

Supplementary Information

Retrophylogenomics Place Tarsiers on the Evolutionary Branch of Anthropoids

Gerrit Hartig^{1,2*}, Gennady Churakov^{1*}, Wesley Warren³, Jürgen Brosius¹, Wojciech Makołowski² & Jürgen Schmitz¹

¹Institute of Experimental Pathology (ZMBE), University of Münster, 48149 Münster, Germany

²Institute of Bioinformatics, Faculty of Medicine, University of Münster, 48149 Münster, Germany

³Genome Sequencing Center, Washington University School of Medicine, 63108 Missouri, USA

*These authors contributed equally to this work

Correspondence and requests for materials should be addressed to J.S. (jueschm@uni-muenster.de)

Supplementary Table 1

Presence/absence state (+/-) of phylogenetically informative retroposon insertions and genome-coordinates for human (hg19) for Alu SINES (A), LINES (B) and LTR (C) elements. The subfamily affiliation of elements is given in the third column.

Among the new 19 diagnostic Alu insertions were 3 dimeric Alu elements of the subfamily Sx, 1 of the subfamily Jb, and 15 monomeric elements (12X FLAMs or SP-D; 1X FRAM; 2X FAM or PB1).

Diagnostic LINES were from the subfamily L1PB4, diagnostic LTRs divide in 62 MSTB and one MSTC elements. Alu/LINE/LTR = element subfamily, Marker = name of sequence, Chr = chromosome, d = deletion,

? = no alignable sequence information, +Ins = additional insertion, ns = no sequence available. Alignments of all loci are attached.

A	Marker	Alu	File Name	Chr	Human genome (hg19)				Homo	Chimp	Orang	Baboon	Rhesus	Marmoset	Tarsius	Bushbaby	Mouse lemur	Outgroups				
					From	To	Intron	Gene										Tree shrew	Mouse	Guinea pig	Dog	Horse
1	A40	FLAM_A	link40-GC	1	85425503	85425834	intron	MCOLN2	+	+	+	+	+	+	+	-	-	?	?	?	-	-
2	A02	AluSx	chr2_15395-GC	2	227644729	227645219	intron	IRS1	+	+	+	+	+	+	-	-	?	-	-	-	-	-
3	A51	AluSx	link51-GC	3	186462009	186462748	downstream	KNR1	+	+	+	+	+	+	-	-	?	?	-	-	-	-
4	A64	FLAM_A	link64-GC	5	149390430	149390749	intron	HMGXB3	+	+	+	+	+	+	-	-	-	-	-	-	-	-
5	A78	FAM	link78-GC	7	116945630	116945990	intron	WNT2	+	+	+	+	+	+	-	-	d	?	-	-	-	-
6	A80	FLAM_A	link80-GC	8	42056706	42057148	intron	PLAT1	+	+	+	+	+	+ Ins	+	-	-	?	?	?	-	d
7	A82	FLAM_A	link82-GC	8	100490117	100490437	intron	VPS13B	+	+	+	+	+	d	+	-	-	-	?	?	-	-
8	A10	FLAM_C	chr10_80089-GC	10	116318982	116319321	intron	ABLIM1	+	+	+	+	+	+	-	-	-	-	?	-	-	-
9	A04	FAM	link4-GC	11	20659017	20659401	intron	SLC6A5	+	+	+	+	+	+	-	-	-	-	-	-	-	-
10	A08	FLAM_A	link8-GC	11	128763149	128763492	intron	KCNJ5	+	+	+	+	+	+	-	-	-	-	-	-	?	?
11	A26	FLAM_A	link26-GC	12	27844129	27844452	intron	PPFIBP1	+	+	+	+	+	+	-	-	-	-	-	-	-	-
12	A14	FLAM_A	link14-GC	12	52040757	52041082	intron	SCN8A	+	+	+	+	+	+	-	-	-	?	-	?	-	-
13	A15	FLAM_A	link15-GC	12	52138299	52138609	intron	SCN8A	+	+	+	+	+	+	-	-	-	-	?	?	-	-
14	A17	FLAM_A	link17-GC	12	99835883	99836207	intron	ANKS1B	+	+	+	+	+	+	-	-	-	?	-	-	-	-
15	A19	FRAM	link19_NNN-GC	13	44909151	44909472		intergenic	+	+	+	+	+	+	-	-	-	-	-	-	-	-
16	A20	FLAM_A	link20-GC	13	48569115	48569407	intron	SUCLA2	+	+	+	+	+ Ins	+	+	-	-	-	?	?	?	?
17	A21	FLAM_A	link21-GC	14	37734831	37735102	intron	MIROL1	+	+	+	+	+	+	-	-	-	-	-	-	-	-
18	A16	AluJb	chr16_26298-GC	16	48009727	48010240	intron?	NSCAN:chr16.559	+	+	+	+	?	+	+	-	-	?	?	?	-	-
19	A29	AluSx	link29-GC	17	40401035	40401512	intron	STAT5B	+	+	+	+	ns	+	+	-	-	-	?	?	-	?

№	Marker	LINE	File Name	Human genome (hg19)												Outgroups					
				Chr	From	To	Intron	Gene	Homo	Chimp	Orang	Baboon	Rhesus	Marmoset	Tarsulius	Bushbaby	Mouse lemur	Tree shrew	Mouse	Guinea pig	Dog
1	L06	L1PB4	06_L1PB4-JS-GC	1-rc	182523983	182524650	intron	RGSL1	+	+	+	+	+	+	+	-	-	-	?	-	-
2	L36	L1PB4	36_L1PB4-JS-GC	4	148410120	148410633	intron	EDNRA	+	+	+	+	+	+	+	-	-	-	?	?	d
3	L39	L1PB4	39_L1PB4-JS-GC	5	85738933	85739326		intergenic	+	+	+	+	+	+	-	-	-	-	?	-	-
4	L41	L1PB4	41_L1PB4-JS-GC	5	117422698	117423070		intergenic	+	+	+	+	+	+	-	-	-	-	?	-	-
5	L43	L1PB4	43_L1PB4-JS-GC	5	144208914	144209472		intergenic	+	+	+	+	+	+	-	-	-	-	?	-	d
6	L70	L1PB4	70_L1PB4_Low_C-JS-GC	8	110725747	110726430		intergenic	+	+	+	+	+	+	-	-	-	-	?	-	-
7	L77	L1PB4	77_L1PB4_Short-JS-GC	9	118511092	118511429		intergenic	+	+	+	+	ns	+	+	-	-	-	-	-	-
8	L79	L1PB4	79_L1PB4_Long-JS-GC	10	53068949	53070094	intron	PRKG1	+	+	+	+	?	+	+	-	-	-	-	?	-
9	L84	L1PB4	84_L1PB4_Short-JS-GC	11	48268829	48269271	intron?	OLFR pseudo	+	+	+	+	?	+	+	-	-	-	-	?	-
10	L85	L1PB4	85_L1PB4-JS-GC	11	82496018	82496816		intergenic	+	+	+	+	+	+	-	-	-	-	?	?	-
11	L87	L1PB4	87_L1PB4_DRs-JS-GC	11-rc	101357895	101358459	intron	TRPC6	+	+	+	+	+	+	-	-	-	-	-	?	-
12	L90	L1PB4	90_L1PB4-JS-GC	12	15691874	15692397	intron	PTPRO	+	+	+	+	+	+	-	-	-	-	?	?	-
13	L96	L1PB4	96_L1PB4_DRs-JS-GC	13	94791280	94791771	intron	GPC6	+	+	+	+	+	+	-	-	-	-	?	?	-
14	L99	L1PB4	99_L1PB4_GC	13	106955531	106956238		intergenic	+	+	+	+	+	+	-	-	-	-	?	?	-
15	L101	L1PB4	101_L1PB4-JS-GC	14-rc	70591827	70592562	intron	SLC8A3	+	+	+	+	+	+	-	-	-	-	-	-	?
16	L106	L1PB4	106_L1PB4-JS-GC	15	91729725	91730285	intron	SV2B	+	+	+	+	+	?	+	-	-	-	?	-	-
17	L109	L1PB4	109_L1PB4-JS-GC	16	53813451	53813717	intron	FTO	+	+	+	+	+	+	-	-	-	-	-	-	-
18	L111	L1PB4	111_L1PB4-JS-GC	16	79033507	79033899	intron	WVVOX	+	+	+	+	+	+	-	-	-	-	-	?	-
19	L112	L1PB4	112_L1PB4-JS-GC	17	52302908	52303320		intergenic	+	+	+	+	+	+	-	-	-	-	-	-	-
20	L113	L1PB4	113_L1PB4-JS-GC	17	67108495	67109272	intron	ABCA6	+	+	+	+	+	+	-	-	-	-	?	-	-
21	L114	L1PB4	114_L1PB4-JS-GC	17	69850664	69851041		intergenic	+	+	+	+	+	+	-	-	-	-	d	?	-
22	L122	L1PB4	122_L1PB4_GC	18-rc	70570246	70570892		intergenic	+	+	+	+	+	+	-	-	-	-	-	?	-

C	Marker	LTR	File Name	Human genome (hg19)				Outgroups																
				Chr	From	To	Intron	Gene	Homo	Chimp	Orang	Baboon	Rhesus	Marmoset	Tarsulius	Bushbaby	Mouse Lemur	Tree shrew	Mouse	Guinea pig	Dog	Horse		
1	M02	MSTB1	02_MSTB1-JS-GC	1	72001799	72002429	intron	NEGR1	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
2	M11	MSTB1	11_MSTB1-JS-GC	2	12467887	12468925		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	?	?	
3	M12	MSTB1	12_MSTB1-JS-GC	2	23888260	23888910	intron	KLHL29	+	+	+	+	+	+	+	+	-	-	-	?	?	?	?	
4	M14	MSTB1	14_MSTB1-JS-GC	2	41988161	41989329		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	-	-	-	
5	M15	MSTB1	15_MSTB1-JS-GC	2	70986163	70987267	intron	ADD2	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
6	M16	MSTB1	16_MSTB1-JS-GC	2	76496842	76497880		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	?	
7	M17	MSTB1	17_MSTB1-JS-GC	2	79406790	79407641		intergenic	+	+	+	+	+	ns	+	-	-	-	-	?	?	?	-	?
8	M18	MSTB1	18_MSTB1-JS-GC	2	79524907	79526021		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	?	
9	M20	MSTB1	20_MSTB1-JS-GC	2	143049616	143050310		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
10	M21	MSTB1	21_MSTB1-JS-GC	2	163323392	163324502	intron	KCNH7	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
11	M23	MSTB1	23_MSTB1-JS-GC	2	204609047	204609821		intergenic	+	+	+	+	+	+	+	+	-	-	d	-	?	-	-	
12	M24	MSTB1	24_MSTB1-JS-GC	2	204881327	204882441	intron?	NSCAN:chr2.5.057	+	+	+	d	d	+	+	+	-	-	?	?	?	-	-	
13	M25	MSTB1	25_MSTB1-JS-GC	3	5516648	5517583		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	-	-	-	
14	M27	MSTB1	27_MSTB1-JS-GC	3	97667409	97668461	intron	MINA	+	+	+	+	+	+	+	+	-	-	-	-	?	?	?	
15	M28	MSTB1	28_MSTB1-JS-GC	3	100298096	100298916		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	?	?	?	
16	M29	MSTB1	29_MSTB1-JS-GC	3	135023873	135024791		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	-	-	-	
17	M30	MSTB1	30_MSTB1-JS-GC	3	139417287	139418030		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	-	?	-	
18	M34	MSTB1	34_MSTB1-JS-GC	4	137719968	137720579		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	-	-	-	
19	M35	MSTB1	35_MSTB1-JS-GC	4	143741132	143741909	intron	INPP4B	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
20	M37	MSTB1	37_MSTB1-JS-GC	5	57569487	57570347		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	
21	M38	MSTB1	38_MSTB1-JS-GC	5	71725831	71726590		intergenic	+	+	+	+	+	+	+	+	-	-	-	?	-	-	-	
22	M40	MSTB1	40_MSTB1-JS-GC	5	103023126	103023778		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
23	M42	MSTB1	42_MSTB1-JS-GC	5	142864785	142865447		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
24	M45	MSTB1	45_MSTB1-JS-GC	5	156950158	156950967	intron	ADAM19	+	+	+	+	+	+	+	+	-	-	-	-	-	?	?	
25	M47	MSTB1	47_MSTB1-JS-GC	6	11469344	11469903	intron	BCO30116	+	+	+	+	+	+	+	+	-	-	?	?	?	?	?	
26	M48	MSTB1	48_MSTB1-JS-GC	6	11833730	11834681		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
27	M51	MSTB1	51_MSTB1-JS-GC	6	62913631	62914174	intron	KHDRBS2	+	+	+	+	+	+	+	+	-	-	-	?	?	?	?	
28	M52	MSTB1	52_MSTB1-JS-GC	6	96573823	96574496	intron	FUT9	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
29	M53	MSTB1	53_MSTB1-JS-GC	6	93143652	93144311		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
30	M56	MSTB1	56_MSTB1-JS-GC	6	140228311	140229201		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	
31	M58	MSTB1	58_MSTB1-JS-GC	7	17313454	17314625		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
32	M62	MSTB1	62_MSTB1-JS-GC	7	54574702	54575494		intergenic	+	?	+	+	+	+	+	+	-	-	?	?	?	-	-	
33	M63	MSTB1	63_MSTB1-JS-GC	7	112196075	112196908		intergenic	+	+	?	+	+	?	+	+	-	-	?	?	?	-	-	
34	M66	MSTB1	66_MSTB1-JS-GC	8	33900254	33901030		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	-	-	?	
35	M68	MSTB1	68_MSTB1-JS-GC	8	59081201	59081987		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	?	?	
36	M71	MSTB1	71_MSTB1-JS-GC	9	9888236	9888896	intron	PTPRD	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
37	M72	MSTB1	72_MSTB1-JS-GC	9	16165094	16166044	intron?	NSCAN:chr9.088	+	+	+	?	+	?	+	+	-	-	?	-	-	-	-	
38	M73	MSTB1	73_MSTB1-JS-GC	9	75390342	75391364	intron	TMC1	+	+	+	+	+	+	?	+	-	-	?	-	-	?	-	
39	M74	MSTB1	74_MSTB1-JS-GC	9	78197092	78197776	intron	MIR548H3	+	+	+	+	d	+	+	+	-	-	?	-	-	-	-	
40	M75	MSTB2	75_MSTB2_Low_C-JS-GC	9	82381408	82382075		intergenic	+	+	+	+	+	+	+	+	-	-	?	-	-	?	-	
41	M76	MSTB1	76_MSTB1-JS-GC	9	114021689	114022444		intergenic	+	+	+	+	+	+	+	+	-	-	-	?	?	?	-	
42	M78	MSTB1	78_MSTB1-JS-GC	10	28155304	28155975	intron	ARMC4	+	+	+	+	?	+	+	+	-	-	?	?	-	-	-	
43	M80	MSTB1	80_MSTB1-JS-GC	10	68222809	68223411	intron	STNNA3	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
44	M81	MSTB1	81_MSTB1-JS-GC	10	72729661	72730274	intron?	NSCAN:chr10.460	+	+	+	+	+	+	+	+	-	-	-	?	-	-	-	
45	M82	MSTB1	82_MSTB1-JS-GC	11	28840715	28841512		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
46	M93	MSTB1	93_MSTB1-JS-GC	13	34914513	34915139		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
47	M94	MSTB1	94_MSTB1-JS-GC	13	43115060	43115947		intergenic	+	ns	+	+	+	+	+	+	-	-	?	?	?	-	-	
48	M95	MSTB1	95_MSTB1-JS-GC	13	66961365	66961983	intron	PCDH9	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	
49	M100	MSTB1	100_MSTB1-JS-GC	14	66177307	66178076	intron	FUT8	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
50	M102	MSTB1	102_MSTB1-JS-GC	14	77133078	77133709	intron?	NSCAN:chr14.512	+	+	+	+	+	+	+	+	-	-	?	-	?	-	-	
51	M290	MSTC	290_MSTC-GC	14	81387413	81388014	intron	SEP128	+	+	+	+	+	+	+	+	-	-	-	-	?	?	?	
52	M107	MSTB1	107_MSTB1-JS-GC	15	92069407	92070337		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	?	?	
53	M116	MSTB1	116_MSTB1-JS-GC	18	7386247	7386856		intergenic	+	+	+	+	ns	+	+	+	-	-	?	-	?	-	?	
54	M120	MSTB1	120_MSTB1-JS-GC	18	47430213	47430927	intron	MYO5B	+	+	+	+	+	+	+	+	-	-	-	?	-	?	?	
55	M121	MSTB1	121_MSTB1-JS-GC	18	59209781	59210372	intron	CDH20	+	+	ns	+	+	+	+	+	-	-	?	-	?	-	-	
56	M124	MSTB1	124_MSTB1-JS-GC	20	20820219	20820851		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
57	M130	MSTB1	130_MSTB1-JS-GC	X	14910154	14910807	intron	MOSPD2	+	+	+	+	+	+	+	-	-	-	-	?	-	-	-	
58	M131	MSTB1	131_MSTB1-JS-GC	X	16448996	16449549		intergenic	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
59	M132	MSTB1	132_MSTB1-JS-GC	X	27688615	27689220		intergenic	+	+	+	+	+	?	+	+	-	-	-	?	?	?	-	
60	M133	MSTB1	133_MSTB1-JS-GC	X	38444759	38445363	intron	TSPAN7	+	+	+	+	+	+	+	+	-	-	?	?	?	?	-	
61	M135	MSTB1	135_MSTB1-JS-GC	X	63056146	63056802		intergenic	+	+	+	+	+	+	+	+	-	-	?	?	?	-	-	
62	M137	MSTB1	137_MSTB1-JS-GC	X	111682658	111683367	intron	ZCCHC16	+	+	+	+	+	+	+	+	-	-	-	-	?	-	-	
63	M138	MSTB2	138_MSTB1-JS-GC	X	112654566	112655210		intergenic	+	+	+	+	+	+	+	+	-	-	-	?	?	?	-	

Marker A40

>FLAM_A

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-----  
-----gccccggcgggtggcggcgcctgtagtcccagctactcgggaggctg  
aggcgggaggatcgcttgagcccaggagttcgagaccagcctgggcaacatagcgagacccccgtctctataaaaaaaaaa  
aaaaaaaaaaaaaaaa-----  
-----
```

>Human

```
CTGTTATTTGTTGTCATTCCATGGTTCAATATGATACATCTGAACAATAATATACAAGATA-CAATTCTGAACAATTC  
A--GATAAAA---CTAATGTTAATTTA---gctgggtgaggtggcctgtggctgtagtcccagctgcttgggaggccg  
agggtgggaggatcacttaagcccaggagttcaaggctagccttggcaatatagcaaaacc-tgtctct-----aaaa  
aataaagtaaaatag---CTAATATTAATTTG---CATATGCAAACAACATACAGGCATACGG-TTTTTTCATGGTTT  
ACATTTTTTAGCTTTTATATTTTGT----TGTTTTAAAAAATACTA
```

>Chimp

```
CTGTTATTTGTTGTCATTCCATGGTTCAATATGATACATCTGAACAATAATATACAAGATA-CAATTCTGAACAATTC  
A--GATAAAA---CTAATGTTAATTTA---gctgggtgaggtggcctgtggctgtagtcccagctgcttgggaggccg  
agggtgggaggatcacttaagcccaggagttcaaggctagccttggcaatatagcaagacc-tgtctct-----aaaa  
aataaagtaaaatag---CTAATATTAATTTG---CATATGCAAACAACATACAGGCATAAGG-TTTTTTCATGGTTT  
ACATTTTTTAGCTTTTATATTTTGT----TGTTTTAAAAAATACTA
```

>Orangutan

```
CTGTTATTTGTTGTCATTCCATGGTTCAATATGATACATCTGAACAATAATATACAAGATA-CAATTCTGAACAATTC  
A--GATAAAA---CTAATGTTAATTTA---gctgggtgaggtggcctgtggctgtagtcccagctgcttgggaggccg  
agggtgggaggatcacttaagcccaggagttcaaggctagccttggcaatatagcaagacc-tgtctct-----aaaa  
aataaagtaaaatag---CTAATATTAATTTG---CATATGCAAACAACATACAGGCATAAGG-TTTTTTCATGGTTT  
ACATTTTTTAGCTTTTATATTTTGT----TGTTTTAAAAAATACTA
```

>Baboon

```
CTGTTATTTGTTGTCATTCCATGGTTCAAAATGATACATCTAAACAATAATATACAAGACA-CAATTCTGAACAATTC  
A--GATAAAA---CTAATGTTAATTTA---gcagggtgaggtggctctgtggctgtagtcccagctgcttgggaggccg  
agggtgggaggatcgcttaagcccaggagttcaaggctagccttggcaatatagcaagacc-tgtctct-----aaaa  
aataaagcaaaatag---CTAATATTAATTTG---CATATGCAAACAACATATAGGCATAAGGTTTTTTTTCATGGTTT  
ACATTTTTTAGCTTTTATATTTTGT----CGTTTTAAAAAATACTA
```

>Rhesus

```
CTGTTATTTGTTGTCATTCCATGGTTCAATATGATACATCTAAACAATAATATACAAGACA-CAATTCTGAACAATTC  
A--GATAAAA---CTAATGTTAATTTA---gcagggtgaggtggctctgtggctgtagtcccagctgcttgggaggccg  
agggtgggaggatcacttaagcccaggagttcaaggctagccttggcaatatagcaagacc-tgtctct-----aaaa  
aataaagtaaaatag---CTAATATTAATTTG---CATATGCAAACAACATATAGGCATAAGGTTTTTTTTCATGGTTT  
ACATTTTTTAGCTTTTATATTTTGT----CGTTTTAAAAAATACTA
```

>Marmoset

```
CTGCTATTTGTTGTCATTCCATGGTTCAAGATGATACATCTGAACAATAACATACAAGATATCAATTCTGAACAATTC  
A--GATAAAA---CTAAGGTTAATTTA---gctgggtgtggcagcctgtggctgtagtcccagttacttgggaggcca  
agggtgggaggatcacctaagcccaggagttcaaggccagccttggcaatatagcaagacc-tgtctctataaaaaaaaaa  
aaaaaagtaaaatag---CTAATATTAATTTG---CATATGCAAACAACATACAGGCATAAAATTTTTTTTAGTGGTTT  
ATATTTTTTAACTTTTATATGTTGTCTGACTTTCTTAAAAAATACTA
```

>Tarsier

```
CTGGCCTTTGTTTTTCAATTCATGGCTCAATACGATACATCTGAACCATAATATACAACATCAATTATGATCGATTC  
G--GATAAAA---TGAATGCTAATTTA---gccagggtgtggcagaatgta--acagtcccagct-----g  
agggtgggaggatcactcgagccatgaattcaaggccagcctggacaaaatagtaagacc-catctct-----aaat  
ataaagg-----AATGTCAATTTG---CATATGCAA-----TGTCATCGTTG  
TCCTTTTTTAGCTTTTGCATTTTATCTGACTTCTTAAAAAATGCTA
```

>Bushbaby

```
CTGTCATTTGTTGTCACGCCAGGGTTCAATATGCTATCTCTGAACGATAATATACAAGATGTGGATTATGAGCAATTC  
A--GATAAAA-----  
-----  
-----C---TGTTAACTTA---CATACGCAA-----CTGGCATAAGGATTTTTTTAATGGTTT  
ATATTTTTTAGCTTTTACATTTTGTCTGATGTTTCTTAAAAGACTA
```

>Mouse_lemur

CTGTCATTTGTTGTCAATCCAAGGTTCAACATGATACCTTGGAAACAATAATATACAAAATGTCAATTATAAGCAATTC
T--GATAAAA-----

-----C---TGTTAATTTG---CATATGCAAA-----CTGGCATAAGGG-TTTTAAGTGGTTT
ATATTTTTTAGCTTTTACATTTTGTCTGAATTTTT---AAAGACTA

>Dog

CTGCTATTTGCTGTCACTCCACGGTTGGATATGAGAGA-CTGCAGGGCACTGAACCAGACATCAACTAAACGAACTTT
TCAGATGAAA-----

-----ACACA-TTAATCTG---CATATGCAAA-----TATATATACTA-CTTTCTAGTGATTT
ATA-TTTTTAGCTT-----TCTTGTCTG-ACTTTTTGAAAAGGCTG

>Horse

CTGTTATTTGCTGTCAATCCATGGTT-AATGTGATACA-CTGCATGACGCTAAATAAGACAGCAACT-CTTCACTTT
TCCAGTGAAA-----

-----C-AATGTTAACAAG---CATATGCAAA-----CTTACATACTA-----TAGTGATTT
ATATTTTTTAGCTTTTAAATTTCAACTG-ACTTCTTTAAAAGGCAG

Marker A02

>AluSx

