1 S.cal </th <th>2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</th> <th>49:00:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:</th> <th>62636463646366637672727 W G C K R G A G E D W G C K R G A G E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A</th> <th>274797077776786838.           27479777776786838.           284757777787878888           2847577777878788           2847577777878788           284757777787888           284757777787888           284757777787888           284757777778888           2847577777777777777777777777777777777777</th> <th>X       R       D       Image: Comparison of the second of the second</th> <th>Image: Sector Sector</th> <th>101313131419191314191926         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       E       S       F       P         K       R       D       K       E       S       F       P         K       K       A       K       F       S       S       F       P         K       K       A       K       F       S       S       S       F       F       N       S         S       N       N       A       K       S       F       S</th>	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	49:00:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:	62636463646366637672727 W G C K R G A G E D W G C K R G A G E D W G C K R G A A E D W G C K R G A A E D W G C K R G A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A E D W G C K R A A A	274797077776786838.           27479777776786838.           284757777787878888           2847577777878788           2847577777878788           284757777787888           284757777787888           284757777787888           284757777778888           2847577777777777777777777777777777777777	X       R       D       Image: Comparison of the second	Image: Sector	101313131419191314191926         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       F       P       P         K       R       D       R       E       S       F       P         K       R       D       K       E       S       F       P         K       K       A       K       F       S       S       F       P         K       K       A       K       F       S       S       S       F       F       N       S         S       N       N       A       K       S       F       S
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         E053502.9 I.C.quinqu           13         NP 524893.2 D.me4           14         XP 013117801.1 S.cal           7         Ix.scapularis           8         A.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AC47656.1 Ae.aegy           12         Rosinguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           10         Predel2017 C.lectula           11         AC47656.1 Ae.aegy           12         E053029.1 C.quinqui <tr< th=""><th>2424249404940442404 D S W R W K B E D A A R R A R D D D A A R A R A E D A A R A A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A D D A A R A R A B A D D A A R A R A A A A A A A A A A A A A A</th><th>49:00:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3</th><th>626364         6266264         6266264         7072727           W         G         K         R         G         K         C         E         D           W         G         K         R         G         K         C         E         D           W         G         K         R         G         A         C         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         G         K         A         A         E         D           E         F         S         E         M         F         D         R         A         C         D         G         C         C         C         C         C         D         G         C<th>2         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         0         2         0</th><th>x         x</th><th>2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:</th><th>1013131314191013101300         K       K       C       R       F<!--</th--></th></th></tr<>	2424249404940442404 D S W R W K B E D A A R R A R D D D A A R A R A E D A A R A A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A D D A A R A R A B D D A A R A R A D D A A R A R A D D A A R A R A B A D D A A R A R A A A A A A A A A A A A A A	49:00:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3:5 3	626364         6266264         6266264         7072727           W         G         K         R         G         K         C         E         D           W         G         K         R         G         K         C         E         D           W         G         K         R         G         A         C         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         G         K         A         A         E         D           E         F         S         E         M         F         D         R         A         C         D         G         C         C         C         C         C         D         G         C <th>2         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         0         2         0</th> <th>x         x</th> <th>2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:</th> <th>1013131314191013101300         K       K       C       R       F<!--</th--></th>	2         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         0         2         0	x         x	2:9:9:2:9:9:9:0:0:0:0:0:0:0:0:0:0:0:0:0:	1013131314191013101300         K       K       C       R       F </th
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NF 25489.2 Dmela           14         XP 013117801.1 S.cal           Taxon \ Character         1           14         AP 013117801.1 S.cal           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47565.1 Ae.aegy           2         R.sanguineus           3         R.microplus           14         XP 013117801.1 S.cal           12         EDS35029.1 C.quinqu           13         NF 24893.2 D.melar           14         XP 013117801.1 S.cal           14         XP 013	2         2	49:00:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5	626366         62666         62666         7072727           W         G         K         R         G         K         E         D           W         G         K         R         G         K         E         E           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         E         D         W         G         K         R         A         E         D           E         Y         E         D         F         S         E         N         W         G         G         K         A         C         D         G	274797077776786888           2747977776786888           28477777767867888           28477777787878           28477777787878           28477777787878           28477777778788           28477777778788           284777777777777777777777777777777777777	X       R       D	P:ge929999000.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	101313131419191013181926         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       A       K       F       S       S       S       F       M       P         S       M       M       K       S       F       M       P       P       P       P       P       P       P       P       P       P       P       P       P       P       P       P       P       P <t< th=""></t<>