```
-----  
-----ggccgggcgcggtggctcacgcctgtaatcccagcactttgg  
gaggccgagggcgggcggtcacctgaggtcaggagttcagaccagcctggccaacatggtgaaacccctctctact  
aaaaatacaaaaa-ttagccgggctggtggcgcgccctgtaatcccagctactcgggaggctgaggcaggagaatc  
gcttgaacccgggagggcggttgagcagcagatcgcgccactgcactccagcctgggagcagagcgagact  
ccgtctcaaaaa-----
```

>Human

```
CA-----AAGAGGAAGAAAAAGGAGGAG-CAATGGGA-CACATCAGGAGGGAAATCTATGAATCACAAACTTTCT  
AACTGACCTCTTTTT---AAAATAGAGGTAGC---agccgggtgcggtggctcatgcctgtaatcccagcactttgg  
gaggccgagggcgggcgaaa--cacgagatcaggagttcaagaccagcctggccaacatggtgaaacccatctctact  
aaaaatacaaaaaattagctgggcatggtggcaggtgcctgtaatcccagctacttgggaggctgaggcaggagaatc  
gcttgaacctgggaagcagaggttgagcagcagatcacaccattgtactccagcctgggcaacagcatgatatt  
ccatgct--aaataaacaatt-----aattaaattaaattaaattaaat---TAAAATAGAG  
GTAGC---TGTGATATAATGCTTATTTTTCAAATAATTTTTCTCATTGCTTTTTGATATCTGAAACGTCAG
```

>Chimp

```
CA-----AAGAGGAAGAAAAAGGAGGAG-CAATGGGA-CACATCAGGAGGGAAATCTATGAATCACAAACTTTCT  
AACTGACCTCTTTTT---AAAATAGAGGTAGC---agccgggtgcggtggctcatacctgtaatcccagcactttgg  
gaggccgagatgggcgaaa--catgagatcaggagttcaagaccagcctggccaacatggtgaaacccatctctact  
aaaaatacaaaaaattagctgggcatggtggcaggtgcctgtaatcccagctacttgggaggctgaggcaggagaatc  
acttgaacctgggaagcagaggttgagcagcagatcacaccattgtactccagcctgggcaacagcgcgagatt  
ccatgct--aaataaacaact-----aattaaattaaattaaattaaat---TAAAATAGAG  
GTAGC---TGTGATATAATGCTTATTTTTCAAATAATTTTTCTCATTGTTTTGATATCTGAAACGTCAG
```

>Orangutan

```
CA-----AAGAGGAAGAAAAAGGAGGAG-CAATGGGA-CACATCAGGAGGGAAATCTATGAATCGCAAACCTTTCT  
AACTGACCTCTTTTT---AAAATAGAGGTAGC---agccgggtgcggtggctcatgcctgtaatcccagcactttgg  
gaggccgaggtgggagaa--catgagatcaggagttcaagaccagcctggccaacatggtgaaaccacatctctact  
aaaagtacaaaaaattagctgggcatggtggcagcgcctgtaagaccagctacttgggaggctgaggcaggagaatc  
gcttgaacccgggaagcagaggttgagcagcagatcacaccactgtactccagcctgggcaacagcagcagatt  
ccgtgct--gaataaataaata-----aattaaattaaattaaattaaat---TAAAATAGAG  
GTAGC---TGTGATATAATGCTTATTTTTCAAATAATTTTTCTCATTGCATTTGATATCTGAAATGTCAG
```

>Baboon

```
CAATATTCCCAAGAGGAAGAAAAAGGAGGAG-CAATGGGA-CACACCAAGAGGGAAATCTATGAATCACAAACTTTCT  
AACTGGCCTCTGTTT---AAAATAGAGGTAGC---gactgggcgcggtggctcatgcctataatctcagcactttgc  
gaggctaaggcaggtgaat--catgaagt caggagtttgagaacagcctggccaacatggtgaaacccctgtctctact  
aaaaatacaaaaaattagctgggctggtggcagggcctataataccagctactcgggaggctgaggcaggagaatc  
acttgaacccggaaagcagaggttgagcagcagatcgcgccactgtactctagcccaggcaatagtgcgagatt  
ccatctc--aaataaataaatt-----aaataaaat---AAAATTAGAG  
GTAGC---TGCGATATAATGC-TATTTTTCAAATAATTTTTCTCATTGCTTTTTGATATCTGAAACCTCAG
```

>Rhesus

```
CAATATTCCC-AAGAGGAAGAAAAAGGAGGAGCAATGGGA-CACATCAAGAGGGAAATCTATGAATCATAAACTTTCT  
AACTGGCCTCTGTTT---AAAATAGAGGTAGC---ggctgggctggtggctcatgcctgtaatctcagcactttgg  
gaggctaaggcaggtgaat--catgaagt cagaggttgagaacagcctggccaacatggtgaaacccctgtctctact  
aaaaatacaaaaaattagctgggctggtggcagggcctataatcccagctactcgggaggctgaggcaggagaatc  
acttgaacccgggaagcggaggttgagcagcagatcgcgccactgtactctagcccaggcaatagtgcgagatt  
ccatctc--aaataaataaata-----aaataaaat---AAAATTAGAG  
GTAGC---TGTGATATAATGC-TATTTTTCAAATAATTTTTCTCATTGCTTTTTGATATCTGAAACCTCAG
```

>Marmoset

```
CAATATTCCCAAGAGGAAGAAAAAGGAGGAG-CAATGGGA-GACATGACAAGGGAGGTCTATAACATCACAAATTTTGT  
AACTGGCCTC--TTT---AAAACAGAAGTAGT---ggctgagcacagtggtcatgcctgtaatcccagcactttgg  
gaggttgaggcaggtgaat--catgaggtcaggagttagagaccag-ctggccaacatgatgaaacaccatctctatt  
aaaaatacaaaaaattagccgggctggtggtacacacctataatcccaggtacttgcgaggctgaggcaggagaatc  
gcttgaacccaggaagcggaggttggtgagcagagattgcaccactgtactccagcccagatgaaagtgaagact  
ctgtctc---agtaagtaaat-----AAAAGAGAG
```

GAAGC---TATGATATAATGTTTACTTTTTCAAATGATTTTCTCATTGCTTTTGATATCTGAAACCTCAG
>Tarsier
AAGTATACCCAAGAGGAAGAAAAGGGAAGGAGCCAAAGGGA-TACCTTAGGCTGGAAGCTCTATGAACTACAAACTTAAT
AACTGGCCTCTTTTT---AAAAATAGGGGTAGC---gccgggctcgggtggctca-gcctgtaatcccgcgcctttgg
gaggctgaggtgagtgattgcccagagcccgcgggttcgagacccgcctgggcagc-----gagacctcatctttaca
ataaaatcaaaaaattagccaggcgtggtagcgcctgtaattccggctacttggaggctgaggcggaaggatc
gccagagcccagcaggtcgaggctgcggtg-gccgggagcg-gccactgtactccagctctgggtgacagagtgagact
ccaactcaaaaacaacaaca-----aaaataataataaaaaat---AAAAATAGAG
GTAGC---TATGATAGAATACTTG-TTTTCAAATAATTTTCTTGTGCTTTTGATATCTGAAACCTCCG
>Bushbaby
CAATATACCCAGAGGAACAAAAAGGAGGAG-GAAAGGGA-CATAG-AAGAGGAGGATCTATGAATCACCAACTTCAT
AACTGGCCTCTTTTT-----

-----AAAAATAGAG
GTCAC---TATGACGTAGTACTTATTTTTCAAATAATTTTCTCATAGCTTTTGATATCTGAAACCTCAG
>Mouse_lemur
CAATATACCCAAGAGGAAGAAAAAGAAGGAG-CAAAGGGA-CATAT-AGGAGGAAGCTCTATGAATCACCAACTTAAT
AACCGCCTCCTTTT-----

-----AAAAATAGAG
GTAGC---TATGACATAATACTTATTTTTCAAATCATTCTCATTGCTTTTGATATCTGAGACCTCAG
>Mouse
TAATATACCCAAAAGGAATGAAGCAAAATGA-CATATTAGAAGTAT-----ATTTATGAACTGCAAACTGAGT
AACTG-----

-----AAAAACAGAG
GTAAC-----TGATACAAGTACTTCTAAAGT-----
>Guinea_pig
-----GGGAAATGAATGTG-----CAAAGGAA-TGTATTAG-AAGGAGATTTTATGAGTCACAACTTAG
TAACTAGCCTCTTTTT-----

-----CAAACAGAGAG
GTAAC---TAAGATTCGGTACTTATTTTTCTAGGCAATTCTCTCATTGCTTTTGATATCTTAAACCTCAG
>Horse
CAATATACCCAAGAGGAAGAAAAG-AATGG-CATATGGA-TAAATCAGAAGAAGACTCTACGAATCACATACTTAAT
AACTGGCCTCTTTTT-----

-----AAAAAATAGAG
GTAAC---TACGATACAATAATTATTTTTCAAATAATTTTCTCATTGCTTTTGATATCTT-----
>Dog
TCATATACTCAAGAGGAAGAAAAGGCACAAG-CATAGGGAACAACTAGAAAGGGACTCTCAAATCACACACTGAGT
AACTGGTCTCTTTTT-----

-----GAAAACAGAG
GTAAC---TATGATACTATAATTATTTTTCAAATCATTCTCATCGCTTTTGGTATCTTAAACCTCAG

Marker A51

>AluSx

```
-----  
-----ggccggggcgcggtggctcacgcctgtaatcccagcactttggggaggc  
cgagggcgggcgga-tcacctgaggtcaggagttcgagaccagcct-ggccaacatggtgaaaccccgtctctactaaa  
aatacaaaaattagccgggctggtggcgcgccctgtaatcccagctactcgggaggctgagggaggagaatcgctt  
gaaccggggaggcgagggttgacgtgagccgagatcgcgccactgcactccagcctggggcgacagagcg----agact  
ccgtctca-----  
-----
```

>Human

```
TGAAATTATCTTTCTGATCCAGGTAAAGAAGCAAATTGAAAATCAATAAAGTAAAAAGTGACGGAGATTTTAAATTTT  
CTGTAAT---AAAACA----CTTATTG---ggttgggcatggtggctcacgcctgtaatcccagcactttggggaggc  
cgaggtgggtgga-tgacctggcggtcaggagttcgagaccagcct-ggcca-catggcgaaactccatgtctaataaa  
aat-acaaaattagccgggctggtggcgacgcactgtaatcccagctactccagaggctgagggaggagaatcactt  
gagcctgagaggtggaggttgacgtgagctgagattgcaccactgcattccaggctgggtgacaaaatg-----aat  
tcagtctcaaaagaaa-----AAAACATTTATCG---AACACCTATTACAGCCATTTGCTATGCTA  
GATAATTTACTTTTTGGCATATAACTTAATCCTCACAACCCTCTAAGGCCCCCATGAACATCA
```

>Chimp

```
TGAAATTATCTTTCTGATCCAGGTAAAGAAGCAAATTGAAAATCAATAAAGTAAAAAGTGACGGAGATTTTAAATTTT  
CTGTAAT---AAAACA----CTTATTG---ggttgggcatggtggctcacgcctgtaatcccagcactttggggaggc  
cgaggtgggtgga-tgacctgggggtcaggagttcgagaccagcct-ggcca-catggcgaaactccacgtctaataaa  
aat-acaaaattagccgggctggtggcgacgcactgtaatcccagctactccagaggctgagggaggagaatcactt  
gagcctgagaggtggaggttgacgtgagctgagattgcaccactgcattccaggctgggtgacaaaatg-----aat  
tcagtctcaaaagaaa-----AAAACATTTATCG---AACACCTATTACAGCCATTTGCTATGCTA  
GATAATTTACTTTTTGGCATATAACTTAATCCTCACAACCCTCTAAGGCCCCCATGAACATCA
```

>Orangutan

```
TGAAATTATCTTTCTGATCCAGTAAAGAAGCAAATTGAAAACCAATAAAAATAAAAAAGTGATGGAGATTTTAAATTTT  
CTGTAAT---AAAACA----TTTATTG---ggctgggcatggtggctcacgcctgtaatcccagcactttggggaggc  
cgaggtaggtgga-ttacctgggggtcaggagttcaagaccagcct-ggcca-catggcgaaactccatgtctaataaa  
aat-acaaaattagccgggctggtggcgacacacactgtaatcccagctactccagaggctgagggaggagaatcactt  
gagcctgagaggtggaggttgacgtgagctgagattgcaccactgcaatccagcctgggtgacaaaatg-----aac  
tccgtctcaaaaaaaaaa-----AAAACATTTATTG---AATACCTATTACAGCCATTTGCTGTGCTA  
GATAATTTACTTTTTGGCATATAACTTCATTCTCACAACCCTCTAAGGCCCCCATGAACATCA
```

>Baboon

```
TGAAAT--TCTTTCTGATCCAGGTAAAGAAGCAAATAGAAAATCAATAAAAATAAAAAAGTGACAGAGATTTTAAATTTT  
CTGTAAT---AAAACA----TTTATTG---ggctgggcatggtcactcacgtgtgtaatcccagcactttggaaggc  
caaagcggggggagtgacctgggggtcaggagtttgagaccagcct-ggcca-catggcaaaaccccacgtctaataaa  
aat-acaaaattagccaggcgtggtggcgacatgcctgtaatccaagctactccagagg-tgagggaggagaatcactt  
tagcctgagagggcagaggttgactt-gcagaggttgaactactgcactccagcctgggtgacaaaatgaaacaaaac  
tcaggctcaaaaaaaaaaggaaaaaa-----AAAACATTTATTG---AAAATCTATTACAGCCATTTGCTGTGCTA  
GATAATTTACTTTTTGGCATATAACTTAATCCTCACAACCCTCTAAGGCCCTCGTGGTCATCA
```

>Rhesus

```
TGAAATTATCTTTCTGATCCAGGTAAAGAAGCAAATAGAAAATCAATAAAAATAAAAAAGTGACAGACATTTTAAATTTT  
CTGTAAT---AAAACA----TTTATTG---ggctgggcatggtcgctcacgcgtgtaatcccagcactttggggaggc  
caaagtgggggga-tgaccgggggtcaggagtttgagaccagcct-ggcca-catggcaaaaccccacgtctaataaa  
aat-acaaaattagccaggcgtggtggcgacatgcctgtaatccaagctactccagaggctgaagcaggagaatcactt  
tagcctgagagggcagaggttgactt-gcagaagttgaactactgcactccagcctgggtgacaaaatgaaacaaaac  
tcaggctcaaaaaaaaaaggaaaaaa-----AACACATTTATTG---AACATCTAATACAGCCATTTGCTGTGCTA  
GATAATTTACTTTTTGGCATATAACTTAATCCTCACAACCCTCTAAGGCCCTCGTGGTCATCA
```

>Marmoset

```
TGAAATTATCTTTGTGATCTAGGTAAAGAAGAAAATAGAAAATCAATAAAAATAAAAAAGTGAC--AGATTTTAAATTTT  
CTGTAAT---AAAAATCCCAGCACTTCA--ggaggg-tgagggcaggtagatgacatgtgggtcaggacttcaaga--c  
caacaaatctggcaaacacctccccatggtaaactaagatagcatggcca-catggtgaaaccccgtgtctaataaa  
agt-acaaaattagccgggtggtggcttgctgctgtagtccagatgctccagaggctgagggaggagattcactc  
gagcctgggatacagaggttgacgtgagctgagatcatgccactgcactccagcctgggtgacagaata-----aac  
ttagtgtcaaaaaaaga-----AAAAAAAATATTT---AACATCTATTACCATCATTTGCTGTGGTA
```

GACAATTTATTTTTGGCATATAACTTAATCCTCACAACCATTCTAAGGTGCCCATGCTCATCA
>Tarsier
GGAAATTATC-TTATGATCTAGGTAAAGGAGAAAATATAAAACCAATCAAATAAAAAAGTGGTAGAGATTTTAAATTTT
CTGTAAT---AAAATA----TGTGTTGA--ggctgggcgccagtggtgaagtctgtaatcccagcagtttgggtggc
taaggtgagagga-ttgcttgagtcagggttcgagaccagccaggcaa-cttgggtgaaacttcgtttctacaata
aatcaaaaaattagctgggcatggtggtgcgccactgtagttccaactacttggaggctgaggtggaaggatcacct
gagcccagcaggtcaaggctgcggtg-gctgtgagcatgccactgcactccagcctgggagacagaatg----agac
tccaactaaaaaa-----AAAAGCATT---G---AATGCCTAGTAGAGCCATTTACCATGCTA
TACCATTTACTCCAGGTGTCTAACTTAATCCTCACAACCCTGTTGGGCCCTGTGGTCATCT
>Bushbaby
TGAAATTATCTTTCTAGTCCAGGTAAAAGAGAAAATGGAAAGCCAATAAAATAAAAAAGTGATAG-----TGTTTT
CTGTAAT-----

-----AAAACATTTATCG--AGCGTCTAGCATAGCTATTTACTGGGCTA
GAAAATTTACTTTTCGGCTCATAACATAGTCTCACAACCCTCTAAGGCTCCCATGATCACCT
>Mouse_lemur
TGAAATTCTCTTTCTGGTCCAGGTAAAAGAGAAAATAGAAAGCTGATAAAATAAAAGGCAATAGATATTTTAAATTTT
CTATAAT-----

-----ATAAACATTTATCA--AGTGCTTATTATAGCCATTTACTGTGGGA
GACAATTTACTTTTGGTGTATAACTTAATCCTCACAACCACTCTCAGGTTCCCATGAT---CT
>Guinea_pig
--GAAATATCATTCTGATTTGGGGAAAAGAGAAAATAG-----AAATAAAACATGGA--GAATTTTAATTGTT
CTTTAAC-----

-----AAAAG-TATTTATTG--ACATT-----GACTGCGTCA
GACCATTTGCTTTTGGAGTGCAGCTTAATCCTTATAGCCGTTCTGAAGAGGCCCT-ATAACCA
>Dog
TTAAATTATCTTTCTGAACTGGGTAAAGAAGAAAATAGAAATCCAGTAGAAGAAAAAGT-ATAAAGATTTTAAATTTT
CTGTAGT-----

-----AAAACACATGTATTG--AATGCCTATGATAGCCATTTACTATGCTA
GACAATTTCTTTTGGGGTGTAACCTTAATCCTCACAACCACTCAGAGGTCCCCATCATCA-CT
>Horse
TAAAATTATCTTTCTGATCAGGTAAAGGAGAAAAGTAGAAAGCCGGTAGAATAAAGAGTGATCGAGATTTTAAATTTT
CTGTAAT-----

-----GAAACACATTTATTG--AATGTCTATTATAGCCATTTACTATGCTA
GACAATTTCTTTTGGTGTGTAACCTTAATCCTCACAACCACTCTGATGTCCCTGTGGTCA---

Marker A64

>FLAM_A

```
-----  
-----gccgggcgcggtggcgcgcgctgtagtcccagctactcgggagg  
ctgaggcgggaggatcgcttgagcccaggagttcgagaccagcctgggcaacatagcgagaccccgtc---tctaaaa  
aaaaaaaaaaaaaaaaaaaaa-----  
-----
```

>Human

```
CCCCATCTGAATCCAGGAAGACCTGGGTACAGGTCTTGTGTGAAAATTCT-TGTACA---CAGCTCAAGGTGC-CATT  
G---TTTGCT---GAAATAGTCTTCAGGGA---gccag-tgtgatgg-acaagcctataatcctggctacttgggagg  
ctgaggcaggaggactgcttaagcccaggaatgcaagaccagcctgggcaacagagtgaaatcccatt---tcaagaa  
aag---GA-AGCAGTCTTCAGAAA---ACATAAAATCCTGACTGATACTAAATTGCCTGACAGATCCTAGCTTTGACT  
CGTGGATA-ATTCAAATACAATTTGCAGCTTTCTT
```

>Chimp

```
CCCCATCTGAATCCAGGAAGACCTGGGTACAGGTCTTGTGTGAAAATTCT-TCTACA---CAGCTCAAGGTGC-CACT  
G---TTTGCT---GAAATAATCTTCAGGGA---gccag-tgtggtgg-acaagcctataatcctggctacttgggagg  
ctgaggcaggaggactgcttaagcccaggaatgcaagaccagcctgggcaacagagtgaaatcccattatttcaagaa  
aag---GA-AGCAGTCTTCAGAAA---ACATAAAATCCTGACTGATACTAAATTGCCTGACAGATCCTAGCTTTGACT  
CGTGGATA-ATTCAAATACAATTTGCAGCTTTCTT
```

>Orangutan

```
CCCCATCTGAATCCAGGAAGACCTGGGTACAGGTCTTGTGTGAAAATTCT-TGTACA---CAGCTCAAGGTGC-CATT  
G---TTTGCT---GAAAAAGTCTTCAGGGA---gccag-tgtggtgg-acaagcctataatcctggctacttgggagg  
ctgaggcaggaggactgcttaagcccaggaatgcaagaccagcctgggcaacagagtgaaatctcatt---tcaagaa  
aag---GA-AGCAGTCTTCAGAAA---ACATAAAATCCTGACTGATACTAAATTGCCTGACAGATCCTAGCTTTGACT  
CATGGATA-ATTCAAATACAATTTGCAGCTTTCTT
```

>Baboon

```
CCCCATCTGAACCCAGGAAGACTTTGGTACAGGTCTTGTGTGAAAATTCT-TGTACA---CTGTTCAAGGTGC-CATT  
G---TTTGCT---GAAATAGTCTTCAGGGA---gccag-tgtggtgccacaagcctataatcctggctacttgggagg  
ctgaggcaggaggactgcttaagcccaggaatgcaagaccagcctgggcaacagagtgacatcccatt---tcaagaa  
aag---GA-AGCAGTCTTCAGAAA---ACA--AAATCCTGATTGATACTAAATTGCCTAACAGATCCTAGCTTTGACT  
CATGGATA-ACTCAAATACAATTTGCAGCTTTCTT
```

>Rhesus

```
CCCCATCTGAACCCAGGAAGACTTTGGTACAGGTCTTGTGTGAAAATTCT-TGTACA---CTGTTCAAGGTGC-CATT  
G---TTTGCT---GAAATAGTCTTCAGGGA---gccag-tgtggtgccacaagcctataatcctggctacttgggagg  
ctgaggcaggaggactgcttaagcccaggaatgcaagaccagcctgggcaacagagtgacatcccatt---tcaagaa  
aag---GA-AGCAGTCTTCAGAAA---ACA--AAATCCTGATTGATACTAAATTGCCTAACAGATCCTAGCTTTGACT  
CATGGATA-ACTCAAATACAATTTGCAGCTTTCTT
```

>Marmoset

```
CCCCATTTGTACCTAGGAGGACCTGGGTACCGGTGTTGTGTGAAAATTCT-TGTACA---CAGTTCAGGGTGC-CATT  
G---TTTGCT---GAAATAGTCTTCAGGGA---gccag-tgtggcggcacaagcctataatcctggctacttgggagg  
ctgaggcaggaacactgcttaagcccagaatgcaagaccagcctgggcaacagagtgagattccatt---tcaaaaa  
aag---GAAAACGGTCTTCAGAAA---ACATAAAATCCTGACTGATACTAA-TAGCCTGACAGATCCTAGCTTTGTCT  
CATGGATA-ATTCAAATACCATTTGCAGCTTTCTT
```

>Tarsier

```
TACCATTGTGTA-CCAGGAAGACTT-----TTTGAAAATTCT-CTTTTA---CAATGCAAAGTGC-CATT  
A---TCTGCT---AAAATGTTAT-----ag-tatggtggctcacacctataatcccagctacatgagagg  
ctgaggcagga---tacttgagcccaggaatgagaccagcctgggcaacag--tgagacccatt---tcaaaaa  
aaa---AAAAGCAGTCTTCAGGGA---ACATAAAATCCTGACTGATACTAA-CAGCCTGACAGATCCT-GCTTTGACT  
CATAAGTA-GCCCAAACACCATTTCCAGCTCTCTT
```

>Bushbaby

```
CCCCATCTGTGCTTATAAAGACCC-----TTTGAAAATTTTCCTAACA---CAGTTCAGGTAC-CACT  
G---TTTGCT-----  
-----  
-----GAAA-CAGTCTTCATGGA---ATGTAAAATCCTAACTGACACTAATAAGCCTGACAGATCCTGGCTTTGACT  
CATGGATA-ATCCAAACACCACCTTCCAGTTCTCTT
```

```

>Mouse_lemur
CCCCACCCGTGCTCAGAAAGACCT-----TTGAAAATT---CTAACA---CAGTTCAAGGTAT-CATT
G---TTTGCT-----
-----AAAA-CAGTCTTCAGGGA--ACATAAAATCCTAACCAATACTACTAG-----CTTGACT
CAGGGATA-AGGCAAATACCATTTTTAGCTCTCCT
>Tree_shrew
CCCTACCTGTGCCAGGAAGACCT-----TTTGAACATTCT-CATATC---CAGTTCACAGTACACTGT
G---CTTGCT-----
-----GAAA-TAGTGTTT CAGGGA--ACAAAAAATCCTGACTGATATCAA-CAGCCTGGCAGACCCTGAC--TGAAT
CATAGGCA-GCCCAAATACCAATTCTAGCTCACCT
>Mouse
TTCTCATCTCTAGCCAAGAGTTCC-----ACTCAGGAA-CT-CACA---CACAGTTCAAGGTAT-CACT
GTGGTTTTTT-----
-----GAAA-GAGATTTTAGG-----ACACGAAATCCTGGCAGGCACTAG-AAGCATGA-AGCTCTTGGCGTTGACT
CACGGATA-CCTTAAGTACCCTTTCCACTCTC--
>Guinea_pig
TGCCATCTAAGCCCAGGAAGACCT-----TTTA-----T-CATA---CACATTTCAAGATAT-CACT
G-TATTTGCT-----
-----GAAA-TAGTCATCAGGAA---CACAAAACCTAACTGGTACTAA-CAACCTGCGAGATCTGGGCTTTGACT
CCTAGACAGCCCTAAGCATCACGTGCAGCTCTC--
>Dog
CCCCTCTGCACCCAGGAAGACTA-----TTTGGAAATTCT-CCTACTAACAGTTCAAGGTGC-CATT
G-TGTCTGCT-----
-----GACA-CAATCTTCAGGGA--ACATAAAATCCTAAT-----AGCCTGAGAGATCCTGGCTTTGATT
CATGGATAGCCTG--TATTATTTAAATGCT-----
>Horse
TGTACTCTGTGCCAGAAAGACTA-----TTTGGAAATTCT-CCTA---GACAGTTCAACGTGC-CACT
G-TGCTTGCT-----
-----GAAA-CAATCTTCAGGGA--ACATAAAACCTGACTCATACTGA-TAGTCTGACAGATCTTGGCTTTGATT
CATGAATAA-CCCAAATATCTTTTCCATCCCTCCT

```


CTACTTCA
>Bushbaby
TCG----TCCCCTCCCCTCCATGAGCAAACCTGC-TCAAAGTCTGGCATTTAATCTCCCAGGCTCTCTGGAGT--TAA
GAGTCCCCAGC-----
-----ATAAAA-----CCCACTCACCAG--
-----AAAGCAAATTCTCT-G-GTCCACAAGCTTACCCTATGTAGCCAGAGCCCCTACATACCATTATA
CTAATTCA
>Mouse_lemur
CC----CCTCCTACCCTCCACGGGCAAATTCC-TCAAAGTCTGGCATTTAACCTCCCAGGCTCTCCGGAGT--TAG
G-GTCCCCAGC-----
-----ATAAGAG-----CCAGCATCCTA--
-CCCACTCAACAAAATGCAAATTCTAT-G-GTCCACAAGCCCTACCTATAACAACCAGAGCCCCTAAACATCTATTTA
CTACTTCA
>Guinea_pig
T----ACCTTCCCTCCAGCCAAAAGCAGAAGTCC-TAGGAATATGGCATGTTACCTCCCAGGTTTTCTGTCTT--TAC
AAGTCCCCAGC-----
-----ATGAT-----AGGCTGTATCCTG--
-AACTCCAAGTAGAAAGCAAATTTCTCT-G-TTCCACAAGCTCTACTCATACAATCAAATTTCCAATGT--CTTTTA
CCTACTTCA
>Dog
CCATCCACTCTCCTCCCCGCT-GAGTGGAAGTCC-TGGTA--CTGGCTTC--GCCTCCCAGGCTTTCTGGAGT--T--
A-GTCTCCAGT-----
-----ATAAC-----GCCAGTGTACTA--
-CCTGTGCACGAGAAAGCAAATCTCTCT-G-ACCCACAAGCCCACTCATATAACCAGTGTTCTAAATACCATTTC
TGAATTCA
>Horse
C-AGCCCCTCCCCTCCACCCT-GAGCAGAACTCC-TGAAG-TCTGGCATCTAACCTTCCAAGCTTTCTGGAGT--TGG
A-GTCTCCAGT-----
-----GTGAC-----AGCCAGTATCCTA--
-CCTACTCACTATAAAGATAACCTCTCT-G-GTCCACAAGTGCCACCCAAACAACCAGAGTTCTAACTACCTTATTA
TGAATTCA

Marker A80

>FLAM_A

-----gcccgggc
gcggtggcgcgcgctgtagtcccagctactcgggaggctgaggcgggaggatcgctt-gagcccaggagttcgagac
cagcctgggcaacatagcgagacccccgtctctaaaaaaaaaaaaaaaaaaaaaaaaaaaaa-----

>Human

AGAGTCTGTTTCTTATCTAATTTACCAATTCCAA-TGAAGTGA--AGAGTATAGCATCCTCTCAGA--gctgggt
gtggtggtttgcacctgtagtcctagctactcaggaggctgaggcaggagcatcactt-gagggcaggagttcaagac
cagcctaggcaacatagcaagacccccatgtcttcaaa-----

-----AGAATAGAATA
TTTTCT--GCGACACCCTGCCCCCACCATCAGAGCAGAATTTTCTCCAAAACATCTTCCAAATGTAGGCATATG
G-CCTGTGTCTAAGCTATATGGAAT

>Chimp

AGAGTCTGTTTCTTATCTAATTTACCAATTCCAG-TGAAGTGA--AGAGTATAGCATCCTCTCAGA--gctgggt
gtggtggtttgcacctgtagtcctagctactcaggaggctgaggcaggagcatcactt-gagggcaggagttcaagac
cagcctaggcaacatagcaagacccccatgtcttcaaa-----

-----AGAATAGAATA
TTTTCT--GCGACACCCTGCCCCCACCATCAGAGCAGAATTTTCTCCAAAACATCTTCCAAATGTAGGCATATG
G-CCTGTGTCTAAGCTATATGGAAT

>Orangutan

AGAGTCTGTTTCTTATCTAATTTACCAATTCCAA-TGAAGTGA--AGAGTATAGCATCCTCTCAGG--gctgggt
gtggtggtttgcacctgtagtcctagctactcaagacgctgaggcaggaggatcactt-gaggtgaggagttcaagac
cagcctaggcaacatagcaagacccccatgtcttcaaa-----

-----AGAATAGAATC
TTTTCT--GGCACACCCTGCCCCCACCATCAGAGCAGAATTTTCTCCAAAACATCTTCCAAATGTAGGCATATG
G-CCTGCATCTAAGCTATATGGAAT

>Baboon

AGAGTCTGTTTCTTATCTAATTTACCAATTCCAA-TAAGGTGA--AGAGAATAGAATCATCTCAGA--gctgcgt
gtggtggtttgcatctgtagtcctagctactcaggaggctgaggcaggaggatcactt-gaggtgaggagttcaagac
cagcctaggcaacatagcaagacccccgtgtcttcaaa-----

-----AGAATAGAATC
TTTTCT--GGCACACCCTGTCCCCCACCATCAGAGCAGAATTTTCTCCAAAGCATCTTCCAAATGTAGGCATATG
G-CCTGTGTCTAAGCTATATGGAAT

>Rhesus

AGAGTCTGTTTCTTATCTAATTTGCGCAATTCCAA-TAAGGTGA--AGAGAATAGAATCATCTCAGA--gctgggt
gtggtggtttgcatctgtagtcctagctactcaggaggctgaggcaggaggatcactt-gaggtgaggagttcaagac
cagcctaggcaacatagcaagacccccgtgtcttcaaa-----

Marker A82

>FLAM_A

```
-----  
-----gccgggcgcggtggcgcgcgctgtagtcccagctactcgggaggctgaggcgggaggatcgcttgagccc  
aggagttcgagaccagcctgggcaacatagcgagaccccgctctctaaaaaaaaaaaaaaaaaaaaaaaaaaaa  
-----  
-----
```

>Human

```
AACTATGTGACCAAAGTTACCCTGTTTCCTTTAATGTCTTTAGACACCAGTATCTCAGACCCTAAATACTATGCTTAT  
TCCAAAGTTAAAT---GAGCCTGT---cctgtaatcccagcgacttggtaggctaagggtgggaggatcacttgagctc  
aggagtttgagaccact-tgagcaacataacaacatgctgtcctttatttaaaaaaaaaaaaaagaaaaaag-----  
-----AAGCCCAT---AGAATC-----TTTTTTTTTTT-TTAATGTGATGAAACTTC-TGTTTACCTTTGGCCA  
ACAAACTGATACATTGTTTTCTTATAG---GCATTCACAGGAACATAA
```

>Chimp

```
AACTATGTGACCAAAGTTACCCTGTTTCCTTTAATGTCTTTAGACACCAGTATCTCAGACCCTAAATACTATGTTTTAT  
TCCAAAGTTAAAT---GAGCCTGT---cctgtaatcccagcgacttggtaggctaagggtgggaggatcacttgagctc  
aggagtttgagaccact-tgagcaacataacaacatgctgtcctttatttaaaaaaaaaaaaaagaaaaaag-----  
-----AAGCCCAT---AGAATC-----TTTTTTTTTTT-TTAATGTGATGAAACTTC-TGTTTACCTTTGGCCA  
GCAAACCTGATACATTGTTTTCTTATAG---GCATTCACAGGAACATAA
```

>Orangutan

```
AACTATGTGACCAAAGTTACCCTGTTTCCTTTAATGTCTTTAGACACCAGTATCTCAGACCCTAAATACTATGTGTAT  
TCCAAAGTTAAAT---GAGCCTGT---cctgtaatcccagtgacttggtaggctaagggtgggaggatcacttgagctc  
aggagtttgagaccact-tgagcaacataacaacatgctgtcctttatttaagaaaaaaaaaaaaaaaa-----  
-----AAGCCCAT---AGAATC-----TTTTTTTTTTT-TTAATGTGATAAAACTTC-TGTTTACCTTTGGCCA  
GCAAACCTGATACATTGTTTTCTTATAG---GCATTCACAGGAACATAA
```

>Baboon

```
AACTATGTGACCAAAGTTACCGTGTTCCTTTAATGTCTTTAGTCACTGGTATCTCAGACTCTAAATACTATGTTTTAT  
TCCAAAGTTAAAT---GAGCCTAT---cctgtaatcccagcgacttagtaggctaagatgggaggatcacttgagctc  
aggagtttgagaccact-tgagcaacataacaaaaccttgcctttatttaaaaaaaaaaaaaagaaaaaagaaaaa  
aaaaaa---AAGCCCAT---AGGATC-----TTTTTTTTTTT-TTAATGTGATAAAACTTC-TGTTTACCTTTGGCCA  
GCAAACCTGATACATTGTTTTCTTATAG---GCATTCACAGGAATACAA
```

>Rhesus

```
AACTATGTGACCAAAGTTACCGTGTTCCTTTAATGTCTTTAGTCACTAGTATCTCAGACTCTAAATACTATGTTTTAT  
TCCAAAGTTAAAT---GAGCCTAT---cctgtaatcccagcgacttagtaggctaagatgggaggatcacttgagctc  
aggagtttgagaccact-tgagcaacataacaaaaccttgcctttatttaaaaaaaaaaaaaagaaaaaagaaaaa  
aaaata---AAGCCCAT---AGGATC-----TTTTTTTTTTT-TTAATGTGATAAAACTTC-TGTTTACCTTTGGCCA  
GCAAACCTGATACATTGTTTTCTTATAG---GCATTCACAGGAATACAA
```

>Tarsier

```
AACTATTTTCAGCAAAGTTATCCAATTCTACTTAAATGTGTTTAGACACCGATCTCTCAG--TCTAAAAATTGTTTTCAT  
TTCAAAACTAAAT---GAGCCTGT---cctataatcccagtgacttgagaggctgagatgggaggatggccttgagcct  
aagagtttagagaccagctcgggcaacatagcaagattctgtttcctttatttaaaaaaaaaagc-----  
-----GAGCCTGT---AGAATCCTTTCTTT-----AAC---ATAACACTTCAAATTTTCTTTAGTCA  
TTGAATTCATAAATTGTCTTCTTACAG---TTATTCTCAAGAGCATAA
```

>Bushbaby

```
AACTATTTTATTAAGTTTCCTAATTCTTCTTGATGTCTTCATATGCTAATCTCACAAACCCTAAAAATTGTGTTAAT  
TCAGAAATTAAT-----  
-----GACCCTAT---AGAATCCTTTATTT-----AACATAATAAAACTTT-AATTTTCCCTTGGTCA  
ATAATTTGATATATTGTCTTCTTATTT---GCATTCTCAAGAACATAA
```

>Mouse_lemur

```
ATCTGTTTTACCAAATCACCCAGTTTGCCTTGATATCTTCATATACTAATCTCACAGTCCCT-AAAATTGTGTTTCT  
TGAAAAAGTATAT-----  
-----GAGCCTAT---AGAATCCTTTCTTT-----AACATAATAAAACTTT-AATTTTCCCTTGGTCA  
GTAATTTGATATATTGTCTTCTTTTATAG---GCATTTTCAAGAAATATAA
```

>Tree_shrew

AATTATTTTACCGAAGTT-TTTAATTTTCTTTAATGTCTCCAACACTGTTTG-CCAGACCCTAGGAATTATGTTTCAT
TTCAAA-TTAAGT-----

-----AATACTGT--AGAATCCTCTTTTT-----TTT-GATGTTTCTTT-----
-----CATTATAGAGGAGAGAC

>Dog

TACTGTTTTACCAACGTTG-CCAGTTCTCTTCGTGTCTTTAGACACTAGTCTCTTTGGCCTTAAAAATTGTATTTAT
TCTAAAATTGAAA-----

-----GAGCCTGG--AGAATCATGTTTTT-----AATAT-GTAAAATTTT-AATTTTCCCTTAGCCA
ATAAATTGATAGATTTTGTCTTCTTTAAGGCATTTCTAGGAATGTAA

>Horse

AACTGTTTTACCAAAGTTACCCAATTCCCTTTTCATGCCTTTAGACACTAGTCTCTCAGAACTTAAAACTGTATTCCT
TCCAAAATTAAT-----

-----GAGCCTGT---AAAATT-----CTCTCTTTAATATAATAAAAATTTT-AGTTTTCCCTCAGCCA
ATAAGTTGATATATTTTGTCTCCGAAAAGGCATTCCCAGGAACATAA

Marker A10

>FLAM_C

```
-----  
-----rgccggggcgcggtgggtcacgcctgtaatcccagcactttgggaggccg  
aggcgggaggatcgcttgagcccaggagttcgagaccagcctgggcaacatagcgagacccccgtctctcaaaaaaaaaa  
aaaaaaaaaaaaaaaa-----  
-----
```

>Human

```
AATGGGAAGTTATCAAAACAAAGCCAAGCACCCTCAATCATGG--TATGCTCTCAGAAAAGG-CAATGGTCACATGG  
CAACCTT---GAAGATTCTGATTTCT---agtcgggtgtgggtggcacatgcctgtaatcccagctactcaggagcgtg  
agggtgggaggattacttgagcccaggagtttgagaccagcttggacaacatagcaaaaactcgtctctcaaaaaaaaa  
aaaaaaaaaaaaa-aagaaagaaagaaaaaagaaaaaagaa---AAAGATACTGACTTCC---AACCTTCATGAGTG  
AAAAGTTCTGGCCATGGCTGTAGTGGACAGGATGTGCTCACCT
```

>Chimp

```
AATGGGAAGTTATCAAAACAAAGCCAAGCACCACCAATCATGG--TATGCTCTCAGAAAAGG-CGATGGTCACATGG  
CAACCTT---GAAGATTCTGATTTCC---agtcgggtgtgggtggcacatgcctgtaatcccagctactcaggaggctg  
agggtgggaggattacttgagcccaggagtttgagaccagcttggaaaatagagcaaaaactcgtctctcaaaaaaaaa  
aaaaaaaa-----aaagaaagaaagaaagaaaaaagaa---AAAGATACTGACTTCC---AACCTTCATGGGTG  
AAAAGTTCTGGCCATGGCTGTAGTGGACAGGATGTGCTCACCT
```

>Orangutan

```
AATAGGAAGCTATCAAAACAAAGCCAAGCACCACCAATCATGG--GATGCTCTCAGAAAAGG-CAATGGTCACATGG  
CAACCTT---GAAGATTCTGATTTCC---agtcgggtgtgggtggcacatgcctataatcccagctactcaggaggctg  
agatggaaggattacttgagcccaggagtttgagaccagcttggacaatatagcaaaaacttg--tctcaaaaaaaaa  
-----aaaaaaagaaagaaagaaaaaagaa---AAAGACTGACTTCC---AACCTTCATGGGTG  
AAAAGTTCTGGCCATGGCTGTAGTGGACAGGGTGTGCTCACCT
```

>Baboon

```
AATGGGAAGCTATCAAAACAAAGCCAAGCATCACCAATCATGG--GATGCTCTCAGAAAAGG-CGATGGTCACATGG  
CAACCTT---GAAGATTCTGATTTCC---agtcggccatgggtggcacatgcctataatcccagctactcaggaggctg  
agggtggga-gattgcttgagcccaggagtttgagatcagcttggacaatgtagcaaaaactcatctcaaaaaaaaa  
aaaaaaaaaagaag---aagaagaagaagaaaaaagaa---AAATATACTGACTTCC---AACCTTCATGGGGG  
AAAAGTTCTAGCCATGGCTGTAGTGGACAGGGTGTGCTCACCT
```

>Rhesus

```
AATGGGAAGCTATCAAAACAAAGCCAAGCATCACCAATCATGG--GATGCTCTCAGAAAAGG-CGATGGTCACATGG  
GAACCTT---GAAGATTCTGATTTCC---agtcggccatgggtggcacatgcctataatcccagctactcaggaggctg  
agggtggca-gattgcttgagcccaggagtttgagaccagcttggacaacgtagcaaaaactcatctcaaaaaaaaa  
aaaaaaaaaaaaaagaagaagaagaagaagaagaaaaaagaa---AAATATACTGACTTCC---AACCTTCATGGGGG  
AAAAGTTCTAGCCATGGCTGTAGTGGACAGGGTGTGCTCACCT
```

>Marmoset

```
AATGGGAGACTATCACAGCAAAGCCAAGCACCACCCAGTCATGG--GATGCTCTCAGAAAAGG-CGATGGTCACATGG  
CAACCTT---GAAGATACTGATTTCC---agtcaggcgtgggtggcacatgcctatcatcccagctactctggaggctg  
agggtgggaggattgcttgaggccaggagtttgaaaccagcttggacaacacagcaagaactcgtctcaaaaacaaaac  
aaaaca-----AAACATACTGACTTCT---AACCCACATGGGTG  
AAAAGTTCTGGCCATGACTGTAGCAGACA--ATGTCCTCACCT
```

>Tarsier

```
GATGGAAAACATGAAAACAAAGCCAAGTACTACCAATCATGG--ATACTCTCAGAAAAG- TAATGGTCACATAG  
CAATCTC---AAAGATACTGATTTCC---agtcaggcatgggtggcatgccatagctcccagctacttgggaggcca  
agggtgggaggactgcttgagctcaagagtttgagaccagcttgggcaacgtggaaagaccctgtctcaaaaaaaaa  
aaaaa-----AAGGAAACGAATTTCA---AGCCTGCATGGGTT  
AAAAGTTCAGGGCATGGTGTCAATGGACAAGATGTGCTCTCCAT
```

>Bushbaby

```
GGTGGGAAGCTATGAAAACAAAGCCAAGCACCACCCAGTCACCACCCATGCTCGCAGAAAAGG-TGATGGTCCCACAG  
CAACCTC-----  
-----  
-----AAAGGCACTGATTTCC---AACCTGCATAGGTG  
AAAAGTTCTGACCACAGCTTCAGTGCACAGGGAATGTCATT-TT
```

```

>Mouse_lemur
GATGGAAAGCTATGAACACAAAGCCAAGCACCACCCAATCACAG--GATGCTCTCAGAAAAGG-TGACAGTCCCATAG
CAACCTC-----
-----
-----AAAGGCACTGATTTTC---AACCTTCATGTGTA
ATAAGTTCTGGCCATGGCTTCA-TGCTCA-----TC-AT
>Tree_shrew
GATAAGCAACTATGAAAACAAA-TCAAGTACCACTCAGTCATAG--GGTGCTCTCAGCGAAGGCTG-TGGTCGTGTGG
AAACCCC-----
-----
-----AAGAATACTGATTTTC---AGTTTGTATGGGTG
AGTAGTTCAGGCCATGGCTGCAGTGGACAGGGCACACAG-CCAC
>Guinea_pig
GGAGGAAAGCAGAAGAAACAAAGCCAAGCACCACAGAATCATGG--GAGGCCCTCAGGAAAGGCGC-CCATCATGTGA
TAACCTT-----
-----
-----AAGGATACTGATTTTC---AACC-ACATGGGTG
AAAAGTTTAGGTCGTAGCTTTGGTGAAGAAA-----GCAT
>Dog
GTTGGGGAGTCATGGGAACAAAGCCAAACACCACCCAATCAT-G--GATGCTCTTGGAAAAGGCTA-TGGTCACATGG
TAGCCTC-----
-----
-----AAGGATACTGACTTCC---AACCTGCAGAGGTG
--GAGTTCAGGCCACAGTCTCACTGGACTGGGCA-----CCCT
>Horse
GATGGGAAGCTGTG-----ACCCAATCATGG--GATGCTCTCAGAAAAGGCTA-CAGTCACATGG
CAGCCTC-----
-----
-----AAGGATACTGATTTTC---AATCTGTCTAGGTG
AAAAGTTCAGGCCATAGCTCCAGTGGACAGGGCGTTCTTGTCAT

```



```

-TCTA-CA-CCACTTGAGTTT-CTTCT-ACTCCTGAGT
>Bushbaby
TAGGCACGTCTGTTCATCTTGGCTCCCAGTGATGCTTCCAGCATCTTCATAATTGAGATGTAGCCTTCTTGAGCCAACA
AGGCAGGTGTGCCTACTTT-----
-----
-----AAG
AAAATAGAATACGTG----AAAGCCCACATTTTCTAACCAGATAAAATTTCCAGGTG-GTTACTCATTACATATGAG-
-T-TA-CAGCCACTCGAGTTC-CTTGG-AGTACTGAAT
>Mouse_lemur
TA-----TGTCATCTTGGCTACCAGTGATGCTTCTAGCATCTTCGTAATTGAGATGTAGCCTTCTTGAGCCAACA
AGGCAGGTGTGTCTACTTT-----
-----
-----AAG
AAAATAGGATACATG----AAAATCCAAATTTTCCAACCAGATAAAATTTCCAGGTG-ATTACTCATTATGTATGAG-
-TCTA-CAGCCACTTGGGTTC-CTTCT-AGTCATGAAT
>Tree_shrew
GA-----TGTCATGTTGGCGACTCATGATGCTTCTAGCATCTTCGTAATTGAGATGTAGCCTTCTCGTGCCAACA
AGGCAGGTGTGTCTACTTT-----
-----
-----GAG
AAAATGGGATGTATG----AGAACTCAGACTTGCCAACCAGAGACATTTCCAGGTG-ATTCCTTGGCCTAGCTGAG-
-TCTGT-CGTCACCTGAGTTC-CTCCT-GGCCCTGAGT
>Mouse
TA-----TGTCATCTTGGCTCCTAGCAAGGCCCTAGTATCTTCATAATTGAGATGTAGTCTTCTTGAGCCAATA
AGACAGGTGTGTCTACTTTA-----
-----
-----AAG
AAAACAGAGATCAGG----AACGTC-----CAGATTT--ATTC-ACCAGCCAAATTTCCAAGAA
-TATCACTTG-----AGGTTTTTCT-TAGTCCCGAGC
>Guinea_pig
TA-----TGTCATC-----CTGGGAATGCTTCTAGCGTCCTGGTAATTGAGTTGTAGCCTTCTTCAGCCAACA
AGACAGGTGTGTCTACTTTA-----
-----
-----AAG
AAATGGGAAACACAG----A-ACTCCAAATTTACCAGCTAGATGCATTCCCAAGCC-ATTACTCACTGTACATCAA-
-ACTA-CAGTCCCAAGTCCTTTCT-----GT
>Dog
CA-----TGTCGCCTTGGCTGCTGGTGTTACTTGTAGCATCTTCATAATTGAGATGTAGCTTTCTTGAGCCAACA
AGGCAGGTGTGTCTCTCTTT-----
-----
-----AGG
AAAATATGACA--CG-----ACGATCCAAATTTACTGACCAGAGAAATTTCCAGTTG-ATTACTCGTTGACATGGGA
GTCTAACAGCTA--TGGGTTTCCTTCTAAGTCCTGAGT
>Horse
TA-----TGTCACCTCGGCTGTGAGTGATACTTCTAGCATCTTTGTAATTGAGATGTAGCTT-CTTGAGCCAACG
AGGCAGATGTGTCTACTTT-----
-----
-----AAG
AAAATGGAATACATG----AAAATCC-----GAAATTTCCAGTTG-ACTACT-CGTCATACATGAG
AGTCTACAGCCAACCTGAGTTCCTTCTGAGGTCCTGAGT

```

Marker A08

>FLAM_A