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         I.ricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED53502.9 I.C.quinqu           13         NP 524893.2 D.medi           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           0         Durafabilis           13         NP 524893.2 D.melan           14         XP 013117801.1 S.cal           15         A.sculptum           16         Licinus           17         R.scaguiaris           18	2 2 2 2 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	49:00:5 3:5:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5	c.262646/2646/2646/26470/27/27           W         G         K         R         G         K         E         D           W         G         K         R         G         K         C         E         D           W         G         K         R         G         A         C         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         G         A         A         E         D           W         G         K         R         A         A         E         D           W         G         K         R         A         A         E         D           E         F         S         S         G         D         G         A         C         D         G         A         C         D         G         A         C         D         G         A         C         D         G         A         C         D         G         A         C         D         G         A         C         D         G         A <td< th=""><th>2         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         0         2         3         3         3         3         3         3         3         3         3         3         3         4         4         5         7         7         7         8         7         7         3         3         3         3         3         3         3         4         4         5         7         7         7         3         3         3         4         4         1</th><th>2x3:2x3:2x4:2x3:2x4:2x3:2x3:2x3:2x3:2x3:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4</th><th>D       G       D       S       F       A       P       W       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       G</th><th>10131313141910131013000         K       K       D       R       F       M       P         K       R       D       R       F       M       P       M       P         K       R       D       R       F       M       P       M       M       P       M       N       <t< th=""></t<></th></td<>	2         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         7         2         0         2         3         3         3         3         3         3         3         3         3         3         3         4         4         5         7         7         7         8         7         7         3         3         3         3         3         3         3         4         4         5         7         7         7         3         3         3         4         4         1	2x3:2x3:2x4:2x3:2x4:2x3:2x3:2x3:2x3:2x3:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4:2x4	D       G       D       S       F       A       P       W       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       W       G       G         D       G       D       T       S       F       A       P       G	10131313141910131013000         K       K       D       R       F       M       P         K       R       D       R       F       M       P       M       P         K       R       D       R       F       M       P       M       M       P       M       N <t< th=""></t<>
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         Ix.scopularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         NP 524893.2 Dmela           14         XP 013117801.1 S.cal           Taxon \ Character         1           14         Advarabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           0         Duricate           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ae.aegy           12         EDS35029.1 C.quinqu           13         AS24756.1 Ae.aegy           14         XP 013117801.1 S.cal           14         XP 013117801.1 S.cal           12         R.sanguineus     <	2         2	49:50:53:53:53:53:53:55:55:55:55:55:55:55:55:	626366463646264264364376472727           W         C         K         R         G         K         C         E         D           W         G         K         R         G         A         C         E         D           W         G         K         R         G         A         C         E         D           W         G         K         R         G         A         E         D           W         G         K         R         G         A         E         D           W         G         K         R         A         E         D         W         G         K         R         A         E         D           E         Y         E         D         F         S         C         M         G <td< th=""><th>27272727272724724838.8           2874727727747467838.8           2874727727746784838.8           287472774746784838.8           28747747748784838.8           28747747748784838.8           28747747748784838.8           28747747748784838.8           28747747748788383           28747747748788383           28747747748788383           28747747748788383           2874774774748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           287477477478788383           287477477478788383           287477477478788383           287477478788383           287477478788383           2874774787883           2874774787883           28747787883           28747787883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           2874883</th></td<> <th>X       R       D      </th> <th>P:99:99:99:040:03030:04030:04030         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       F       G       P       G       G       G       G         P A       D       D       T       F       G       P       G       G         P A       D       D       D       