```
-----gccgggcgcggtggcgcgcgctgtagtcccag
ctactcg-----ggaggctgaggcgggaggatcgcttgagcccaggagttcgagacc
agcctgggcaacatagcgagaccccgctctcaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
-----
```

>Human

```
TTCAGTGGGAGGCCTGGGGCACAGCGTATGTGCTTCTTGAAGAGCAGCAGCAGGGCCACCA--TTGAAAGACAGGAA
ACAACAC---ATAGAGAAATTGCTGGCTCA---ggaggctgaggttaaggggattacttgagcccaggagttcaagacc
aactggggcaacatagcaagaccccatctcaaaaaaaaaaagaaataaaa---aagaaaaagaaagg---ATAGAAAAT
TTGCCTATACA---TTCCACAAAGCACAAGGATTGTCCCAGAACAACGTTCTAGACCTACTACCTAGCTCTCCAACA
GAAAGGGAACCAGCCACTCAGGCATGGCTGTTTTCTGGCCTCTCCA
```

>Chimp

```
TTCAGTGGGAGGCCCGGGGCACAGCGTATGTGCTTCTTGAAGAGCAGCAGCAGGGCCACCA--TTGAAAGACAGGAA
ACAACAC---ATAGAGAAATTGCGGGCTCA---ggaggctgaggttaaggggattacttgagcccaggagttcaagacc
aactggggcaacatagcaagaccccatctcaaaaaaaaaaagaaagaaaaaaa---aagaaaaagaaagg---ATGGAAAAT
TTGCCTATACA---TTCCACAAAGCACAAGGATTGTCCCAGAACAACGTTCTAGACCTACTACCTAGCTCTCCAACA
GAAAGGGAACCAGCCACTCAGGCATGGCTGTTTTCTGGCCTCTCCA
```

>Orangutan

```
TTCAGCGGGAGGCCCGGGGCACAGGGTATGTGCTTCTTGAAGAGCAGCAGCAGGGCTACCA--TTGAAAGACTGGAA
ACAACAC---ATAGAGAACTTGCGGGCTCA---ggaggctgaggtcaggggattacttgagcccaggaggtcaagatc
aactggagcaacatagcaagacccacctcaaaaaaaaaaaaaaaaaaaaaaaaaaagaaaaagaaagg---ATGGAGAAT
TTGCCTATACA---TTCCACAAAGCACAAGGATTGTCCCAGAACAATATTCTAGACCTACTCTCTAGCTCTCCAACA
GAAAGGGAACCAGCCACTCAGGCATGGCTGTTTTCTGGCCTCTCCA
```

>Baboon

```
TTTAATGGGAGGCCCGGGGAACAGGGTATGTGTTTTCTTGAAGAGCAGCAGCAGGGCCACCA--TTGAAAGAGAGGAA
ACAGCAC---ATAGAGAACTTGCTGGCTCA---ggaggctgaggtgagaggattacttgagcccagagttcaagacc
aactggggcaacatagcaagaccccatctcaaaaagaaaaagag-----aaagaaagg---ATGGAGAAT
TTGCCTATACA---TTCCACAAAGCACAAGGATTGTCCCAGAACAATGTTCTAGAC-----CCAGCTCTCCAACA
GAAAGGGAACCAGCCACTCAGGGGTAGCTGTTTTCTGGCCTCTCCA
```

>Rhesus

```
TTTAATGGGAGGCCCAGGGAACAGGGTATGTGTTTTCTTGAAGAGCAGCAGCAGGGCCACCA--TTGAAAGA---GAA
ACAGCAC---ATAGAGAACTTGCTGGCTCA---ggaggctgaggtgagaggattacttgagcccagagttcaagacc
aactggggcaacatagcaagaccccatctcaaaaagaaaaagag-----aaagaaagg---ATGGAGAAT
TTGCCTATACA---TTCCACAAAGCACAAGGATTGTCCCAGAACAATGTTCTAGAC-----CCAGCTCTCCAACA
GAAAGGGAACCAGCCACTCAGGCGTAGCTGTTTTCTGGCCTCTCCA
```

>Marmoset

```
TTCAGGGGGAGGCCTGGGGCACAGGGTATGTGCTTCTTGAAGAGCAGCAGAGGGGCCACCG--TTGAAAGAAAGGAA
ACATCAC---ATAGAGCACTTGCCAGCTCA---gggggctgaggttaagaggcttacttgagcccaggagttcaagacc
aatcgggacaacatagcaagaccccatctcaaaaaaaaaaaaa-----aaaggagg---ATGGAGAAT
TTGCCTACACA---TTCCACAAAGCACAAGGATTGTCCCAGAGCAGTGTCCAGCCCTGCTACCTAGCTCTCCAACA
GAAAGGGAACCAGCCATTCAAGCATGGCTGTTTTCTGGCCTCTCCA
```

>Tarsier

```
TTCAGTGGTAGTCCTGAGATGCTAGG--TGTGCTTCTTGAAGAACAGCAGCAGGGCCACCC--TTGAAAGAGAGGAA
ACATCAC---ATAGAGAACTTGCTGCTCA---ggaggatgagacaggaggatagcttgagcctgagagttcaagacc
agcctgggcaacatagtgagactcagctcagaaaaaaaaga-----aaagaaagg---ATAGAGAAC
TTGTCTGTATA---TCCCACAAAGCAGAGATCATCCCAGAACAATGTTCTGGACTTACTACCTAGCTGTCCAACA
GAAAGGG-ATCAGCCACTCAGGCATGGATGTGTCCAGTCCTCTCCA
```

>Mouse_lemur

```
TTCAGTCAGAGTCCTGGGGAGCATGGTGTGTGCTTCTT---GAACAGTGGCAGGGCCACCG--TTGAAAGAGAGGAG
ATGTCAC-----ATA--GCAC
CTGCATGTACA---TTCCACACAGCACAGTGCTTGTCCCGGGAACAGCCTGCTGGGCCTACTGCTGAGCTCTCC----
-AACAGGGCCCAACCGCTCAGGCACGGG-TGTTCCCGGCCTCTCCA
```

>Bushbaby

TTTAGCAGGAGCCCTGAAACGCAGGGCGTGTGCTTCTT----GAATGGTGTCCAGGGCCACCA--TTGAAAGAGAGGAG
ACATCTC-----
-----GTA--GCAC
CTGCCTGTACA---TTCCACGAAGTACAAGGCTCG-CCCTGAAACAGTGTTCCAGACATTCTCTCTAGCTGCCAGCA
GAACGGGGACCTGCCACCCAGGCATGGGCTTTTCCGGGCCTCTCCA

>Tree_shrew

CTCAG--GGAGTCCTAGGGTGCAGGGTGTGTGCGTCTC-GAGGAACAGGTTCCGGGCCA-----TTGAAAGGGAGGGG
ACATCAC-----
-----GGA---CAC
TGGGCGTTACC---TTCCGCCCCGGCACAGTG--ACCCAGGAAGAAGGTTCCAGACTTGCTTCTGCGAGTCCACGA
GAA-GGGG-CCAGCCACG-AGGCACAGACAGGCC- GACTCCTCGA

>Mouse

TCCAGTGGGAGCCCTAGGGAACAGGGT-----GTACTTGGGAGCATGGCAGCATCAGATCACCCTGAAAGA--GGTG
CCATCCC-----
-----AGA---GAT
AA-CTTCATCC---TCCAACAGCACCCAGCCATCTTCCCA-----CGCTGACCACCTAGCTGCCAACA
GCAAAAGCACCCACCACT-----CTGCCACCGCCTCTCCA

>Guinea_pig

TTCAGC-AGAGTCCTCGGGCAGAGG-----CACCAG-GCTGCTATTTTAAAAA--GGAAA
TTTCACC-----
-----TAG--ATAA
CTTTCGTGCAT---GCACACTATGCCAGCAATCCTCCCTGGA-----CTTACTATCGAGCTGCCAACA
GGAAGGAAA-----GACCAGAGACTTCCT-----

Marker A26

>FLAM_A

```
-----  
-----gccggggcgcggtggcgcgcgctgtagtcccagctactcgggaggctg  
aggcgggaggatcgcttgagcccaggagttcgagaccagcctgggcaacatagcgagacccccgtctctaaaaaaaaa  
aaaaaaaaaaaaaaaa-----  
-----
```

>Human

```
TATTCTATTTTGCTAATCTTAGATTGAAAAACCTTGCAAATTGGATTGAG-CTGTGAGAAATCTCATTGCATTAAGT  
CCT--GTC---TAATCAAAACTATGAA---gccaggtgcagtggtgctgctgtagtttcagctactccagaggctg  
aggcaggaggatcccttgagcccaggagtttgaggccagcctgggcaacatagcaagattctgtctctaaaa-----  
-----ataatagtaaatgatg---TAATCAAATTAT-----TCTTGCCATATTTTGT----TTATC  
ACGGTGACT-----ATTGAGCTATTTGGCGTGAATAAGAAGAATAAGGTTAATTTCTGAGA
```

>Chimp

```
TATTCTATTTTGCTACTCTTAGATTGAAAAACCTTACAAAATTGGATTGAG-CTGTGAGAAATCTCATTGCATTAAGT  
CCT--GTC---TAATCAAAACTATGAA---gccaggtgcagcggcctgctgtagtttcagctactccggaggctg  
aggcaggaggatcccttgagcccaggagctgaggccagcctgggcaacatagcaagattctgtccctaaaa-----  
-----ataatagtaaatgatg---TAATCAAATTAT-----TCTTGCCATATTTTGT----TTATC  
ACGGTGACT-----ATTGAGCTATTTGGCATGAATAAGAAGAATAAGATTAATTTCTGAGA
```

>Orangutan

```
TGTTCTATTTTGCTAATCTTAGATTGAAAAACCTTGCAAATTGGATTGAG-CTGTGAGAAATCTCATTGCATTAAGT  
CCT--GTC---TAATCAAAACTATGAA---gccaggtgcagtggtgctgctgtagtttcagctactccggaggctg  
aggcaggaggatcccttgagcccaggagtttgaggccagcctgggcaacatagcaagagtctgtctctaaaa-----  
-----ataatagtaaatgatg---TAATCAAATTAT-----TCTTGCCATATTTTGT----TTAGA  
ACAGTGACT-----ATTGAGCTATGTGGCGTGAATAAGAAGAATAAGATTAATTTCTGAGA
```

>Baboon

```
TATTCTATTTTGCTAATCTTAGATTGAAAAACCTTGCAAATTGGATTGAG-CCATGAGAAATCTCATTGCATTAAT  
CCT--GTC---TAATCAAAACTATGAA---gccaggtgcagtggtgctgctgtagttccagctactctggaggctg  
aggcaggaggatcccttaagcccaggaatttgaggccagcct-ggcaacatagcaagattctgtctctaaaa-----  
-----ataatcgtagtgatg---TAATCAAATTAT-----TTTTGCCATATTTTGT----TTATC  
ACAGTGACT-----ATTGAGCTAGTTGGCATGAATAAGAGGAATAAGATTAATTTTCTGAGA
```

>Rhesus

```
TATTCTATTTTGCTAATCTTAGATTGAAAAACCTTGCAAATTGGATTGAG-CCATGAGAAATCTCATTGCATTAAGT  
CCT--GTC---TAATCAAAACTATGAA---gccaggtgcagtggtgctgctgtagttccagctactctggaggctg  
aggcaggaggatcccttaagcccaggaatttgaggccagcctaggcaacatagcaagattctgtctctaaaa-----  
-----ataatcgtagtgatg---TAATCAAATTAT-----TCTTGCCATATTTTGT----TTATC  
ACAGTGACT-----ATTGAGCTAGTTGGCGTGAATAAGAAGAATAAGATTAATTTTCTGAGA
```

>Marmoset

```
CATTTTATTTTGCTAATCTTAGATTGAAAAACCTTGCAAATTGGACTTAG-CCCTGAGAAATC-CGTTGCATTAAGG  
CAT--GTC---TAATCAAAACTATGAA---gccaggtgcagtggtgctgctgtagtaccagctactccagaggctg  
aggcaggaggatctcttgagaccaggagtttgaagccagtcag-----  
-----  
ACAGTGACT-----ATCCAGCCAGTTGACATG---AAGAAGAATAAGATTAATTTTCTGAGA
```

>Tarsier

```
CATTTTATTTTGTGGTCTTAGATTGAAAAACCTTGCAAACCTGAATTTAT-TCTTAAGAAATCTCATTGCATTAATT  
CCT--GTC---CAGTCAAAACAATGAA---gctggacac--tggtgctgctgtaatcccagctacttagaaggcta  
aggcagaaggatcatttgaaccaggagtttgagatcagcctgggcaacatagtagattccatctctaaaaat---aa  
taataatgatgatgataataataatg---TAATAAGACT-----GTGATACTGGCATATTTTGC----TTATC  
ACAGTGACTGACCAATCCAGCTCGTTGATGTG-----AATAAAATTAAT---CTGTGA
```

>Bushbaby

```
-----CTTAGA-TGGGAAACCTTGAAAGATCGGATTGAG-CCCTGAGAAAT-CCATTGCATTAAGT  
CCT--GTC-----  
-----  
-----TAATCAAATTAA--GGT--TCTTGCCATATTTTGC----TTATC  
AGAGGGACC-----ATCCAGCTAGTTGATGT-----GAATAAGATTTATCTTCTGAGA
```