T       F       A       G</th> <th>81013131314191013181926         K       R       E       D       R       F       M       P         K       R       E       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         S       M       D       K       S       F       M       P</th>	27272727272724724838.8           2874727727747467838.8           2874727727746784838.8           287472774746784838.8           28747747748784838.8           28747747748784838.8           28747747748784838.8           28747747748784838.8           28747747748788383           28747747748788383           28747747748788383           28747747748788383           2874774774748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           28747747748788383           287477477478788383           287477477478788383           287477477478788383           287477478788383           287477478788383           2874774787883           2874774787883           28747787883           28747787883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           28747883           2874883	X       R       D	P:99:99:99:040:03030:04030:04030         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       S       F       A       P       G       G         D G D       T       F       G       P       G       G       G       G         P A       D       D       T       F       G       P       G       G         P A       D       D       D       T       F       A       G	81013131314191013181926         K       R       E       D       R       F       M       P         K       R       E       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         S       M       D       K       S       F       M       P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 524893.2 D.medi           14         XP 013117801.1 S.cal           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2012 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 524893.2 D.melani           14         XP 013117801.1 S.cal           11         AAC47656.1 Ae.aegy           12         R.sanguineus           13         NP 524893.2 D.melani           14         XP 013117801.1 S.cal           15         A.sculptum           14 <td< th=""><th>2       2</th><th>49:00:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:</th><th>C         C         K         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         K         C         C         K         K         C         D         C         C         K</th><th>274797077776784838.8           200         A         F         S         P         W         C         K           201         F         G         N         W         G         G         K           21333435393(3)         3         3         3         4         M         M         G         G           4133434353(3)         A         F         N         P         W         G         G           12334353(3)         A         F         N</th><th>2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:</th><th>P:99:39:99:90:00:00:00:00:00:00:00:00:00:00:00</th><th>101313131419101310131000         K       K       D       R       F       M       P         K       R       D       R       F       M       P       P         K       R       D       R       F       M       P       P       P         K       R       D       R       F       M       P</th></td<>	2       2	49:00:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:5:3:	C         C         K         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         K         C         C         K         K         C         D         C         C         K	274797077776784838.8           200         A         F         S         P         W         C         K           201         F         G         N         W         G         G         K           21333435393(3)         3         3         3         4         M         M         G         G           4133434353(3)         A         F         N         P         W         G         G           12334353(3)         A         F         N	2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:	P:99:39:99:90:00:00:00:00:00:00:00:00:00:00:00	101313131419101310131000         K       K       D       R       F       M       P         K       R       D       R       F       M       P       P         K       R       D       R       F       M       P       P       P         K       R       D       R       F       M       P
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         Rmicropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         b.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 A.e.aegy           12         EDS35029.1 C.quinqu           13         NP 524893.2 Dmela           14         XP 013117801.1 S.cal           Taxon \ Character         1           1. H.dromedarii         2           2. R.sanguineus         3           3. R.microplus         4           4. D.variabilis         5           5. A.sculptum         6           6         Licinus           7         Ix.scapularis           0.turicata         9           9         DAA34788.1 R.prolix           10         Prede12017 C.lectula           11         AAC47656.1 A.e.gy           12         R.sanguineus           3. R.microplus         4	2         2	49:00:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5	A              P              C              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              C              K              C              K              G              K              C              K              K              C              K              K              K              C              K	274797777878788888           28787787787878878888           28787787787878878878           287877878788           287877878788           287877878788           287877878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           287878787888           28787878788           28787878788           28787878788           28787878788           28787878788           28787878788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           287878788           2878788           2878788           2878788           2878788           2878788           2878788           2878788            2878788 <th>Image: Second control of the second</th> <th>P:90:92:90:90:00:00:00:00:00:00:00:00:00:00:00:</th> <th>1013131314       10101314       10101314       10101314       10101314         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M         K       R       D       K       E       S       F       M       P         K       R       A       K       F       S       S       F       M       P         K       K       K       K       S       S       F       M       P<!--</th--></th>	Image: Second control of the second	P:90:92:90:90:00:00:00:00:00:00:00:00:00:00:00:	1013131314       10101314       10101314       10101314       10101314         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M         K       R       D       K       E       S       F       M       P         K       R       A       K       F       S       S       F       M       P         K       K       K       K       S       S       F       M       P </th