```

>Mouse_lemur
CATTTCCTTTTTGCTGATCTTAGATTGGAAAACCTTGCAAATTGGATTGAG-CCCTGAGAAATCCCATTGCTTTAAGT
GCA--GTC-----
-----
-----TAATCACAACCTAA--GGT--TCTTGGCATATATTGC----TTATC
AGAGTGACT-----ATCCAGCTAGTCGGTGTGGATAA---GAATAAGATTAATCTTCTGAGA
>Tree_shrew
CATTTCCTTTTTACTAATCATAGATTGGAAGACCTTGCAAATTGGACTGAG-CCCTGAGAAATCCCAATATATTAAGT
CCTATGTC-----
-----
-----ATCAAAACTAA--GGC--TTTTGGTGTATCTTAC----TTATC
ACAGTGACC-----CTCTACCTCGTTGACAGGGATAAGAAGATTA-----GCCTTCTGAGA
>Mouse
TCACTGATCTTAGACTGAATAGTTTT-----GCAAATTTGGCTCATCCCTGAGAGGAATTCGATTGCATTAAGT
CCT--GTC-----
-----
-----TAATCCTAACAAA--GGA-----TTTTGACA----TGTCC
AGCCTGTG-----GCATAACGGTGAGA-----TTGACCTTTTGAGA
>Guinea_pig
TTGCTTATTTTACACTGAAAAACCTC-----CAAGGTTAGATTGAG--TGTGAGAAATCTATTGCATTAAGT
CCT--GTC-----
-----
-----TAATCAAAACAAA--GGG--CCCTAGCATGGTTTTA----TCACA
GTAGCTATC---CAGCTAGTTTGTGTGAA-----TAAGAATAAGATTAATATTGTTATT
>Dog
CATTTCCTTTTTACTGATCTTAGATGGAAAATCTTACAAGATTGGACCCAT-CCCTGAGAAATCTCATTGCCTTAAGT
CCT--GTT-----
-----
-----TAATCGAAACTAA--TGCTCTTGGCATTTTTTTTTTGTTTGTATC
ACAGTGACTACCCAGCTAATTGGTGTGA---ATAAGGAGAAACAAGCTTAATCCTCCGAGA
>Horse
TTTGTTTTTCTGATCTT--AGATTGGGAAATCTTGCAAATTGAATTCAGTCCT-GAGAAATCTCATTGCATTAAGT
CCT--GTT-----
-----
-----TTAATATAAACTAA--GG-CTCCTGGCATATTTTGC-----TTATC
ACAGTGACTACCCAGCTAGTTGGCTTGA-----ATAAGGACAATAGGCTTAATCTTCTGAGA

```

Marker A14

>FLAM_A

-----gcccggcgcggtggcgcgcc-----tgtagtcccagctactcgggag
gctgaggcgggaggatcgcttgagcccaggagtccgagaccagcctgggcaacatagcgagacccccgtctctaaaaaa
aaaaaaaaaaaaaaaaaaaaa-----

>Human

TTATAATAATTGTAATCATTGG-ATTGA-CTTCA-TTAAATAGGATCCATTCT----TAAGAATCTTTCTTAGTGTTT
TTAGATT---aaaatatctaagtacta-----acttggtggcatgcacc----agtagtcccggccacttgggag
gctgaggcaggaggattgcttgagcccaggagttaagtccagcctgggcaacacagtgaggacccccatctctgaatta
aaggaaaa---AAAATATCCAAGTACTC---AAAGT---GTAAGTGCTTCACAAGTATCTCCTGAT--AG--TTACT
TAT---GGATAATCATACATTT--AT--ATCCACACTAGGCCTCTGTCAAAGTATT

>Chimp

TTATAATAATTGTAATCATTGG-ATTGA-CTTCA-TTAAATAGGATCCATTCT----TAAGAATCTTTCTTAGTGTTT
TTAGATT---aaaatatctaagtacta-----acttggtggcatgcacc----agtagtcccggccacttgggag
gctgaggcaggaggattgcttgagcccaggagttaagtccagcctgggcaacacagtgaggacccccatctctgaatta
aagg-aaaa---AAAAATCCAAGTACTC---AAAGT---ATAAGTGCTTCACAAGTATCTCCTGAT--AG--TTACT
TAT---GGATAATCATACATTT--AT--ATCCACACTAGGCCTCTGTCAAAGTATT

>Orangutan

TTATAATAATTATAATCATTGG-ATTGA-CTTCATTTAAATAGGATCCATTCT----TAAGAATCTTTCTTAGTGTTT
TTAGATT---aaaatatctaagtacta-----acttggtggcatgcacc----tgtagtcccggccacttgggag
gctgaggcaggaggattgcttgagcccaggagttaagtccagcctgggcaacacagtgaggacccccatctctgaatta
aagg-aaaa---AAAATATCCAAGTACTC---AAAGT---ATAAGTGCTTCGCAAGTATCTCCTGAT--AG--TTACT
TAT---GGATAATCATACATTT--AC--ATCCACACTAGGCCTCTGTCAAAGTATT

>Baboon

TTATAATCATTATAATCATTGG-ATTGA-CTTCATTTAAATAGGATCCATTATTACCTAAGCATCTTTCTTAGTGTTT
TTAGATT---aaaatatctaagtacta-----acttggtggcatgcacc----tgtagtcccggccacttgggag
gctgagacaggaggattccttgagcccagaagttaagtccagcctaggcaacacagcgagacccccatctctgaatta
aagg--gaa---AAAATATCCAAGTACTT---AAAGT---GTAAGTGCTTCACAAGTATCTCCTGAT--AG--TTACT
TAT---GGATAATCATACATTT--AT--ATCCACACTAGGCCTCTGTCAAAGTATT

>Rhesus

TTATAATCATTATAATCATTGG-ATTGA-CTTCATTTAAATAGGATCCATTCTTACCTAAGCATCTTTCTTAGTGTTT
TTAGATT---aaaatatctaagtacta-----acttggtggcatgcacc----tgtagtcccggctacttgggag
gctgagacaggaggattccttgagcccagaagttaagtccagcctaggcaacacagcgagacccccatctctgaatta
aagg--aaa---AAAATATCCAAGTACTT---AAAGT---GTAAGTGCTTCACAAGTATCTCCTGAT--AG--TTACT
TAT---GGATAATCATACATTT--AT--ATCCACACTAGGCCTCTGTCAAAGTATT

>Marmoset

TTATAATCATTATAATCATTGG-ATTGA-CTTCATTTAAATAGGATCCATTCTTGCCTAAGAATC---CTTAGTGTTT
TTAGATG---aaaatatctaagtacga---gccaggcttggtggtacatatac---tgtagtcccagctacttgggag
gctgaggcaggaggattgcttgagcccaggagttaagtccagcctaggcaacacagcaagatcccatttctgaatta
aagg--aaa---AAAAATCCAAGTACCC---AAACT---GTAAGTGCTTCCAAGTATCTCCTGAT--AG--TTACT
TAC---GGATAATCATATATTT--AT--AGCCACACTAGGCCTCTGTCAAAGTAGT

>Tarsier

TTCTCATCATTATAATAATTGA-TTTTAGTTTTCATTTAAATTGGATCAATTCTTACCTAAGAATC-TTCTTAGCATT
TTAGATG---aaaatatctaagtatta---gccaggtttggtgacatgcacctacttgtagtccctactactgaggag
actgaggtaggaggattgcttgagcccagaagtccaagtccaacctgggcaacacagcgagattctctctctaaatta
aatgaaaa---AAAAATCCAAGTACTC---AGAGTATAATAAGTGCTTCACAGATATTTTCTGATAGAG--TTACT
TATCATGGTTAATCTTACATTGCAAT--ACCCATATTAGGCCTCTG--AAAGTATT

>Bushbaby

TTTTAGTAATTATAGTCATTTGTTTTTA-CTTCATTTAAATAGAATAAATTCTTACCTAAGGATCTTCTTAAGATTT
TCAGATC-----

-----AGAATGTC-AAGTGCTC---AAAGT---ATAAGTGCTTCACAAGTATCTCCTGAT--AGAGTTACC
TATCGCTGTTAACTGTATGTTT--TT--ATCCATAGTAAGCCTCTTTTC-AAGTATT

>Mouse_lemur

TTCTAATAGTTATAATTGTTAGTTTTGA-CTTCATTTAAATAGAATAAATTCCTTACCTAAGAATGTTTCTTAGCATTT
TTAGATC-----

-----AAAATGTCCAAGAACTC---AAAGT---ATAAGTGGTTTACAAGTATCTCCTGAT--AG----ACT
TATAGTAGTTAATCTTACATTT--AT--TTCCATAGTAGGCCTCTTTCAAAGTATT

>Mouse

-----ATAAATAGGATGATGAATTCCTACCAAGAA--TCTTAACATTT
TTAGGTC-----

-----AAAACATCCAAGTACTA--AATGT-----ACTTATATTGGATGCTTACATGCT-----TTCTA
AGTGTCTCCTGACAGTTACAGGTCATGGGTGTGCAGTTGGCTCTGTATTAGGATTC

>Dog

TTATAATCACTATAATAATTGGTTTTGG-CTGCATTTAAATA-----CCATT
TTGTATC-----

-----AAAATATTCATGTAGTC---AAAGT-----GTGCTTACAAGCCCCTCCTGAT--AGAGTTACT
TATTTATCATGGTCAGTCTTATGTTTATATCCATATTAGGCCTCTTTCAAATATC

>Horse

TTGTAATCATTATAATCATTGGTTTTGA-CTTCATTTCAAAGCG-----TTT
TTAGATC-----

-----AAAATATTCAGGTACTC---AAAGT---GTAAGTGCTTACAAGTACCTCCTGAT--AGAGTTTCT
TATTTATCGTGGTTAATCTCGTATTTATATCTATATACGGCCTCTTTGAAAATATT

Marker A15

>FLAM_A

-----gccgggcgcggtggcgcgcgctgtagtcccagctactcgggaggctgaggcgggaggatcgc
ttgagcccaggagttcgagaccagcctgggcaacatagcgagaccccgctctcaaaaaaaaaaaaaaaaaaaaa
a-----

>Human

CATCAAAAAGCCCATCTGTTCT---AAACATCTTCAGATTTTAAGGACTGAACAGAAGAAAGTTCCTAGCAGATTAC-
-GATTTATCTTATC---aaagtgtttcattag---cctgtagtcccagctactcaggtggtggaggcggcaggattac
atgagcccaggagtttagagaccatcctgggcaacatagagacctcatctcaaaaaaaaaaaaaaaaa-----
-----AAAGTGTTTCATCAG---ACCGTTTCACTGATTAG---ATTTGGATCAGTGACCTTGGGGTCTTGT
TTGTTTTGTTT-GTTTG-----GCAAAGCTACAGAAGAAA-TACAGGA

>Chimp

CATCAAAAAGCCCATCTGTTCT---AAACATCTTCAGATTTTAAGGACTGAACAGAAGAAAGTTCCTAGCAGATTAC-
-GATTTATCTTATC---aaagtgtttcattag---cctgtagtcccagctactcaggtggtggaggcggcaggattac
atgagcccaggagtttagagaccatcctgggcaacatagagagacctcatctcaaaaaaaaaaaaaaaaa-----
-----AAAGTGTTTCATCAG---ACCGTTTCACTGATTAG---ATTTGGATCAGTGACCTTGGGGTCTTGT
TTGTTTTGTTT-GTTTG-----GCAAAGCTACAGAAGAAA-TACAGGA

>Orangutan

CATCAAAAAGCCCATCTGTTCT---AAACATCTTCA-ATTTTAAGGACTGAACAGAAGAAAGTTC-TAGCAGATTAT-
-GATTTATCTTTTC---aaagtgtttcattag---cctgtagtcccagctactcgggtggtggaggtagcaggattac
atgagcccaggagtttagagaccatcctgggcaacatagagagacctcatctcaaaaaaaaaaaaaaaaa-----
-----AAAGTGTT-CATCAG---ACCGTTTCACTGATTAG---ATTTGGATCAGTGACCTTGGGGTCTTGT
TTGTTTTGTTT-GTTTG-----GCAAAGCTACAGAAGAAA-TACAAGA

>Baboon

CATCAGAAAGCCCATCTGTTCT---AAACATCTTCAGATTTTAAGGACTGAACAGAAGAAAGTTCCTGGCAGATTAT-
-GATTTATCTTATT---aaagtgtttcattag---cctgtagtcccagctactcaggtggtggaggcagcaggattac
ataagcccaggagtttaggaccatcctgggcaacacagagagacctcatctcaaaaaaaaaaaaaaaaa-----
-----AGCGTGTTTAATCAG---ACCATTTCCTGATTAG---ATTTGGATCAGTGATCTCGGGGTCTTGT
TTGTTTTGTTT-GTTTG-----GCAAAGCTACAGAAGTGG-TGCAAGG

>Rhesus

CATCAGAAAGCCCATCTGTTCT---AAACATCTTCAGATTTTAAGGACTGAACAGAAGAAAGTTCCTGGCAGATTAT-
-GATTTATCTTATT---aaagtgtttcattag---cctgtagtcccagctactcaggtggtggaggcagcaggattac
atgagcccaggagtttagagaccatcctgggcaacacagagagacctcatctcaaaaaaaaaaaaaaaaa-----
-----GGCGTGTTTCATCAC---ACCATTTCCTGATTAG---ATTTGGATCAGTGATCTCGGGGTCTTGT
TTGTTTTGTTT-GTTTG-----GCAAAGCTACAGAAGAAG-TGCAAGA

>Marmoset

CATCAAAAAGTCTATCTGTCCT---ATACATCTTCAGATTTTAAGGACTAAACAGAAGAAAGTTCCTAGCAGATTAT-
-GATTT---TATC---aaagtgtttcattag---cctgaagtcctagctactc-----
-----caggagtttagaggccatcctgggcaacacagagagacctcatcttaaaaag-----
-----AAAGTACTTCATCAG---AATGTTTCACTGATACAG---ATTTGGATCA---CCCTGGAGTATTGT
TTGTTTTA-----GCAAACCTACGGAAGAAA-TACAAGA

>Tarsier

CATAAAAAGTCTTCTGTTCTTATACAAATGTTTAGATTTTAAGGACTAAACAGAAGAAAGTTCCTAGCAATTTACA
AGATTTCTCTTATC---aaagtgtttcatcaa---tctatagtcctagctacttgggaggttgaggcagaaggactgc
ttgagtcaggagcttagagaccagattgagcaacatagtaagacctcgtcaccaaaaaaaaaaaaaa-----
-----AAGGTATTTTATCAG---ACTGCTTACTAATTCAGGCATTTGGTTCA---CCTTAGAGTTTTCAT
TTGTTTG-----GC-AAGATACAGAAAAAATGGAATG

>Bushbaby

CTTCAAAAAGCCCTCTGTCCTT---CTATATGTTTAGATTTGAAGGACTGAACAGAAGAAAGTTCCTGGTAGATTATA
AGATTTGTCTTATC-----

-----AAAGCGTTTCATCAG---ATCGTTTACTAATTCAGACATTTGGTTCA---CCTGCAGGTCTTGA
TTGTTTTGTTT-GTTTG-----GCAGGGATACAGAAGAAG-TGAAA-G

>Mouse_lemur

CATCAAAAAGCCTTTCTATCCTT--ATACATGTTTAGATTCTAAGGATTGAACAAAAGAAAGTTCCTAGCACATTATC
AGATTTATTTTATC-----

-----AAAGTATTTTCATCAG--ACTGTTTCACTGTTTCAGACATTTGGTTCA----CCTTAAGGCCTTGA
TTGTTTTGTTTTGTTTTGTTT-----GCAGAGATACAGAAGAAG-TGGAATG

>Tree_shrew

TATCA-AAAGCCCTTCTGTCCTT--CTACATGTTTAGATTTTAAGGACTGAACAGAAGAAAATTCTAGAAGATTATA
AGATTTATCTTATC-----

-----AAAGTGTTTTATCAG--ACTGTTTCACTGATTTCAGACACTTGGTTCA----CCTTAGGATCTTCT
TTGTGTGTTTTGTTTTGTTTCTTTGGCAGAACTACAGAAGAAA-TGGAATG

>Dog

CATCAGAAAGCCTTTCTGCCCTT--AGATATGATTAGATTTTAACAACAGTACAGAAGAAAGTTTCTGGCAGATTAT-
-AATTTATCTTGTT-----

-----AGAGTGTTTGATCAA--ACTGTTTCATTGATTTCAGACATCTGGTTTA----CCTTAGGGTTTGGT
TT----TGTTT--TGTG-----GCAGAGCTACAGAAGAA--TGAAAA

>Horse

CATCAGA--GCCTGTCTGTCTGC--ATATACGTCTAGATTTTAAGAACCGTA-AAAAGAAAGTTCCCGGCAGATTAC-
-AGTTTATCTTATC-----

-----GTAGTGTTTCATCAA--ACGGTTTCACTGATTTCAGACAT-TGGTTTA----CCTTAGGGTTTTGT
TTATTTGTTTGTGTTTGTGTTTGTG--GCAGAGCTACAGAAGAAA-TGAAAAG

Marker A17

>FLAM_A

-----gcc-gggcgcggtggcgcgcgctgtagtcccagctactcgggaggctg
aggcgggaggatcg-cttgagcccaggagttcagaccagcctgggcaacatagcgagaccccgctctctaaaaaaaa
aaaaaaaaaaaaaaaa-----

>Human

GTATGGAATATGCAGGTTTCAGGGGCATTTAGGCACAGGTAACATTTGACATAGTGCCCAATATGTGGAGAAGAAAA
TGTTTTCAAAAAT---GTCGCTTCT---gcc-aggcacagtggcacacggttgtaatcctagctacttgggaggctg
aggcag-agaatcaccttgagcccaggagttctagaccagtctgggtaacatagtgacacc-ttcatctcattacaaa
at-----GTCCTCTTTT-----TCAAGGAAATTTGATGGGGTCTATTTGCTTCAAGA--TAAAC
CTCACTAAACCC-AGATTTAG--TTGCTATCTGTCA

>Chimp

GTATGGAATATGCAGGTTTCAGGGGCATTTAGGCACAGGTAACATTTGACATAGTGCCCAATATGTGGAGAAGAAAA
TGTTTTCAAAAAT---GTCCTCTTCT---gcc-aggcacagtggcacacggttgtaatcctagctacttgggaggctg
aggcag-agaatca-cttgagcccaggagttctagaccagtctgggtaacatagtgacacc-ttcatctcattacaaa
aa-----GTCCTCTTTT-----TCAAGGAAATTTGATGGGGTCTATTTGCTTCAAGA--TAAAC
CTCACTAAACCC-AGATTTAG--TTGCTATCTGTCA

>Orangutan

GTATGGAATATGCAGGTTTCAGGGGCATTTAGGCACAGGTAACGTTTTGACACAGTGCCCAATATGTGGAGGAGAAAA
TGTTTTCAAAAAT---GTCCTCTTCT---gcc-aggcacagtggcacacggttgtaatcctagctactcgggaggctg
aggcag-agaatca-cttgagcccaggagttgtagaccagtgtgggtaacatagtgacacc-ttcatctcattacaaa
at-----GTCCTCTTTT-----TCAAGGAAATTTGATGGGGTCTATTTGCTTCAAGA--TAAAC
CTCACTAAACCCAGATTTAAGTTGGCTATCTGTCA

>Baboon

GTATGGAATATGCAGTTTTCCGGGGCATTTAGGCACAGGTAACATTTGATACAGTGCCTCAATATGTGGAGGAGAAGAA
TGTTTTCAAAAAT---GTCCTCTTCT---act-aggcacagtggcacacgcttggttctagctactcgggaagcta
aggcag-agaatcc-cttgagcccaggagttctatactagtctgggtaacatagtgacacc-ttcatctcattacaaa
aa-----GTCCTGTTTT-----TCAAGGAAATTTGATCGGGTCTATTTGCTTCAAGA--TAAAC
CTCACTAAACCC-AGATTTAGA--TGCTATCTGTCA

>Rhesus

GTATGGAATATGCAGTTTTTCAGGGGCATTTAGGCACAGGTAACATTTGACACAGTGCCTCAATATGTGGAGGAGAAGAA
TGTTTTCAAAAAT---GTCCTCTTCT---act-aggcacagtggcacacgcttggttctagctactcgggaagcta
aggcag-agaatca-ctggagcccaggagttctataccagtctgggtaacatagtgacacc-ttcatctcattacaaa
aa-----GTCCTGTTTT-----TCAAGGAAATTTGATCAGGTCTATTTGCTTCAAGA--TAAAC
CTCACTAAACCC-AGATTTAGA--TGCTATCTGTCA

>Marmoset

ATATGGAATATGAAGGTTGAGGGGCATTTAGGCACAGGTAACGTTTTGACACAGTGACCAATATGTGGAGGAGAA-AA
TGTTTTCCAAAAT-----TTCTTCT---gct-aggcacagtggcatgcacttgtaatcctagctactgggaggctg
aggcaa-agaatca-cttgagcctaggagttctagaccagccagataacataatgacacc-ttcatctcattaaaa
aa---aaaaaaaa-----GTCCTCTTTT-----TCAAGGAAATTTTATCGGGTCTATTTGCTTTAAGA--TAAAC
CTCACTAAACCC-AGCTTTAGA--TGCTTTCTGTCA

>Tarsier

GTATGGAGTTTCAGATTTCGTTTTGTTTCAGGCACAGCTCCGTTTTGACACAGTGCCCAATATGTGGAAGAGGAAAA
CGTCGTCACAGAT---TCCCTCCACT---gcctgggtgtggatcatgcctgtgatcccagctactcagg-gtctg
aggcag-a-----aggagttcaagaactgcctcactaaaactgagacc--ccatctcattaaaa
aa---aaaa-----ATCCTCTTCT---TTTTTCATTGAAATTTGATCTAGTCTATTT-CTTCGAGAAATAGAC
CTCACTAAACC--AGATTTAGA--TGCTGTCCGTTA

>Bushbaby

ATATGGAATTGGTAGGTTTCAGGGTAGTTTAGGCACAGGTAACGTTTTACACAGTGCCCAATATGTGGTCAAGGAAAA
TGTCTTCAGAAAT-----

-----TTCCTCTTCT---TTTTCAAGTAAGTTTGTAGTCTATTTGCTTCAAGAAATAAAC
CTCCCTAAACTG-AGCTCTACA--TACTGTCTGTCA

```

>Mouse_lemur
ATATGAAATTTATAGGTTTCGAGGTTGTTTAAGCACAGGTAACATTTTACACAGTGCCCAATATGTGGAGAAGGAAAA
TGTTTTTCAGAAAT-----
-----
-----TCCCTCTTCT----TTTTCAGGTAAATTTGATCTAGTCTATTTGCTTCAATAAATAAAT
CTCACTAAACCC-AGCTATAGA--TACTTCATTATG
>Mouse
CAACCTAATGTACACATGTAGCGTTGTTTAGGCACAGGTTACGTT----ATAATACCTCAGTCTGCAGAGTAAGAAAA
TGTTTTCAAGCAT-----
-----
-----CCCACCTCAGT-----CTACTTGG-----TCGAAG--CAAGA
AACACCAAACCC-GGATTCCAATG-GT-GGGTGCCA
>Guinea_pig
GTTCTTAATTAACAAGCTCAGGGTTGTTTAGGAACAGATAACATTTT--ACAGTGCCTTGGTATGTGGAG-GAGAAAA
TGTGTTCAAACAG-----
-----
-----TGCCTCTCTTT-----TGTCAGGGAAGTCTTATCTCA-ATATTTGATTAAATAAATAAGC
CTCACTAAATCT-GGATTTAGTT--GTCATGTATCA
>Dog
GGATGGAGCT--CAGGTTTCAT-----TCAGGCA-AGATAACATTTTACGCAGTGTCCCAACTACTGGAGGAGGAAA-
TGTCTTCATAGAT-----
-----
-----CCCTTCTTTCT----TTTCAGAAAAAATTGATCTAGTTCATTTGCTTCAAGAAATAAAC
CTCACTACAGCC-AGATTTAGA--TGCTAAATGTCA
>Horse
GGATGGAACCTTAAAGGTTTCAT-----TTAGGCACAGGTAACATTTTACAAAGTGTCTAACAAGGAGAGGTGGAAAA
TGTCTTTAAAGAT-----
-----
-----CCCTTTTTCT----TTTTCAGGGAATTTGATCTAGTCCATTTGTTTTCAGGAAAGAAAT
CTCACTAAACCC-AGATTTAGAC--ACTAAATGTCA

```


Marker A19

>FRAM

```
-----  
-----gccgggcgcggtggcgcgcgctgtagtcccagctactcgggaggctgaggcgggaggatcgcttgagc  
ccaggagttcgaggctgcagtgagctatgatcgcgccactgcactccagcctgggcgacagagcgagacccccgtctca  
aaaaaaaa-----  
-----
```

>Human

```
TGGTAC-CTTCTATCTCTTCCCTTAGAGATGCAATAAGAAATAATTTTGTAAAAGGTCACCCTCAAGAAA---TATAC  
TTTCTA---gctgggaatggtggtatgcacctgtagtcccactactaaggaggctgaggaggaagatcacttgagc  
ccaggagttcgaggctgcagtgagatgatcagccacagcactcctgcctgggcaatagagctagaccctgtcact  
aaa--atatata-----TATACTTTTCAT---GTATAAGTA-CAACATCT  
AGCTAGCCAGCCAACAAAGTTAAAACATTTATAATAATTAGTGTTGAACCTTAGAA
```

>Chimp

```
TGGTAC-CTTCTATCTCTTCCCTTAGAGATGCAATAAGAAATAATTTTGTAAAAGGTCACCCTCAAGAAA---TATAC  
TTTCTA---gctgggaatggtggtatgcacctgtagtcccactactaaggaggctgaggaggaagatcacttgagc  
ccaggagttcgaggctgcagtgagatgatcatgccacagcactcctgcctgggcaacagagctagaccctgtcact  
aaaatatatatata-----TATACTTTTCAT---GTATAAGTA-CAACATCT  
AGCTAGCCAGCCAACAAAGTTAAAACATTTATAATAATTAGTGTTGTACTTAGAA
```

>Orangutan

```
TGATAC-CTTTTATCTCTTCCCTTAGAGATGCAATAAGAAATGATTTTGTAAAAGGTCACCCTCAAGAAA---TATAC  
TTTCTA---gctgggcatggtggtgtgcacctgtagtcccactactaaggaggctgaggaggaagatcacttgagc  
ccaggagttcgaggctgcagtgagatgatcatgccacagcactcctgcctgggcaatagagctagaccctgtcact  
aaa----atatata-----TATACTTTTCAT---GTATAAGCA-CAACATCT  
AGCTAGCATGCCAACAAAGTTAAAACATTTATAATAATTAGTGTTGTACTTAGAA
```

>Baboon

```
TGGTAC-CTTCTATCCCTTCCCTTAGAGATATAATAAGAAATGATTTTGTAAAAGGTCACCCTCAAGAAA---TATAC  
TTTCTA---gctgggctggtggtgtgctcctgtagtcccactactaaggaggctgaggaggaagatcacttgagc  
ccaggagttcgaggctacagtgagatgatcatgccacagcactcctgcctgggcaatagagctagaccctgtcact  
aaa----atatata-----TATACTTTTCAT---GTATAAGCA-CAACATCT  
AACTAGCAAGCCAACAAAGTTAAAGCATTTATAATAATTAGTGTTGTATTAGAA
```

>Rhesus

```
TGGTAC-CTTCTATCCCTTCCCTTAGAGATGTAATAAGAAATGATTTTGTAAAAGGTCACCCTCAAGAAA---TACAC  
TTTCTA---gctgggctggtggtgtgacctgtagtcccactactaaggaggctgaggaggaagatcacttgagc  
ccaggagttcgaggctacagtgagatgatcatgccacagcactcctgcctgggcaatagagctagaccctgtcact  
aaa----atatata-----TATACTTTTCAT---GTATAAGCA-CAACATCT  
AACTAGCAAGCCAACAAAGTTAAAGCATTTATAATAATTAGTGTTGTATTAGAA
```

>Marmoset

```
TGGTAC-CTTCTATCTCTTCCCTTAGAGATGTAATAAG-----ATCTTGTGAAAGGTCACCCTCAAGAAA---TATAG  
T-----tggtggtgtgcacctgtagtcccactatgaaggaggctgaggaggatgatcccttgagc  
tcaggagttcgaggcttactgagaaatgatcatgccacagcactcctgcctgggcatagagctagaccctgtcact  
aaa-----ttata-----TATACTTTTCAG---GTATAAGTATTAACATCT  
AGCTAGCAGGCCAACAAAGTCAAAACGTTTATAATAATTAGTGTTGTACTTAGAA
```

>Tarsier

```
TGGT--TCTTCTCTCTCTTCTTCCAGATGTAATAAGAAACGATTTTGTAAAAGGTCACCCTCAAGAAA---TATAC  
TTTCTA---gccgtgatgatggcatggcctgtaatcccagttaacttgg-ggctgaggcaggaggatcacttaagc  
ccagaagttaaggctgcagtgagctgtgattacaccactgcacttcagcctaggtgacagagcaagacctt-tcata  
aaa-aagtattatagaaaaaatttaaaaaacaaaaggaa-----TGTGCTTTTAG---TTTTAAGCA-CAACATCT  
GACTAGCAAGCCAAGGAAGTTGAA-TATGAGTAATAATGAATATTGTGTTTAGAA
```

>Bushbaby

```
TGGTAG-GCTCTAGCTCTTCCCTTCCAGATGTAATAAGAAATGATTGTGTAAGGTCACCCTCCAGTAA-----  
-----  
-----TACACTTTTCAT---GTATAAGCC-CCACATCT  
GGCTAGCAAGCCAGCAGGGTGAAAGCATGGACGATAATTAGCATTGTGCTTAGAA
```

```

>Mouse_lemur
TGGTAC-CTTCCACCTCTTCCCCTCCAGATGTAATAAGAAATGATTTTGTAAAAATAACCTTCAAAAA-----
-----
-----TACACTTTCTT---TTATAAGCA-CAATGTCT
GGCTGGCCAGCCAACCAGGTAAAACATGTGTAATAATTAGCGTTGTACTTAGAG
>Tree_shrew
TAGAAC-TTCCTAACACTTCCTTACCAGATATAATAAAAAACAAATTT-TAAAAGGTCAGCCTCAAGAAA-----
-----
-----TATGCTTTCAT---TTATAAGAA-CAACATCT
GGTTAGCAAGCCAACACTAGGTCAAAAGATGTATAATAATTAGTG-----CTTAGAA
>Mouse
GAGCAC-CTGCTATCTCTTCCCTGTCCA-ATGCTCTAAGAAATCATTTTATAAAAGGTCATCCAGGATAAA-----
-----
-----TAGGCCTTCAT---CTGCAAGCG-CAACAGCT
GG-TAAGAAGCCAACACTACGCTAAGAAAAAAAAGGATA----ATTTGCCTTAGAA
>Guinea_pig
CCGCACTCTTCTATCTCTTCACTTCCAGATGTAGTAAAAACAATTTTGTAAACAGTTCAGTTTATAAGCA-----
-----
-----CAACATCAGGC---TGGTAAACCAATTATGCT
----AAAAGATGTAAA-ATTAA-----TATTGCACTTAGAA
>Dog
TGGTAC-TTTCTATTTCTTCCCTTCCAGTCGTAATGAAAAACGATTTTGCAAAAGGTCACTGTCCAGAAA-----
-----
-----TACACTCTCGC---TCGCATGCA-----
----ACTGGCTGGGCAGTTGTACAGTC-----ATTACCGTCACGCTCCCAA
>Horse
CAGTAC-CTTCTATTTCTTCCCTTCCAGATGTAATAAGAAATGATTTTGTAAAAGGTCACCCTCAAGAAA-----
-----
-----TATACTTTCAT---TTATAAGCA-CAGCATCT
CACTAGCGTGA-AACTAGATTGG-AGATGTATAATAGT----GTTGTGCTTCCAA

```


Marker A21

>FLAM_A

-----gccgggCGCGGTGGCGCGCGCCTGTAGTCCCG
ctactcgggaggctgaggcgggaggatcgcttgagcccaggagttcgagaccagcctgggcaacatagcgagacccg
tctctaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

>Human

ATCATACTTGCCAAAA-TAGTTGGTCAAAA-----AAACA-AGACAG-----GCA----GGAAAATTTTATAAG-
-TCAGCCATGTGTATTCTAAAGTAAAATT--AAATTCTCAG---actggg-----
-----agtctgagggtgggaggattgcttaaaccaggagtttgaggccagcctgggcaacactgcaagatcctg
ac-ct-aaaac---athtttttt-----aaa-----TAAATTTTCAG---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGGCTCCAAAT-TTCTGATGAGCC---TTTTGAAATAGAA

>Chimp

ATCATACTTGCCAAAA-TAGTTGGTCAAAA-----AAACA-AGACAG-----GCA----GGAAAATTTTATAAG-
-TCAGCCATGTGTATTCTAAAGTAAAATT--AAATTCTCAG---actggg-----
-----agtctgagggtgggaggattgcttaaaccaggagtttgaggccagcctgggcaacactgcaagatcctg
ac-ct-aaaac---athtttttta-----aaa-----TAAATTTTCAG---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGGCTCCAAAT-TTCTGATGAGCC---TTTTGAAATAGAA

>Orangutan

ATCATACTTGCCAAAA-TAGTTGGTCAA-----AAAAACA-AGA-----CA----GGAAAATTTTATAAAA-
-TCAGCCATGTGTATTCTAAAGTAAAATT--AAATTCTCAG---actggg-----
-----agtctgagggtgggaggattgcttaaaccaggagtttgaggccagcctgggcaacactgcaagatcctg
ac-tt-aaaaa--aaathtttttt-----aaa-----TAAATTTTCAG---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGGCTCCAAAT-TTCTGATGAGCC---TTTTAAAATAGAA

>Baboon

ATCATACTTGCCAAAA-TAGTTGGTCAA-----AAAAACA-AGA-----CAAGCAGGAAAATTTTATAAAA-
-TCAGCCATGTATATTCTAAAGTAAAATT--AAATTCTCAG---attggg-----
-----aatctgagctggaaggattgcttaaaccgaagagtttgaggccagcctacacaacattgcaagatcctg
ac-tt-aaaaa--tatthtttttg-----gaa-----TAAATTTTCAG---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGCCTCCAAAT-TTCTGATGAGCC---TTTTGAATTAGAA

>Rhesus

ATCATACTTGCCAAAA-TAGTTGGTCAAAA-----AAACA-AGACAA-----GCA----GGAAAATTTTATAAAA-
-TCAGCCATGTATATTCTAAAGTAAAATT--AAATTCTCAG---attggg-----
-----aatctgagggtggaaggattgcttaaaccgaagagtttgaggccagcctacacaacattgcaagatcctg
ac-tt-aaaaa--aatthtttttg-----aaa-----TAAATTTTCAG---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGGCTCCAAAT-TTCTGATGAGCC---TTTTGAATTAGAA

>Marmoset

ATCATATTTTGCCAAAA-TAGTTGGTCAGAA-----AAGAA-AAA--G-----ACA----GGAAAATTTTATAAAA-
-TCAGCTATGTTTATTCTAAAGTAAAATT--AAATTCTCAG---actggg-----
-----agtctgagggtgggaggattgcttaagcccagaaatttgatgccagcctgggcaacattgcaagatcctg
ac-tc-taaaaaatahttttttttaatcthttttaaaa-----TAAATTTTCAG---TAGAAGGGTATGGAT
AGTCTGATTTGCAGAGCAAGCTCCAAAT-TTCTGATGAGCC---TTTTCAATTAGAA

>Tarsier

ATCATATTTTGCCAAAA-CAGTTGATTTTAA-----AAAAACAGGCAG-----GCA----GAAAAA-TTTTATAAAA-
-TTAGCCTTGTTGACACCAAAG-----T---AAACTCTCAG---gttgggcatggtggcatgcatctgtagtcccag
ctacttgaaactctggggtgaaaggattgcttgagttcaggagtttgatgccaccctgggcaacatagtgagaccccc
at-cthttaaaacaaaatctcaa-----aaacaaaaaaciaa---AAAAGTCTCAG---TAGATGAGTATGGAT
AGTCTGATTTGCAGTGCAGGCTCCAAAT-GCCTGATGAACA---GTCTGAATTAGGA

>Bushbaby

ATTGTATTTTGCCAAATACATTTGGCCAACAGCAACAAAAG-AACGTA-----GCA----GGAAAA-TTTTATAAAA
CTTGGCCTTGCTTACTCTAAAGTAAAAT-----
-----TAGATCCTCAG---TAGAGAACTATGGAT
AGTCTGATTTGTAGGCCAGGCTCTATATGGTCTGCTGAACAAATATTAGAAAAAGAA

```

>Mouse_lemur
ATCATATTTGCCAAAT--AGTTGGCCCAAATCAACAAAAA-AAGGTA-----ACA----GAAAAA-TTTTATAAA-
-TTAGCC-TGTTTACTCTAAAGTAAAAT-----
-----
-----TAAATCCTCAG---TAGAAAATATGGAT
AGTCTGATTTGCAGGGCAGGCCTCAAAT-GTCTGATGAACA---GTTTG-----
>Tree_shrew
ATCATATTTGCCAAA--TGGTTGATTTT-----TAAAAAC-AAATTACGGTCAGGCA----GGAAAA-TTTTATGAA-
-TCAGCC-TATTTATGCCAAAGTAAAAT-----
-----
-----TAAATCTT-AG---TAGATAAGTGTGGCT
AATTTAATTTGCAGAACAA--TCTACAC-GTGTGATTAATA---GTTGGAATTAGTA
>Mouse
ATAGCATTCTCAAAA-ATGATTTGTTAAA-----AAAAT-AAAATGCATGCAGGCAAGCGGAAAGA-TTTTATAAA-
-TCAGCCTTGTTTACTCTGAAGTAAAAT-----
-----
-----TAAATTCTCAA---TAAAAGAGTATAGAT
AGTTTGATTTGCAGAGCAGGTTCCAAAT-GTCAGATGAACA---GTTCAAATTAGGC
>Guinea_pig
ATCATATTTGCCAAGG-TAGTTGCTAAA-----GACAGAAC-AAAATACAGAAAG----GTGGAACAT-TTTTATAAA-
-TCAATCTTGTCCTACTCTAAA-----
-----
-----T-----TCTCAG---TAGAAGAATACAAAT
GGTCTGATTTGCAGAACAGGATTTAAAT-GTGTGAGGAACA---GTTT-----
>Dog
GCAACATTTGCTACAA-TAGTTGGTCAAAAAAATT--GGC-AGA-----CA-AAAAGAAAA-TTTTGTATA-
-TCAGCCTTGTTTACCCTAAAGTAAAAG-----
-----
-----TAAATCTC-AG---TAGAAAAATATGGAT
AGTCTGGTTTACAGAACAGGCTCCAAAT-GTGTGATAAACA---GTTACAGTT---A
>Horse
GCAATATTTGCTAAAA-TAGTTGGTCAAAAAAAGAAGGC-AGA-----CAGGAAGGAAAA-TTTGATAAA-
-TCAGCCTTGTTTACTCTAAAGTAAAAT-----
-----
-----TAAATTCTCCA---TAGAAGAGTATGGAT
AGTCTGATTTGCAGAGCAGGCTCCAAAT-GTCTGATGAATA---GTTATAGTTAGGA

```

Marker A16

>AluJb

```
-----  
-----ggccggggcgcggtggctcacgcctgtaatcccagcactttgggaggccg  
aggcgggaggatcacttgagcccaggagttcgagaccagcctgggcaacatggtgaaaccccgtctctacaa-----  
-----aaaatacaaaaattagccgggctggtggcgcgccctgtagtcccagctactcgggaggctgaggcagg-a  
ggatcgcttgagcccgggaggctcaggctgcagtgagccgtgatcgcgccactgcactc-----  
-----cagcctgggcgacagagcgagaccctgtctca-----  
-----
```

>Human

```
GGAAGAGGGTAGGTATAGTAGGTGAGAGTATCATGATATAGACACCAATTATGTTCTTTTTCAAAGGTCCAGGGAATT  
--AAAATTAAT---GTAGAATTCTT---ggccggggcaccatggctcatgcctgtaatcccagcactttgggaagcta  
aggcaggaggggttgcttgaggccaggagttcgagaccagcctgg-caacgtagtgagaatgcatctctacaa-----  
---aaaataaaattataattagccaggcatggtggcacatgcctgcagtcccagctacttgggatgctgaggcagg-a  
ggatcacttgagcccaggagtttgaggctgcagtgagttgtgattgtgtcactgcactc-----  
-----cagccagggtgacagagtgcagaccgtgtcttt---aaaagaaaagaaaaagaaaaaaagga---AAA  
AAAGTCTAGGGC---CAAGAC---ATCCTAACCGAGATGTTAAGATGGGGTCCAATCAAATTACTTGAGGGATAT-G  
GTAAAGGGCTGGAGCATGGGCCTACTGCTC
```

>Chimp

```
GGAAGACGGTAGGTATAGTAGGTGAGAGTATCATGATATAGACACCAATTATGTTCTTTTTCAAACGGTCCAGAGAATT  
--AAAATTAAT---GTAGAATTCTT---ggccggggcaccatggctcatgcctgtaatcccagcactttgggaagcta  
aggcaggaggggttgcttgaggccaggagtttgagaccagcctgg-caacgtagtgagaatgcatctctacaa-----  
---aaaataaaattataattagccaggcatggtggcacatgcctgcagtcccagctacttgggatgctgaggcagg-a  
ggatcacttgagcccaggagtttgaggctgcagtgagttgtgattgtgtcactgcactc-----  
-----cagccagagtgcagagtgagaccgtgtcttt---aaaagaaaagaaaaagaaaaaaagga---AAA  
AAAGCCTAGGGC---CAAGAC---ATCCTAACCGAGATGTTAAGATGGGGTCCAATCAAATTACTTGAGGGATAT-G  
GTAAAGGGCTGGAGCATGGGCCTACTGCTC
```

>Orangutan

```
GGAAGAGGGTAGGTATAGTAGGTGAGAGTATCATGATATGGACACCAATTATGTTCTATTCAAACGGTCCAGGGAGTT  
---AAAATTAAT---GTAGAATTCTT---ggctggggcaccgtggctcacgcctgtaatcccagcactttgggaagcca  
aggcaggaggggttgcttgaggccaggagttcgtagaccagcctgg-caacgtagtgagaatgcatctctacaa-----  
---aaaataaaattataattagccaggcatggtggcacagcctgcagtcccagctacttgggatgctgaggcagg-a  
ggatcacttgagcccaggagtttgaggctgcagtgagttgtgattgtgtcactgcactc-----  
-----cagcctgggtgacagagtgcagaccatgtcttt---aaaagaaaaaa-----gg---AAA  
AAAGTCTAGGGC---CAAGAC---ATCCTAACTGAGATGTTAAGATGCAGTCCAATCAAATTACTTGAGGGATAT-G  
GTAAAGGGCTGGAGCATGGGCCTACTGCTC
```

>Baboon

```
GGAAGA-GGTAGGTATAGTAGGTGAGAGTATCATGATATAGACACCAATTATCTTCTTTTTCAAATGGTCCAGGGAATT  
--AAAAGTTAAT---GTAGAATTCTT---ggctggggcaccgtggctcacgcctgtaatcccaacactttgggaagcca  
aggcaggaggggttgcttgaggccaggagtttgagaccagcctgg-caacacagcgagaatgcatctctacaa-----  
---aaaataaaatgataattagcca-----cacagcctacagtcccagctacttgggatgctgaggcagg-a  
ggatcacttaagcccaggagtttgaggctgcagtgagctgtgattgtgccactgcactc-----  
-----cagcctgggtgacagagtgcagccatgtcttt---aaaagaaaagcaaaagaataaa--gga---AAA  
AAAGTCTTGGGC---CAAGACTTCCATCCTAACCAAGATGTTAAGATGGAGTCCAATCAAATTACTTGAGTGATAT-G  
GTAAAGGGCTGGAGCATGGGCCTACTGGTC
```

>Marmoset

```
GGGATAGGGTAGGTATAGTAGGTGAGAGTATCAGGATATAGATACCAATTAT-TCATTTTTCAAATAGTACAGAGAATT  
--AATAATTAAT---GTAGAATTCTT---agctgggcatggtggctcatgcctgtaatcccagcactttgggaagcca  
agacaggcaagttacttgaggccaggagttcgagaccagcctgg-caacaaagcaagaatccatttcttccaaaataa  
aataaaaataaaaataaaaattaacctggagtggtggcacatacctgcagtcccagttacttgggatgttgaggcagg-a  
ggatggcttgagcccaggagtttgaggctgcagtgagctgtgattgtgccactgaactc-----  
-----cagcctgggtaacagagcaagaacatgtcttt---aaaagaaaagaaaata-----  
-AACTCTTGGGC---CAATACTTCCATCCTAACTGAGATGCTAAGATGGAGTCTAATCAAATTACTTGAGGGATAT-G  
GTAAAGAGCTGGAGCATGGGCCTACTGGTC
```

>Tarsier

GGGAGAGACTAGATGTAGTAGATCAGGGCATCAGGATACAGAGACCAATTAGGTTATTTTTCAAATGGTCCAGGGAATG
CAAACATGAAT--ACAGAAATCTT--gggcctagcatgtaagctcatgcctgtaatcctagcattttggaaggctg
agacaggagggtagcttg-----aggagttttaggccagcctggacaatagagcaagaccctatctctaca-----
---aatataaaataa-aattagctgagcttgctgggtgagcctatagttatagttacatgagagattgaagtgtgta
ggattgcttaagtccaggagttcaaggctgcagtgagcaatgatcacatcactctactc-----
-----cagcctgggtgacagaataagaccctgtctctcaacaaaaaaaaaagaaaagagaaata--ata---AAA
GAAGCCTTGGAC---CAGTGGAT-----GAGAGGTTATGATGAAGTGTGATCAAATTATCTGAGGGCTATGG
GTGAAGAACTGGCACAC-AGCCTGCTGGTC

>Bushbaby

GGGAG-----AGGCATAGTAGGTGAGGGTGTCAAGGTACAGATATCAACTATCTTATTTTTCAAATGGTCCAGGGGATA
CAAATTATTAAT-----

-----ACA
GAAATCTTGGGC-----TTGAGATTAGGATGG-----AATTATTTGAGGAATGAGG
GTGAAAGGCTGGAGCACAGACCTGCAGCTC

>Mouse_lemur

GGGAGAGGGCAGGTTTTAGTAGGTAAGGGGGTCAAGATACAGATATCAACTATCTTATTTTTCAAATGGTCCAGGGAATT
CAGAACATTAAT-----

-----ACA
GAAATCTTGGGC-----GAGAGACTGGG-----CTGGAATTATTGAGGAATGTGG
GTGAAGGGCTGGAGCACGGGCCGGCAGGTC

>Dog

-----GA-----TGGGAGTGTGAGGATATAGACAC---TAATGTTATTTTTCAAGTGGTGCAAGGGATG
CAAAAAATTC-----

-----ACA
GGCCAATGCACA-----GGATGTAACCTTGACCAAATTACTTGAGGGATACAG
GCAAAGGGCTGGAGCACACGCCTACTGGTT

>Horse

GGGAGACAGTAGA-----CAGGAGTCTCAGGATATGGATACTA-TTACATTATTTTTAAAGTGGTCCAGGGGACG
CAAATATTAAC-----

-----ACA
AAGTCCTTGGGC---CAATGGAT-----GGGAGGTTAGGATGTAATCTGACCACATTATTTGAGGAATGCAG
GTGAGGG-CATGAGCACAGGCCTACTGGTC

Marker A29

>AluSx

```
-----  
-----ggccggggcgcggtggctcacgcctgtaatcccagcactttgggaggcc  
gagg-cgggscggatcacctgaggtcaggagttcgagac-cagcctgg-ccaacatggtgaaaccccgtctctact-aa  
aatatacaaaaattagccgggscgtgggtggcgcgccctgtaatcccagctactcgggaggctgaggcaggagaatcgct  
tgaacccgggaggc-ggaggttgagtgagccgagatcgcgccactgcactccagcctgggscgacagagcgagactcc  
gtctcaaaaaaaaaaaaaaaaaaaaa-----  
-----
```

>Human

```
AAGGTGAGATTAAACAT--GAAGAAAAGGTCAGGA--CTGGAA--CCAT-CCAGATTTTATACCAATG-TCCAG-AAG  
TCTCCATCTAAAAAT---AAGATGGTA---ggctggggtgaggtggctcaggcctgtaatcccagcactttgggaggcc  
aagg-ccagtgatcacttgaggtcaggagtttgagac-cagctctgg-ctagcatggtgaaaccccgtctctaccaa  
aatatacaaaaattagctgggtgtgggtggcgcgctgactgtaatcccagctactcgggaggctgaggcaggagaattgct  
tgaacctgggagggt-ggaggtagcagagagccaagattgcaccactgcactccagcctgggcaacagagtgagactct  
atctc-aaaaaaaaataaaaagaaaa-----  
-----AGAAGATGGTA---TTTTAGAGATAATAAATGCAACAACAGATAAAGTCCCTAGTCAACT---GATA-AA  
AAAAGAATAAATTTTGAA----CT
```

>Chimp

```
AAGGTGAGATTAAACAT--GAAGAAAAGGTCAGGA--CTGGAA--CCAT-CCAGATTTTATACCAATG-TCCAG-AAG  
TCTCCATCTAAAAAT---AAGATGGTA---ggctggggtgaggtggctcaggcctgtaatcccagcactttgggaggcc  
aagg-ccagtgatcacttgaggtcaggagtttgagac-cagctctgg-ctagcatggtgaaaccccgtctctaccaa  
aatatacaaaaattagctgggtgtgggtggcgcgctgactgtaatcccagctactcgggaggctgaggcaggagaattgct  
tgaacctgggagggt-ggaggtagcagagagccaagattgcaccactgcactccagcctgggcaacagagtgagactct  
atctcaaaaaaaaaataaaaagaaaa-----  
-----AGAAGATGGTA---TTTTAGAGATAATAAATGCAACAACAGATAAAGTCCCTAGTCAACT---GATT-AA  
AAAAGAATAAATTTTGAA----CT
```

>Orangutan

```
AAGGTGAGATTAAACAT--GAAGAAAAGGTCAGGA--CTGGAA--CCAT-CTAGATTTTATACCAATG-TCCAG-AAG  
TCTCCATCTAAAAAT---AAGATGGTA---ggctggggtgaggtggctcaggcctgtaatcccagcactttgggaggcc  
aagg-ccggtggtatcacttgaggtcaggagtttgagac-cagctctgg-ctagcatggtgaaaccccgtctctaccaa  
aatatacaaaaattagctgggtgtgggtggcgcgctgactgtaatcccagctactcgagaggctgaggcagcagagaactgct  
tgaacctgggaggc-ggaggtagcagacagccaagattgcaccactgcactccagcctatgcaacagagtgagactct  
atctc-aaaaaaaaataaaaagaaaa-----  
-----AGAAGATGGTA---TTTTAGAGATAATAAATGCAACAACAGATAAAGTCCCTAGTCAACTAGGGATA-AA  
AAAAGAATAAATTTTGAA----CT
```

>Baboon

```
AAGGTGAGATTAAACAT--GAGGAAAAGGTCAGGA--CTGGAA--CCAT-CTAGATTTTATACCAATG-TCCAG-AAG  
TCTCCATCTAAAAAT---AAGACGGTA---ggctggggtgtgggtggctcaggcctgtaatcccagcactttgggaggcc  
aagg-ctggtggtatcacttgaggtcaggagtttgagac-cacctctgg-ccagcatggtgaaatcccgtctctaccaa  
aatacacgaaattagttggatgtgggtggcgactgtaatcccagctactcgggaggctgaggcagagaagaattgct  
tgaacctgggagat-ggaggtagcagtgagccaagaatgcgccactgcactccagcctgggcaacagagcgagattcc  
atctc---aaaaaagaaaaagaaaa-----  
-----AGAAGATAATA---TTTTAGAGATAATAAATGCAGCAACAGATAAAGTCCCTAGTCGACT---GATA-AA  
AAACGAATAAATTTTGAACCTTCT
```

>Marmoset

```
AAGGTGAGATTAAACAT--GAGGAAAAGGGCAGGA--CTGGGAACCCAT-CTAGATTTTATACCAATGCTCCAGAAAG  
TTTCCATCTAAAAAT---AAGATGGGG---ggccggggtgtgggtggctcaggcctgtaatcccagcactttgggaggcc  
aaggcccggtggtatcacttgaggtcaggagtttgagacgcagctctggccagcatggtgaaactccagctcgggtcaca  
aa-----gtagcacgcggcagctgactgtaattccagctccttgggaggctgaggcacaagaatcgct  
tgaacctgggaggcaagaggttacactgagccaatcaacgacactgcactccagcctggatgacagagtgagattcc  
atctc---aaaaat---ataaaa-----  
-----ATAAGATGGTA---TTTTAGAGATAATAAATGCAACAACAGATAAAGTCCCTAATGGACT---GATATAA  
AAAGGAATAAATTTTGAA----AT
```

```

>Tarsier
AACGTGAGATTAA--AT--GAGGAAAAGGGCAGAA--TTGGAA--ACATCCTAGATTTTACACAAATGCTCCAG-AAG
TCTCCATCTAAAACT---AAGATGT-----ggcccgggtggtgggtcatgcctgtaatcccaacactttgggaggct
gagc-tggaaggattgcctgagaccaggagttcgagac-cagcctag-gcaacaaagcgagaccttgtctctacaaa
a--aaaaaaaatttagctgggtgaagtggcacacacctgtagtaccagctactcgagtagctgagacaggaggatcact
tgagccctggagct-cgaggctgtagag-gctgtgagcgtgcccgtgcactccagcctgggtgacagagtggagaccg
actca-aaaaggaaagcaaagtaaa---caagtaaataaatatataaatatttatacatcacacacacacactca
cacat---ACATGACAGTA---TTTTGGAGATAATAAATGCAACAACATACAAAGCCCCTAATTAAC---GATATT-
---AAAATAAATTTTTAG----CT
>Bushbaby
AAAGGG-----GAAATTAAGGAAAAGGGGGGAGGATTGGAA--CCATCCCATATTTTATACTAACAGTCCAG-AAG
TTCATATCTAAAAAT-----
-----
-----
-----
-----
-----AAGA--TGGTA---TTTTGGAGATAATAAACACAACAATATATAAGGTCCTCGTTCACG---GATAT--
--AAAATAAATTTTTAG----TT
>Mouse_lemur
AATGGGAGATTAAAAATGTGAGGAAAAGGGTAATG---CCGAA--CCATCCTAGATTTTATACTAATGCTCCAG-AAG
TCTCCATCTAAAAAT-----
-----
-----
-----
-----ATGAC--AGTA---TTTTGGAGGTAATAAATGCTACAACATATAAGGTCCTAGCTGATA---GA-----
--AAAACAAATCTGTGG----CT
>Tree_shrew
-----CCAG-AAG
TCTCTAAGTAAAAAT-----
-----
-----
-----
-----AAGA--TGGTA---TTTCAGAACATATAAAAATAAGA-----TGGTATTTTCAG-----
--AAAATAAATTTTTTAA----TT
>Dog
AACGTGTACTTAAATAT--GAGGAAAAGAAAAGAA--TTGGAA--CCATCCAGATTTTATACTAGTCTTCCAG-AGT
TCTCCATCTAAAAAT-----
-----
-----
-----
-----AAAA--CGGTA---TTTTGGCTACAATAAATGTGACAACATATAAGGTCCTCAGCTGATT---GATAT--
--AAAATAAATCTTTAG----CT

```

Marker L06

>L1PB4_3'-End

```
-----tgtttatcgcagca
ctattcacaatagcaaagatatggaatcaacctaagtgtccatcaatggatgactg-----
----ga-taaagaaaatgt-gg-tatatatac-----accatggaataactact
cagccataaaaaagaatgaaatcatgtcttttgcagcaacatggatggaactggaggccattatcctaagtgaaataa
ctcagaaacagaaagtcaaataccgcatgttctcacttataagtgggagctaaacaatgkgtacacatggacatacag
agtggaataatagacactggagactcmgaaaggt-gggaggggtgggaggggggtgagggatgagaaattacctawtgg
gtacaatgtacactattcgggtgatggktacactaaaagcccagacttcaccactacgcaatatatccatgtaacaaa
actgcacttgtacccccctaaatctataaaaaataaaaaa-----
-----
```

>Human

```
TTTAACAGACTCAAGTCCCTTCTGTTCTTATTGCCAATATCCTGCCAAGCAGAAGAACAGATCTTCTTT--CTTTCCC
ACCTT-----ATGCACCCTGCCCTGAGCAGCCTGGAATATTTAGGAAGCTGGC---AATAAAAAGATCATC
T---gaataaagagaatgtaggatacatatac-----acaatgtaataactaaa
cagtcataaaaa-ga-taaaatcatgtcttttgcagcaacatggatggaactggagaccattatcttaagtgaaataa
ctcagaaatggaaagtgaagtattgcatgttctcagttacacgtgagagctaaataatgtacacctggacattgac
cgcgaaataatagacactggagacttggagagt-gcgagagtgggaggtgggtaaggg-tgagaaattacctaattgg
gcacaatgtatactatttggatcatgactacactaaaaccctagacttcactacctccaatatatccatgtaacaaa
actgcacttgtactccttaaatctataaaaaatgaa----AAATAAAAATCAAA-----GATCATCTGGGACACT--
TCCAC-AGCAGTATTGTTCTACTGAAAAGTGGGTGAG-AGACTCCAACCTTCTTAAAAGTGCCTGTCTTA---GTTGGA
GGTGAGAAAGGACCCCCACAGAGAAACACCTCTTTAACT
```

>Chimp

```
TTTAACAGACTCAAGTCCCTTCTGTTCTTATTGCCAATATCCTGCCAAGCATTAGAACAGATCTTCTTT--CTTTCCC
ACCTT-----ATGCACCCTGCCCTGAGCAGCCTGGAATATTTAGGAAGCTGGC---AATAAAAAGATCATC
T---gaataaagagaatgtaggatacatatac-----acaatgtaataactaaa
cagtcataaaaa-ga-taaaatcatgtcttttgcagcaacatggatggaactggagaccattatcttaagtgaaataa
ctcagaaatggaaagtcaagtattgcatgttctcagttacaagtgagagctaaataatgtacacctggacattgac
cgtgaaataatagacactggagacttggagagt-gcgagagtgggaggtgggcaaggg-tgagaaattacctaattgg
gcacaatgtatactatttggatgatgactacactaaaaccctagacttcactacctccaatatatccatgtaac-aa
actgcacttgtactccttaaatctataaaaaatgaa----AAATAAAAATCAAA-----GATCATCTGGGACACT--
TCCAC-AGCAGCAGTGTCTACTGAAAAGTGGGTGAG-AGACTCCAACCTTCTTAAAAGTGCCTGTACTA---GTTGGA
GGTGAGAAAGGACCCCCACAGAGAAACACCTCCTTAACT
```

>Orangutan

```
TTTAACAGACTCAAGTCCCTTCTGTTCTTATTGCCAATATCCTGCCAAGCAGAAGAACAGATCTTCTTT--CTTTCCC
ACCTT-----ATGCACCCTGCCCTGAGCAGCCTGGAATATTTAGGAAGCTGGC---AATAAAAAGATCATC
T---gaataaagagaatgtaggatacatatac-----acaatgtaataactaat
cagtcacaaaaa-ga-taacatcatgtcttttgcagcaacatggatggaactggagaccattatcttaagtgaaataa
ctcagaaatggaaagtcaagtattgcatgttctcagttacaagtgagagctaaataatgtacacctggacattgac
cgcgaaataatagacactggagacttggaggggt-gcgagagtgggaggtgggtaaggg-tgagaaattacctaattgg
gcacaatgtatactatttggatgatgactaaaactaaaaccctagacttcactacttccaatatatccatgtaacaaa
actgcacttgtgctccttaaatctataaaaaatgaa----AAATAAAAATCAAA-----GATCATCTGGGACACT--
TCCAC-AGCAGTAGTATTCTACTGAAAAGTGGGTGAG-AGACTCCAACCTTCTTAAAAGTGCCTGTCTTA---GTTGGA
GGTGAGAAAGGACCCCCACAGAGAAACACCTCCTTAACT
```

>Baboon