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqu           13         NP 524893.2 D.medi           14         XP 013117801.1 S.cal           Taxon \ Character         1           1         H.dromedarii           2         R.sanguineus           3         R.microplus           4         D.variabilis           5         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED535029.1 C.quinqui           13         NP 52489.2 D.melaniandui	2       2	49 C C S S S S S S S S S S S S S S S S S	C         C	274797072767040838.8           200         A         F         S         P         W         G         K           201         F         G         N         W         G         G         K           21334343536334363344044         F         P         W         G         G         K         F         N         W         G         G         K         F         N         W         G         G         K         F         N         W         G         G	2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:	P:G:92:92:99:90:00:0:0:0:0:0:0:0:0:0:0:0:0:	101313131431431431431431431431431431431431
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lircinus           7         b.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Prede12017 C.lectula           11         AAC47656.1 Ac.aegy           12         EDS35029.1 C.quinqu           13         NP 524893.2 Dmela           14         XP 013117801.1 S.cal           Taxon \ Character         1           1. H.dromedarii         2           2. R.sanguineus         3           3. R.microplus         4           4. D.variabilis         5           5         A.sculptum           6         Licinus           7         Ix.scapularis           0.turicata         9           9         DAA34788.1 R.prolix           10         Prede12017 C.lectula           11         AcC47656.1 Ac.agy           12         R.sanguineus           3         R.microplus           <	2         2	49:00:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5:5	A              C              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              G              K              C              K              K              G              K              K              G              K              K              K              G              K              K              G              K              K              K              G              K              K              K              K              K              K              K              K              K              K              K              K              K              K	274797777787848888           27479777787848888           28478789           2847878           2	X       R       D	P:90:3:2:90:3:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:	81013131314191013181031910         810131313141910131810300         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       F       M       P         K       R       D       R       E       S       F       M         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         K       R       D       K       E       S       F       M       P         S       M       D       K       S       F       F       N       P       P         S       M       A       K       S       F       S       N       P       P         S       M       N       S       S       S       S       N       P       P </th
Taxon \ Character           1         H.dromedarii           2         R.sanguineus           3         R.micropius           4         D.variabilis           5         A.sculptum           6         Lricinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         ED53029.1 C.quinqu           13         NP 524893.2 Dmela           14         XP 013117801.1 S.cal           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula           11         AAC47656.1 Ae.aegy           12         R.sanguineus           3         R.microplus           14         XP 013117801.1 S.cal           15         A.sculptum           6         Licinus           7         Ix.scapularis           8         O.turicata           9         DAA34788.1 R.prolixi           10         Predel2017 C.lectula <t< th=""><th>2         2</th><th>42:00:05:25:25:35:35:35:35:35:35:35:35:35:35:35:35:35</th><th>C         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         K         C         K         K         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         K         C         C         K         K         C         D         C         C         K</th><th>270         70</th><th>2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:</th><th>P:99:39:99:90:00:00:00:00:00:00:00:00:00:00:00</th><th>101313131419101310131000         K       R       C       R       F       M       P         K       R       C       R       F       M       P       M       P         K       R       D       R       F       M       P       M       P       M       P       M       P       M       P       M       P       M       P       M       P       &lt;</th></t<>	2         2	42:00:05:25:25:35:35:35:35:35:35:35:35:35:35:35:35:35	C         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         C         K         K         C         K         K         C         K         C         C         K         C         C         K         C         C         K         C         C         K         C         C         K         K         C         C         K         K         C         D         C         C         K	270         70	2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:2x3:	P:99:39:99:90:00:00:00:00:00:00:00:00:00:00:00	101313131419101310131000         K       R       C       R       F       M       P         K       R       C       R       F       M       P       M       P         K       R       D       R       F       M       P       M       P       M       P       M       P       M       P       M       P       M       P       M       P       <



**Supplementary Figure 4.** Above is the alignment of the fourteen kinin precursors that were used for the phylogenetic analysis, as shown in the Mesquite window (Version 3.6).