```
TTTAACAGACTCAAGTCCCTTCTGTTCTTATTGCCAATATCCTGCCAAGCAGAAGAACAGATCTTCTTT--CTTTCCC
ACCTT-----ATGCACCCTGCCCTGAGCAGCCTGGACTATTTGGAAAGCTGGC---AATAAAAAGATCATC
T---gaataaagagaatgtaggatacatatac-----acaatataataactaat
cagttataaaaa-ga-taaaatcatgtcttttgcagcaacatagatggaactggagaccattatcttaagtgaaataa
ctcagaaaaggaaagtcaaatattgcatgttctcagttataagtgagagctaaataatgtacacctggacatagac
agcaaaataatagacactggagacttggaggggt-gcaagagtgggaggtgggtaagggatgagaaattacctaattgg
gtacaatgtatactatttggatgccgactacactaaaaccctagacttcactacttcccgatatatccatgtaacaaa
actgcacttgtactccttaaatcgacaaaaatgaa----AAATACAAATCAAA-----GATCATCTGGGACACT--
TCCAC-AGCAGTAGTATTCTATTGAAAAGTGGGTGAG-AGACTCCAACCTTCTTAAAAGTGCCTGTCTTA---TTGGA
GGTGAGAAAGGACCCCCACAGAGAAACACCTCCTTAACT
```

>Rhesus

```
TTTAACAGACTCAAGTCCCTTCTGTTCTTTATTGGCCAATATCCTGCCAAGCAGAAGAACAGATCTTCTTT--CTTTCCC  
ACCTT-----ATGCACCCTGCCCTGAGCAGCCTGGACTATTTGGAAAGCTGGC---AATAAAAGATCATC  
T---gaataaagagaatgtaggatacatatac-----acaatataataactaaa  
cagttataaaaa-ga-taaaatcatgtcttttgcagcaacatagatgggaactggagaccattatcttaagtgaataa  
ctcagaaaaggaaagtcaaatattgcatgttctcagttataagtggagagctaaataatacgtacacctggacatagac  
agcaaaataatagacactggagacttggagggt-gcaagagtgaggaggtgggtaagggatgagaaaattacctaattgg  
gtacaatgtatactatttggatgctgactacactaaaaccccagacttcactacttcccgatacatccatgtagcaaa  
actgcacttgtactccttaaatcgacaaaaattaa-----AAATACAAATCAA-----GATCATCTGGGACT--  
TCCAC-AGCAGTAGTATTCTATTGAAAAGTGGGTGAG-AGACTCCAACCTTTCTTAAAAGTGCCTTGTCTTA----TTGGA  
GGTGAGAAAAGACCCCCACAGAGAAAACACCTCCTTAACT
```

>Marmoset

```
TTTAACAGATTTAAAGTCCCTTCTGTTCTTTGTTGCCAATATCCTGCCAAGCAGAAGAACAGATCTTCTTT--CTTTCT  
ACCTT-----ACGCACCCTGCCCTAAACAGC-TGGAATATTTCAGGAAGCTGGC---AATAAAAGACCAT-  
T---gaataaagaaaatgcagga--catacac-----acaatataataactaat  
cagtcataaaaa-gg-taaactcatgtattttgcagcaacatggatgggaactggagaccattatcttaagtgaataa  
ctcagaaatggaaagtcaaatattccatgttctcagttataagtgagggtgaaataataattacacctgggcacagac  
agcaaaataatagacaatggagacgtggaaggggtgggagagtgagaggtgggtaagggatgagaaaattacctaattgg  
gtacagtgtagcagttttggatgatggctacactaaaaccccagacttcggtactccccgatataccatgtaacgaa  
actgcacttgaactccttaaacctaaaaatattaac-----AAATACAAATACAA-----GATCCTCTGGGACGCT--  
TCCACCAGCAGCAGTGTCTACCGAAAAGTGGGTGAG-AAACTCCAACCTTTCTTAAAAGTGCCTTGTCTTA---GTTGGA  
GGTGAGAAA-----CACAGAGAAAACCCCTCCTTAATT
```

>Tarsier

```
-----CGAATCT-TTCTGTTCTTTTTGCTAATATCCTGCCAAGCAGAATATTAAATTTTCTCAAATTTTCTC  
ACCTTTGACCCTGAACAGATGCACCCGACCCTGAACAGA-TGGAATATTTGGGAAGCCGGC---AATAAAAGATCATT  
T---ggataaaaatgtggagtatacatatattttatatatttctatttttatatgtatataaaaatagaataactact  
cagccacaaaaataa-tgaaatcaggttggtttgcagcaacatggatggaactagagaccattacctaagtgaataa  
tgca--aatagaaattcaaataccacatgttctcagctgtaagtgagggtgaaataatgtacacatggacgtacag  
agtgggaataacaga-actgggagactcagaaggat-----agaaggggatgagggatgagaaattacttaaggg  
ataccgtgcatattatgtgggtaatggtttacactaaaaccccagacttcac-attaacaatagatctgtgtaacaaa  
actgcatttgtactccctaaatctacataaataaa-----ACA-ATAAA-----TATATTCTGGGACTCT  
TCCATAAGCAGTGGTGTCTACTGGAAAGCAGGTGAGGAAACATCAATTTCTTAAAAGTGCCTTTCCGA---ACTGGA  
GGTGAGCAAGGACACCCACAGAAAAACCCCTCCTTAACT
```

>Bushbaby

```
TTTGACAGTCTCAAATCCCTTCTGTTTTTATTGTCACTATCCTGCTAAACAGAAGAACAGAACTCTTT--CTTTCTC  
ACCTT-----GCATGTCTTACCCTGAAGTGT-TGGAATATTTGGGAATTGTT-----  
-----  
-----  
-----  
-----  
-----  
-----AATAAA-----AAA-----TCATCTGAGGTACTCT--  
TCTACCAGCAATAGTGTCTACTGGAAGGTGG-CCAG-GGGCTCCAGCTTCTTAAAAGTGCCTTGTCTTA---GTTGGA  
GGTGAGCAAAGATTTTTGCAGAGAAAACCCCTCCTATTT
```

>Mouse_lemur

```
TTTAACAGGCTCACATTCTTTCTGTTCTTTATTGGCCAATATCCTGCCAAGCAGAAGAACAGCTCCTTTTT--CTTTCTC  
GCCTT-----GCACACCTTACTCTGAAGGGC-TAGCATATTTGGGAAGCTGGT-----  
-----  
-----  
-----  
-----  
-----  
-----ATTAATA-----AAA-----TAGTCTGAGACTCT--  
TCCACCAGCAATAGCATTCTGCTCGAAGGTGGGTGAG-GGACTTCAACCTTCTTAAAAGTGCCT-TCTTAAAAGTTGGG  
GGTGAGCAAAGACCTTCATAGAGAAAACCCCTCCTTCGCT
```

>Tree_shrew

TGGGACACGCTCATATTCTTTCCATTCTCATTGCTGATATCCTTCCAAGCAGAAAAATAGCTCCT-TTC--CATCCCT
ACCTC-----ACATACCATATCCTGAAGGTC-TGGGGCTTTCTGGAAGTTGGA-----

-----AATAAA----GGA-----CACCCAAGATGCCTCT--
TCCTCTAGCAATAGCATTCTACTAAAAGGTGGGGTAG-GGATTCCCACTTCTGAAAGTGCCTGTCCTG---GGTAGC
GGTAACTAAGGACCCCCCAGGAGAAACCCCTCCTGAACT

>Dog

TTTAACAGGCTCAAGTCCTTTTATACTTTTATTGCCAATATCCTGCCAAGTAGAA---TAACTTTT--CT--TCTTTCC
ATTTT-----A-----TGTA-----

-----ATAAA----AGA-----CCATCTGGGACATTCT--
TTCTCCAGCAATAGTGCTCTCCTAGAAGGTGGGTGAG-GGGATCCAGCTTCTAAAAGTGCCTGTCCTA---GTTGGA
GGCATGCAGGGATATCCACAGAGAAACCCCTTCCTAACT

>Marmoset

CATGCCTTCTT---TTTCTTATAACATTATTACAGTGTAAATCAGCAATTCTAGCTTGCCTC-AGATAGTAATACAATC
TTTAAATAGTCTACTTCCACTTATGCTGACTCTGATATGACTCAAAGCAATGTTGTCTGTCTGGAGACACCTTAGAAT
TGAGCATAACAG---CAACTGAGAGAG---tggatgatgagaaatttcttagtgggtacaacgtatggtattctgggtg
atggataccctaaaatccctgacttccccacttttgcaatatatgcatgtaacaaaactacacttttaccctccagatt
tatacaaattaaaa-----aataaaaag---CTATTAATAT---AATTGGTAAACACAAAAATATGTGTGGTTC-AAA
ACTCATCTTTCTTC-GATATTTTCAACTTTGATAAATGGTTGAAAGTATTGAGCATATTCGATACTTTCAACCATTTA
TTCTTCTTTCAACCTGATCCTCTTAATACTGAGGGAAATAAAGAAGGTTTCATGCATCGCTTTAATTGAATATTTTCCA
ATTGTATGCATTATTTTCATAGCTACA

>Tarsier

CATGCTCTTTCTTTTTCTTGTAACATTACTTAAAGTCTAATCAGTAATTCTAGCTTGCCTG-AGATA-----CAATC
TTTGCATTGTCTGCTTCCACTTATGCTGACTCTGATATGACTCAGTGCAATGTTCTTTGTCTGGAGACACCTTAGAAC
TGAGCATGAAAG---CAATTGAGGG-----ggtgagaaattacttcatgggacaaatgtatg--gatagggtg
atggatgccctaaaagc-----ccttaccaccgtgaaatctatacatatgacaatattataacttgtaccctacacatt
tatataaataaaaaataaaaaaatgaaag---CAAGTGGTAT---AATTGTTAAATACAACAATATGTGCAATTTGAAA
ATTCATCTTTCTTTTGGG-----GAGCAAAG-----CAACCATTCA
TTCTTCTTTCAGCCTAATTCTTCTAATATTGGGGAAGATGAGGAAGGTTTCATGCATCCTTTTGTAGAATGTTCTGTA
AGTCTACGAATTATTTTCATAGGTACC

>Bushbaby

CATGCCCTCTCATTTTTCTGTAGTATTATTATAGTCTAATCAGCCATTCTAGATTGTCCCAGACA-----TGGT-
TGCACACTGTTTACTTCCATTTACACAGACTCTGACATGACTCAATGCAATGTTCTCTGTCTAGAGACACCTCAGGAC
TGAGCATAAAAG-----

-----CAAGTGATAT---AATCGATAAACACAACAA-----

>Mouse_lemur

CACACCCTCTTATTATCCTTGTAACATTATTACAGTCTAATCAGCAATTCTAGCTGGCCCCGAGATA-----TGATC
TTCACACTGTTTACTTGCACGTACGCTGACTCTGACATGACTCAATGCAATGTTCTCTGTCTGGAGACACCTTAGAAC
TGAGCATAAAAG-----

-----CCAGTGATAT---AATTGTTAAACACAACAT---CTGTAATTTGAAA

ACTCATCTTTCTTT-GAA-----GAGCATAGCAGATACTTTCAACC-----A
TTCTTCTTCCATGCTAATTCTTTTAAAGTAGGGAAGATAAAGAAGGTTTCATGCATATCTTTAATAGAATGTTCTCCA
AGTCTACATATTAA-TTCATAAGTACC

>Horse

CAGGCGCTCTCCTTTTTCTTGTAACATTACTACAGTCTAATCAGCAAGTCCAGCTTGCCCCAAGATA-----CAATC
TTCACACTGCCTACTTCCACATATGCTGACTCTGATGCGTCTCAATGCAATGCTCTGTGTCTGGAGACACCTTAGAAC
TGAGTATAACAG-----

-----CAACTGATGG---AATTGTTAAACACAATGACCTGTGTGATTTGAAA

GCTTATCTTTCTTT-GAA-----GAGCATAGCAGATACTTTT-----A
TTTTTTTTTCAACCTAATTCTTCTTATTGTAGGAGAGATAAAGAAGCTTCATGTATCCCTTTAATAGAATGTTCTCCA
AGACTATGCATTGTTTTTATAGGTACC

Marker L39

>L1PB4_3'-End

```
-----gacatacagagtggaataatagaca
ctggagactcmgaaaggt-----gggaggggtgggaggggg
gtgaggggatgagaaattacctawtgggtacaatg-tacactattcgggtgatggktacactaaaagcccagacttcac
cactacgcaatatatccatgtaacaaaactgcacttgtaccccctaaatctataaaaaataaaaaa-----
-----
```

>Human

```
GCTGGGAAAGCAAGT-GTCTAACAATTTTCTATTTTCAGCCTCCTATCAGAAC-CAAAGGTGATGAGTTCCTCAAAC
CTAGGAAGGGATCCACGTTTTTAAACAGTTAAAAT--ATTAG---AAATTTTAACCAC---atgagggagggaggaga
ttggataatgagaaagtatttaattgggtacagca-tacattatttgggtgatagatgcgctacaagcccagattttgc
cactatgcaataaagccatgtaac-aaattgtgtttgtaacccttaaattatacaaatttaaaga-----aaaca
---AAATGTTTACCAC---GTGGAAGTACTAAATCTCCTGCATAAATTGAGCTCTGTATCCTTCACAGTCGATAAAGC
CTTTGGCATGACGAGAACCACCAAGAAGT
```

>Chimp

```
GCTGGGAAAGCAAGT-GTCTAACAATTTTCTATTTTCAGCCTCCTATCAGAAC-CAAAGGTGATGAGTTCCTCAAAC
CTAGGAAGGGATCCACGTTTTTAAACAGTTAAAAT--ATTAG---AAATTTTAACCAC---atgagggagggaggaga
ttggataatgagaaagtatttaattgggtacagca-tacattatttgggtgatagatgcactacaagcccagattttgc
cactatgcaataaagccatgtaac-aaattgtgtttgtaacccttaaattatacaaatttaaaga-----aaaca
---AAATGTTTACCAC---GTGGAAGTACTAAATCTCCTGCATAAATTGAGCTCTGTATCCTTCACAGTCGATAAAGC
CTTTGGCATGACGAGAACCACCAAGAAGT
```

>Orangutan

```
GGTGGGAAAGCAAGT-GTCTAACAATTTTTTATTTTCAGCCTCCTATCAAAAC-CAAAGGTAATGAGTTCCTCAAAC
CCAGGAAAGGATCCAAGTTTTTAAACAGTTAAAAT--ATTAG---AAATTTTAACCAC---atgagggagggaggaga
tttgataatgagaaagtatttaattgggtacagca-tacattatttgggtgatggatgcactacaagcccagattttgc
cactttgcaatatagccatgtaac-aaattgtgtttctaacccttaaattatacgaatttaaaga-----aaata
---AAATGTTTACCAC---GTGGAAGTACTAAATCTCCTGCATAAATTGAGCTCTGTATGCTTCACAGTCGATAAAGC
CTTTGGCATGACGAGAACCACCAAGAAGT
```

>Baboon

```
GCTGGGGA-----AGCCTCCTATCAAAAC-CAAAGGTGATGAGTTCCTCAAAC
CTAGGAAGGGATCCAAGTTTTTAAACAGTTAAAAT--ATTAG---AAATTTTAACCAC---at----tagggagaaga
ttggataatgagaaagcatttaattgggtacaaca-tacattatttgggtgatggatgcactacaagcccagattttgg
caccatgcaatatagccatgtaacaaaattgtgtttgtaacccttacgttatacaaatttaaata-----aaaca
---AAATGTTTACCAC---ATGGAAGTACTAAATCTCCCGCATAAATTGAACTCTGTATCCTTCACAGTCGATAAAGC
CTTTAGCATCATAAGAACCACCAATAAGT
```

>Rhesus

```
GCTGGGAA-----AGCCTCCTATCAAAAC-CAAAGGTGATGAGTTCCTCAAAC
CTAGGAAGGGATCCAAGTTTTTAAACAGTTAAAAT--ATTAG---AAATTTTAACCAC---at----tagggaggaga
ttggataatgagaaagtatttaattgggtacaaca-tacattatttgggtgatggatgcactacaagcccagattttgg
caccatgcaatatagccatgtaacaaaattgtgtttgtaacccttacgttacacaaatttaaata-----aaaca
---AAAGGTTTACCAC---ATGGAAGTACTAAATCTCCCGCATAAATTGAACTCTATATCCTTCACAGTCGATAAAGC
CTTTAGCATGACAAGAACCACCAATAAGT
```

>Marmoset

```
GCTGGGAAATCAAGT-GTCTAACAATGCTACACTTCAGCCTCCTATCGAAAC-CAAAGGTGATGAGTTCCTCAAAC
CTAGGAAGGGATCCAAGTTTTTAAAGCGTTAAAAT--ATTTG---AAATTTTAACCAC---atgagagaggaaggata
ttggataatgagaaagtatttaattgtgtacaaca-tacgttatttgggtgatggctacactgcaagcttagattttgc
tactatgcaatatatccatttaacaaaattgtgcttgaacccttacattatacaaatctaaaga-----aaata
---AAATGTTTACCCC---ATGGAAGTATTAATCTCCTTTATCAATTGAGCTCTGTATCCTTCACAGTTGATAAAGC
CTTTGGCATGGCAAGAACCACCAAAAAGT
```

>Tarsier

```
GTTGAGAAAGCAGAT-ATCTGACCATTTTCAGATTTTCAGTCTCCATTAAGAC-TACAAAATAATGAATTCTTCAATCT
CCAGGAAGGGATTCA-GTTTCTAAACTATTAATA--AGATCAT---AAATGTATACCAC---at-----
-----gagtgcagtagtacatgattgggggtgacggttataactaaaagcccagactccac
catgacacagtatagccatgtaacaaaattgcacttgtaccccataaatctatacaaatgaaaaataaaaaataa
---AAATGTTTCACTAT---ATGTAAGTACTAAATATCTCCTATAAATGGTGTGTTTTGGCTCCTTCACAGATCATGAGGT
```



```

CTTTGGCATAACTAGAACATCAAGAAAT
>Bushbaby
GCAGGGAAATCAAGTTAGTTGACAATTTTCAGATTCCAGCCTCCCATCAAAAC-TATGCAGTGAAGAATTCCTCAAAC
CTGGGTAGGGTTCAAG-TTCTAAATAGTTAAA--AGTTTGG-----
-----
---AAATTTTTACCCT---GCAGTAGCACTAAGGCCTCTGTATAAGTTGAGTTCTGTGT-CTCTACAGCTGATGAGAA
CTTCAGCATGACCAGAGCCATCTAGAAGT
>Mouse_lemur
GCTGGGAAAGCAAGTCACTTGACAATTTTCAGATTTCAGCCTTCCATCAGGAC-TACAAGGTGATGAATTCCTCAAAC
CTGGGAAGGGTTTCAGG-TTCTAAAT----AGA--AGACTGG-----
-----
---AAATGTTACCAT---GTGGTAGCACTAAATCTTTGGTATAAATTGAGTTCTGTGTCCTTTACAGTTGATGAGGC
CTTTGTC----CTTGAGCCATGAAGAAGT
>Tree_shrew
GCTGGGAAAGCAAG--ATCTGGCAATTTCTAATTTTCAGTCTCCTATCAAGACTTACAAGGTGATGAACGCCTCTATTC
TAGGTAAGGGATACTGG-TAATAATTAGTGAGAATGGCTTGG-----
-----
---A-ATGTTACCAC---ATGGCAGCACTAAATCTCTTCTG-AAATTGAACTCCATATCTCTTAGAGTTGATGAAAA
CTTT-----
>Guinea_pig
-----AAAAATCTAACCTGCAGCTTTCTTCAAGACTTACATGGTGAGGAATCTCGCAGGCC
CTGGGAAGGGAATCTTACTGTAAACAGTTATAGTTGAGTTGG-----
-----
---AAATATTCCCAC---ATGGAAATTCTAAATTTCTGTATAAATTAAGCTCTGGGTCTTTACAATTAACGTGAC
CTTTGTCGGGGATCCAGAATCCAAATTGT
>Horse
GCTGGGAAA-TATGA-ATTTGGCAATTTTCGTATTCCAGCCTCCCATCAAGACTCATAATGTGAGGAATTCCTCCAACC
CCAGGAAGGAGTTTCAGG-TTCTAAATAGTTACAATGGATTGG-----
-----
---AAATGTGCACCAC---GTGGAGGCACTA-ATCTTCTGCGTAAATTGAGTTCTGTATCTTCTAAAGGGGGTATGGA
TTTTGCTACGACAAGAGCCATCAAGAAGT

```

Marker L41

>L1PB4_3'-End

```
gacatacagagtgggaataatagacactggagactcmgaaaggtgggaggggtgggagggggggtgagggatgagaaatta  
cctawtgggt-----acaatgtacac  
tattcgggtgatggktacactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtac  
cccctaaatctataaaaaataaaaaa-----
```

>Human

```
TCACCATGCACCTAGCTTACACCTTGCTCTCTATT-GATAATAATAAAAAGAAAAATTCCTAAGAGAGAACATGATATT  
TGCATTATTATTAGAGCTGTGTAACACACTACCTG---AAAACCTAGTGACTATAGCTAACA---aaaatgtactg  
tactcagatgatggaaaccctaaatgccctaacttgaccactatacattatatacatgtaacaaaatTTTACATATAC  
cccataaatttGTGTAATAACAA---AAAACCTTAGTGATTTAAA---ACAACAGTATTATTATGTGCGCAGTAAGT  
CAGGAATCCTAGCACAGTTTAGCTGGGTCTGTG-CTCTGACTCTCTCACAAAGGCTACAATCAAGGAGCTGGCTAG
```

>Chimp

```
TCACCATGCACCTAGCTTACACCTTGCTCTCTATT-GATAATAATAAAAAGAAAAATTCCTAAGAGAGAACATGATATT  
TGCATTATTATTAGAGCTGTGTAACACACTACCTG---AAAACCTAGTGACTATAGCTAACA---aaaatgtactg  
tactcagatgatggaaaccctaaatgccctaacttgaccactatacgttatatacatgtaacaaaatTTTACATATAC  
cccataaatttGTGTAATAACAA---AAAACCTTAGTGATTTAAA---ACAACAGTATTATTATGTGCGCAGTAAGT  
CAGGAATCCTAGCACAGTTTAGCTGGGTCTGTG-CTCTGACTCTCTCACAAAGGCTACAATCTAGGAGCTGGCTAG
```

>Orangutan

```
TCACCATGCACCTAGCTTACACCTTGCTCTCTATT-GATAATAATAAAAAGAAAAATTCCTAAGAGAGAACATGATATT  
TGCATTATTATTAGAGCTGTATAACACATTACCTG---AAAACCTAGTGACTATAGCTAACA---aaaatgtactg  
tactcagatgacggaaaccctaaatgccctaacttgaccactatacattatatacatgtaacaaaatTTTACATATAC  
cccataaatttGAGTAATAACAA---AAAAC--AGTGATTTAAA---ACAACAGTATTATTATGTGCGCAGTAAGT  
CAGGAATCCTGGCACAGTTTAGCTGGGTCTGTG-CTCTGACTCTCTTACAAGGCTACAATCAAGGAGCTGGCTAG
```

>Baboon

```
TCACCATGCACCTAGCTTACAACCTTGCTCTCTATT-GACAATAATAAAAAGAAAAATTCCTAAGAGAGAACATGATATC  
TGTATTTATTATTAGAGCTGTATAACACATTATCTG---AAAACCTAGTGACTATAGCTAACA---aaaatgtattg  
tactcagatgatggaaaccctaaatgctctaacttgatcactagacattatatacatgtaacaaaatTTTACATATAC  
cctataaatttGTGTAAGTAACAA---AAAACCTTAATGGTTTAAA---ACAACAGTATTATTATGTGCGCAGTAAGT  
CAGGAATCCTAGCAAAGTTTAGCTGGGTCTGTG-CCCTGACTCTCTCACAAAGGCTACAATCAAGGAGCTGGCTAG
```

>Rhesus

```
TCACCATGCACCTAGCTTACAACCTTGCTCTCTATT-GAAAATAATAAAAAGAAAAATTCCTAAGAGAGAACATGATATC  
TGTATTTATTATTAGAGCTGTATAACACATTATCTG---AAAACCTAGTGACTATAGCTAACA---aaaatgtattg  
tactcagatgatggaaaccctaaatgctctaacttgatcactagacattatatacatgtaacaaaatTTTACATATAC  
cctataaatttGTGTAAGTAACAA---AAATCTTAATGGTTTAAA---ACAACAGTATTATTATGTGCGCAGTAAGT  
CAGGAATCCTAGCAAAGTTTAGCTGGGTCTGTG-CCCTGACTCTCTCACAAAGGCTACAATCAAGGAGTTGGCTAG
```

>Marmoset

```
TCACCATGCACCTAGTTTATACCTTGTTCTCTATT-GATAGTAATAAAAAGAAAAATTCCTAAGAGAGAATATGATATC  
TGCATTATTATTAGAGCTCGTGAACACATTACCTC---AAA-----ACTATAGCTAACA---aaatgtattg  
tattcagacaatggaaaccctaaatgccctaacttgaccacaatacaatatatatatagcaaaaactTTTACATATAC  
tccataaatttGTGTAATAACAA---AAAACCTTAGTGTTTAAA---ACAACAATTTTATTATGCCACAGAAAGT  
CAGGAATCCTAGCACAGTTTAGCTGGGTCTTGT-CTCTGATTATCTCACAAAGGCTACAGTCAAGGAGCTGGCTAT
```

>Tarsier

```
-----ACCTGGTTTACACATTGTTCTTTATTAATAACAATCAAAGATAAATTTATAAAAAGAGA--TTTATGTC  
TGTTTCAGTAATTTATAGCTGCATAACATATTACCTC---AAAATTTGGTGGCTATAGTTAACA---aaaatgattg  
cactcaggtgtagacttcctaaattccctgacctactcaccagcactatatacaggtaacaaaatTTTACAGGTAT  
ctcacaatTTTGTACAAAC-aca-----AAA---AGTGACAAAAA---ACAACAGTATTTACTATATCACAGTAAGC  
CAGGAATCCAAGCACAGTTTAGCTGGGTCTTGTG-CTCTGATTATCTCACAAAGGCTACAATTAAGGAGCTGACTGG
```

>Bushbaby

```
---CTATGCCCTGACCTGCATCCTGTTTTTTTATT-GCTAATAATTACAGATAAATCTC-AATGGAGG-CGTGATGCC  
TATATTAGCTGTTTAGAGCTGCCTAACACATCACCTC-----  
-----AAAACCTTAGTGTTCTCAA---ATAACAATGTTTACTTTCACTGCAAGT  
CAGGAATCCAAGCACTCTTTGGCAGCGTCTCTGTCTCTGGGTCTCACATAAGGCTGCAATCAAGGAGCTGGCTAT
```

```

>Mouse_lemur
TCACCATGTACCTGACTTGCATCCTGTTTTCTATT-GATAATAATCAAAGATAAATCTCTAATGGAGGACATGATGCC
TATATTAGTTATTTATAGCTGCATAAGACATCACTTC-----
-----
-----AAACTTAGTGGATTAAA--A--CAATATTCATTATGTCACGGTAAGT
CAGGAATCCAAGCACAGGTTAGCTGGATCCTCTGTCTCTGAGTCTCTCACAAGGCTATAATCAGGGAGTTGGCTAG
>Tree_shrew
TCACCATACACCTGCCTTACACCTTGTCTTCTATT-GACAGTAATCAAAGATGACTCACTAAGAGAGAATGTGATTTTC
TGTATTAGTTATCTATTGCTGCATAATGCCTTACCTC-----
-----
-----AAAATTTATTGGCTTGAA--ACAGCAATATTCATTATGTCACAGCAGGT
CAGGAATCTGAGCACGAGTTACCTGGGTGCTGTGGCTCAGGTTCCCTCACAAGCCTGTCATCAGGGAGCTGATCAG
>Guinea_pig
TCATTACACACCTAGCTTATACCCAGTTTTTAAA-GATAATAATCATGGATATATTTATAAGAAAGAACCTGATGTT
TTGATTAGTTA--TACAGCTACAAGACACATTACTTT-----
-----
-----GAAGACTAGTGAAGTAAA--ATGACAATACTCATTATGTTACAGTGAGT
CTGAAATTTGAGCACAGCATACTTGG-TGCTCTGGCTC-GGTGTTGCTCCTAGGCTGCAGTTGAGGAGCTGATCAG
>Dog
TCACCACCCACTTGGTTTTGTACCTTATTCTCTATT-GATAGCAATCAAAGATTAATCCCTAACACAGAACATGATGTC
TGTATCAGTTATCTATAGCTGCATAACGCATTACTTC-----
-----
-----AAACCTTAGTAGCTTAAA--ACAGTAATGTTTATTATGTCACAGCCTGT
CTGGAATCCAAGCACAGGTTAGCTGGGTCTCTGACTCT-GGTCTCTCACAAGGCTGCAGTCAAGGAGTTGCCTAG
>Horse
TCACCATGCACCTGGCTTACATCTTGTCTCTATT-GATAGCAATTAAGATAAATCCCACAACAGACCGTGATGTC
TGTATTAGTTA-----TGCATAACACATCACTTC-----
-----
-----AAACTTAGTGGCTTAAA--ATAACAATACTCGTTATGACACAGCATGT
CAGGAATCCAAGCACAGCTTAGCTGGGTCTCTGGCTCTGGGTCTCTCACAAGTTGCAATCAAGGAGCTGGCTAG

```

Marker L43

>L1PB4_3'-End

```
-----tcatgtcttttgcagcaacatggatggaactggaggccattatcc
t-----aagtgaataaactcagaaacagaaagtcaaataccgcatgttctc
acttataagtggg---agctaaacaatgkgtacacatggacatacagagtggaataatagacactggagactcmgaaa
gggaggagg---tgggagggggggtgagggatgagaaattacctawtgggtacaatgtacactattcgggtgatggkta
cactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtaccccct--aaatctataa
aaataaaaaaa-----
```

>Human

```
ACAAA--CATAAGTCTTCTCTT-TCTCAAATTAATATGACTCTAATTTTAGATGTAGGTGAAGAAAGGAGAAAGAA
GCAAGT--CATTAA---AAAGCAAGTATTA----agtgaacaaggcaggtacagaaagacaaatatcacatgttctc
actcataagtggg---tgctaaaaaatgtgttcacatggacatagagaatggaatgatagataatggacactc--aaa
ggggtgagaaagtggaaagaggggaaaatgataagaaattathtaattgggtataatgtatgttattcaggtgatggata
ccctgaaagctcttacttggcaaatatgcagcctatgtatgcaataaaaattgcacatgtatccc--ataaatgtatac
aaata-----AACATAAAAA---TTATTTTTTT---AATTACATAAATTCATTTT--TGGACATATTCTGTAATATC
TCCATATTTACTTTCAAATTCTCACCC--TTATACACCCATAGCAGGAATGATACACACAAAATTTAATTATGCTACTCC
TCTGTTTAGAATCTTTCAAAG-GGTTTT-AT-CTTATCTTAGGATAATATCT
```

>Chimp

```
ACAAA--CATAAGTCTTCTCTT-TCTCAAATTAATATGACTCTAATTTTAGATGTAGGTGAAGAAAGGAGAAAGAA
GCAAGT--CATTAA---AAAGCAAGTATTA----agtgaacaaggcaggtacagaaagacaaatatcacatgttctc
actcataagtggg---tgctaaaaaatgtgttcacatggacatagagaatggaatgatagataatggacactc--aaa
ggggtgagaaagtggaaagaggggaaaatgataagaaattathtaattgggtataatgtatgttattcaggtgatggata
ccctgaaagctcttacttggcaaatatgcagcctatgtatgcaataaaaattgcacacgtatccc--ataaatgtacac
aaat-----AACATAAAAT---TATTTTTTTT---AATTACATAAATTCATTTT--TGGACATATTCTGTAATATC
TCCATATTTACTTTCAAATTCTCACCC--TTATACACCCATAGCAGGAATGATACACACAAAATTTAATTATGCTACTCC
TCTGTTTAGAATCTTTCAAAG-GGTTTT-AT-CTTATCTTAGGATAATATCT
```

>Orangutan

```
AAAAA--CATAAGTCTTCTCCT-TCTTAAATTAATATGACTCTAATTTTAGATGTAGGTGAAGAAAAGGAGAAAGAA
GCAAAT--CATTAA---AAAGCAAGTATTA----agtgaaccaaacagggtacagaaagacaaatatcacatattctc
actcataagtggg---tgctaaaaaatgtgttcacatggacatagagaatggaatgatagataatggacactc--aaa
ggggtgaaaaagtggaaagaggggaaaatgataagaaattathtaattgggtataatgtatgttattcaggtggtggata
ccctgaaagcccttacttggcaactatgcagcctatgcatgcaacaaaattgcacgtgtatccc--ataaatgtatac
aaat-----AACATAAAAA---TTATTTTTTT---TAAATTACATAAATTCATTTT--TGGACATATTCTGTAATATC
TCCATATTTACTTTCAAATTCTCACCC--TTATACACCCATAGCGGAATGATACACACAAAATTTAATTATGCTACTCC
TCTGTTTGAATCTTTCAAAG-GGTTTT-AT-CTTATCCTAAGTTAATATCT
```

>Baboon

```
ACAAA--CATAAGTCTTCTCTT-TCTTAAATTAATATGATACTCTAATTTTAGATGTAGGTGAATAAAGGAGAAAGAA
GCAAGT--CATTAA---AAAGCGAGTATTA----agtgaacaagccaagtagacagaaagacaaatatcacatattctc
actcataagtggg---tgctaaaaacttttttcacgtggacgtagagaatggaatgatagataatggacactc--aaa
ggggt---aagtggaaagaggggaaaatgacaagaaatcatttaattgggtataatgtatgttattcaggtgatggata
ccctgaaagcccttacttggcaactatgcagccgatgcatgcaacaaaattgcacatgtatccc--ataaatgtatac
aaataaata----AAAGTAAAAA---ATTTTTTT---AATTACATAAATTCATTTT--TTGACATATTCTGTAATATC
TCCATATTTACTTTCAAATTCTTACCC--TTATACACCCATAGCAGGAATGATACACACAAAATTTAATTATGCTACTCC
TCTGTTTGAATCTTTCAAAG-GGTTTT-AT-CTTATCTTAGGATAATGTCT
```

>Rhesus

```
ACAAA--CATAAGTCTTCTCTT-TCTTAAATTAATATGATACTCTAATTTTACACGTAGGTGAATAAAGGAGAAAGAA
ACAAGT--CATTAA---AAAGTGAGTATTA----agtgaacaagccaagtagacagaaagacaaatatcacatattctc
actcataagtggg---tgctaaaaactgttttcacatggacgtagagaatggaatgatagataatggacactc--aaa
ggggt---aagtggaaagaggggaaaatgatgagaaatcatttaattgggtataatgtatgttattcaggtgatggata
ccctgaaagcccttacttggcaactatgcagccgatgcatgcaacaaaattgcacatgtatccc--ataaatgtatac
aaataaata----AAAGTAAAAA---TTATTTTTTT---AATTACATAAATTCATTTT--TTGACATATTCTGTAATATC
TCCATATTTACTTTCAAATTCTTACCC--TTATATACCCATAGCAGGAATGATACACACAAAATTTAATTATGCTACTCC
TCTGTTTGAATCTTTCAAAG-GGTTTT-AT-CTTATCTTAGGATAATGTCT
```

>Marmoset

ACAAA--CGTAAGTCTTCTCTT-TCTTAAATCAATATGGCACTTAAATTTTAGATGGAGGTCAAGAAAAAAGAAAGAA
GCAAGT--CTTTAA---AAAGCAAGTATTA----agtgaaataagccaggtacggaagacaaatcacatattctc
acccataagtggg---taccaaaaaatgtgtccacacagacgtagagaatggaatgatagataatggagactc--aaa
ggggtgagaaagtgggaagagaggaaattatgagaaattagttaatgggttgtaatgatggattcaggtgatggata
cctggaaagccctgacttggcaactgtgcagcctatgcatgcaacaaaattgcatgtgtatccccataaatgtatac
aaataaata---CTAGTAAAAA---TTATTTTT-GAAAATTATGTAATTCATTTTTCTTGGGCATATTCTCTAATGTG
TCCATATTTATTTTCAAATTCTCACCC-TTATACAGCCAAAGCAGGAATGATACACGCAAATTTAATTCTGCCACTCC
TTTGTTTGAAATCTGTCTAAG-GGTTTT-AT-TTTATCTTAGGATAATGTCT

>Tarsier

ACAAA-GTAAAAGTCTTCTTTTTCTCTTAAATTAATG----ACATTAATTATAGACTAAGGTGAAGAAAT---AAGAA
GCAAGT--CATTAA---AAGACAAGTATTA----atggaaacaagtttagtcacagaaagacaaatcacatgggtctc
attcaaaagtgggtgggtgctaaaaaaa-attcacattgatgtgcagagtggaatggtagataatggagatt--aaga
aggttaaggggatgg-aaggggaaaaatgatgagaaattaattaccaaatacaatgtatgttactcaggtgatagata
tcctaaaacccttgacttgaccactatgcaacctatgcaagtaacaaaatcgcacatgtacctc--ataaatgtatac
aaattga-----AAAGTAAGAT---TCATTTTT-AAAATTACATAATTTACTGTCTTGAGTATGTGCTGCAACATG
CCCATATTTATTTCTCAAATTCTCACCC-C-GTACATCCACAGCAGAAATGATG-ACATGAATTTAATCATGCCACTTC
TCTGCTTAAAATCTTTCAAAT-AATTTT-GT-CTTATTTTAGGATAATGTCT

>Bushbaby

ACAAA-GAATAAGTCTTCTCTT-TCTTAAATTAATATGACACTCTAATTTTAGATTGAGATGAAGAAAGGGTACAGAA
ACAAGT--CAGTAA--AGGGTAAGTAGAA-----

-----ATCATTTTTTAAACTAAGTCATTGATTTTCTTGGGTATGTTCTGTAATATG
TCCACATTTACTGCTAAATTCTCACTG-TCGTACACCCACAGCAGGAATGATAAACACAAATTTAACTCTTTAACCC
TCTGTTTTAAAGTATTTTACAG-GATTTT-AC-CTT-TCTTAGTGTAATATCT

>Mouse_lemur

ACAAA-GAATAAGTCTTCTCTT-CCTCAAATTAATATGACACCCTAATTTTAGATTGAGGTGAAGAAAGTGGAAAGGA
ATAAGT--CACTAA--AGAACAAGTAGAA-----

-----ATC-AAATTTTAAATTATGTAATTGATTTTCTTGGATATGTTCTGTGCTATG
TGCATATTTACTCTCAAATCCTCACCA-TCGTACACCCACAGCAGGAATCGGAAACCCAAAGTTAACACACCACACC
TCTGTTTTAAATCTCTCAGAC-GATTTT-AT-CTT-TCTAGGGATAATGTCT

>Tree_shrew

-----AGTCTTCACTT-TCTTAAATTAATACGACATTC-AGTTTCAGATTGATGTGAAGAGAGGGGAAAGAA
GTAAGTCACACAAA--AAAATAGGTAGAT-----

-----ATCAGGTTTTT-AATTATGTCATTGATTTCTTTGGGTATATTCTGAAATATA
TTTGTATTTACACTCAAATCCTCCCC---ATCTGCTCACAGAAGAAATGATAAGCAGAAATTTAATCAGACCACTCC
TCTGTTTTAAATCTTTCAAAG-GACTTC-AT-AGTATCTTAGGATAATGTGT

>Dog

ACAAAAGAACAAGTTTTCTCTT-TCTTAAATTAATA--GCACTCTAGTTTTAAAGTGCTAGTAAAGAAAGGATGAAGAA
GCAAAT--CATTAA--AAAA-AAGTAGAA-----

-----ATCATTTTT--AAATTCAGTAATCAACATTGTTGGGTACTCTGTGGTATG
TCCATATGTCAT-TCAAATCCTTGCC- TTGTGTACTCCAGCAGAAACCACAAAGACCAACATATTCTGGTCACCCCT
TCTATTTAAAATCTTTCAAAGTGTTTTTAAT-CTCATTTTAAAGATAATGTCT

Marker L70

>L1PB4_3'-End

```
-----  
-----  
-----gggagctaacaatgkgtac  
acatg-----gacatac--aga--gtgg-----  
--aataatagacactgggagactcmgaaaggtgggaggggtgggaggggggtgagggatgagaaattacctawtgggtac  
aatgtacactattcgggtgatggktacactaaaagcccagacttcaccacta---cgcaatatatccatgtaacaaaa  
ctgcacttgtaccccctaaatctataaa----aataaaaaaa-----  
-----
```

>Human

```
TTTTTCTAGGCTTGGG-TGC-ATTGATTATTC-----TTTGTTTAAAATATGATGACACAGTAAATATTCCTCTTTT  
GCGCTGTGTTACC-AATTTTTGATGTACCAGTGTTCCTGTAGT---CTTATTTACATAAAGGCTCTTTTAAATACAT  
A--CCATTCTTAATTTAAATATAACTACT-AAAA-----TTGTATATCTCTACTGCAAATGGAGATACCATGTTAC  
TTGCAATAGATAGGAG----AAA-ACCATTAAA----atggaaac--agagtgtgg-----  
--aatgatagacaatgggagacctggaaggttgcaggggtgggaagggagtgaggagataagaaatcacttactgggtac  
aatgtacgttattcaggtgatggatgcag-aaaaaccctgtcttcgccactatacagtaatatatgcatgtagcaaaa  
taacacctggactcca-aaatttatacc----AAAAGCCCCCAG-----AAAAGCATAACTACTACAAAAA---TCTA  
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACACTTATGCATCTG-CTACCTTTTGCAAAGC-  
ACTACTCAATTTTACCATTTATTAATTATCAAAAAGACAG-ACT-TTTAAGAGAGAGATTTTCTGTGGTATATTTATA  
GATCATTGTACAATCATAGCTTATAAAAAG-ACATACATTGGTAAGA--GTTTGAACAGA-TCTTTGGATACTC
```

>Chimp

```
TTTTTCTAGGCTTGGG-TGC-ATTGATTATTC-----TTTGTTTAAAATATGATGACACAGTAAATATTCCTCTTTT  
GCACTGTGTTACC-AATTTTTGATGTACCAGTGTTCCTGTAGT---CTTATTTACATAAAGGCTCTTTTAAATACAT  
A--CCATTCTTAATTTAAATATAACTACT-AAAA-----TTGTATATCTCTACTGAAAATGGAGATACTATGTTAC  
TTGCAATAGATAGGAG----AAA-ACCATTAAA----atggaaac--agagtgtgg-----  
--aatgatatacaatgggagacttgggaaggttgcaggggtgggaagggagtgaggagataagaaatcacttactgggtac  
aatgtacgttattcaggtgatggatgcag-aaaaaccctgtcttcgccactatacagtaatatatgcatgtaacaaaa  
taacacctggactcca-aaatttatacc----AAAAGCCCCCAG-----AAAAGCATAACTACTACAAAAA---TCTA  
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACACTTATGCATCTG-CTACCTTTTGCAAAGC-  
ACTACTCAATTTTACCATTTATTAATTATCAAAAAGACAC-ACT-TTTAAGAGAGAGATTTTCTGTGGTATATTTATA  
GATCATTGTACAATCATAGCTTATAAAAAG-ACATAAATTGGTAAGA--GTTTGAACAGA-TCTTTGGATACTC
```

>Orangutan

```
TTTTTCTAGGCTTGGG-TGC-ATTGATTATTC-----TTTGTTTAAAATATGATGACACAGTAAATATTCCTCTTTT  
GCACTGTGTTACC-AATTTTTGCTGTACCAATGTTTCCTGTAGT---CTTATTTACATAAAGGCTCTTTTAAATACAT  
A--CCATTCTTAATTTAAATATAACTACT-AAAA-----TTGTATATCTCTACTGAAAATGGAGATACCATGTTAC  
TTGCAACAGATAGGAG----AAA-ACCCTAAA----atggaaac--agagtgtgg-----  
--aatgatagacaatgggagacttgggaaggttgcaggggtgggaagggagtgaggagataagaaatcacttagtgggtac  
aatgtacgttattcaggtgatggatgcac-aaaaaccctgacttcgccactatacagtaatatatgcatgtaacaaaa  
taacacctggattcca-aaatttatacc----AAAAGCCTTCAC-----AAAAGCATAACTACTACAAAAA---TCTA  
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACACTTACGCACCTG-CTACC--TTGCAAAGC-  
ACTACTCAATTTTACCATTATTAATTATCAAAAAGCAG-ACT-TTTAAGAGAGATTTTCTGTGGTATATTTATA  
GATCATTGTACAATCATAGCTTATAAAAAG-ACATAAATTGGTAAGA--GTTTGAACAGA-TCTGTGGATACTC
```

>Baboon

```
TTTTTCCAGGCTTGGG-TGC-ATTGATTATTC-----CTTTTTAAAATGTGATGACACAGTAAATATTCCTCTTTT  
GCACTGTGTTACCTAATTTTTGCTGTACCAATGTTTCCTGTAGT---CTTATTTACATAAATGCTCCTTTTAAATACAT  
A--CTATTCTTAATTTAAATGTAATACTACTAAAAA-----TTGCATATCTCTACTGAAAATGGAGATACCATATTAC  
TTGCAATAGATAGGAG----AAA-ACCATTAAA----atgaaaac--agaatgtgg-----  
--aatgatagacaatgggagacttgggaaggttgcaggggtgggaagggagagagataagaaatcacttagtgggtac  
aatgtacattattcaggtgatagatgcac-aaaaatcctgtcttcgccactatacagtaatatatgcatgtaacaaaa  
taacacctggactcca-aaatttatacc----AAAAACCCTCAC-----AAAA-CATAACTACTACAAAAA---TCTA  
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACATTTATACACATG-CTACCTTTTGTAAAGC-  
ACTGCTCAATTTTATCATTATTAATTATCAAAAAGCAG-ACT-TTTAGGAGAGATAGTTTCTGTTGTATATTTATA  
GATCATTGCACAGTCATAGCTTATAAAAAT-ACGTAAATTGGTAAGA--GTTTGAACAGA-TCTTTGGATACTC
```

>Rhesus

TTTTTCCAGGCTTGGG-TGC-ATTGATTATTC-----CTTTTTAAAAATGTGATGACACAGTAAATATTCCCCTTTT
GCACTGTGTTACC-AATTTTTGCTGTACCAATGTTCTGTAGT----CTTATTTACATAAATGCTCCTTTTAATACAT
A--CTATTCTTAATTTAAATGTAACACTACTAAAAA-----TTGCATATCTCTACTGTAAATGGAGATACCATATTAC
TTGCAATAGATAGGAG----AAA-ACCATTAAA----atgaaaac--agaatgtgg-----
--aatgatagacaatggagacttggaaggttgcaggggtgggaaggggagaaggagataagaaatcacttagtgggtac
aatgtacattattcaggtgatagatgcac-aaaaatcctgtcttcgccactatacagtaatatatgcatgtaacaaaa
taacacctggactcca-aaatttatacc----AAAAGCCCTCAC-----AAAAGCATAACTACTACAAAAA---TCTA
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACATTTTATACACATG-CTACCTTTTGTAAAGC-
ATTGCTCAATTTTATCATTATTATAAATTATCAAAAGGCAG-ACT-TTTAGGAGAGATAGTTTCTGTTGTATATTTATA
GATCATTGCACAGTCATAGCTTATAAAAAAT-ACGTAAATTGGTAAGA--GTTTGAACAGA-TCTTTGGATACTC

>Marmoset

TTTTTCCAGGACTTGG-TGC-CTTGATTATTCCTCTTTTTTTTTTTTAAATACCATGTCACACTAAATATTCCTCTTTT
GCACCGTGTTC--AATTTTTGCTGTATGAATGTCCCTTTTGTGTAGCTTATTTATACAAAAGCTTTCTTTAATACAG
A--ACATTCTTAATTTAAATGAAACGACTGAAAT-----TTGTATATCTCTACTGTAAATGGAGATACTATATTAT
TTGCAATAGATAAGAG----AAAAACCATTAAA----atgaaaac--cgattttaattgaaaattaaatcacattcc
ataatgatagacaatggagacttggaaggttgcaggtgcggtgggaagggagtggaagataagaaatcacttagtgggtac
aatgtacattgttcaggtgatggatgcactaaaaactttgacttcgccaccatacactaatatatgcatataacaaaa
tagcacttatactcca-agatttatacc----AAAAGCCCTCAC-----AAAGGCATAGCTACTACAAAAA---TGTA
CCTGTGCTC-----CACCCA-----AAATCATCTTGCACATCAACAGTTTATACACATG-CTAGCTTTTGTCAAAGC-
ACTGCTCAGTTTTACCATTTATTAATTTTTTAAAAGGCAG-AAT-TTTAAGAGAGATATTTTCTGGGTTATATTTGTA
GATCATTGTACAATTATAGCTCATAAAAAG-ACATAATTGGTAAGA--GTTTGAACAGA-TCTTTGGATACGC

>Tarsier

TCTTCCCAGACTCCAG-CACAATTGATTATTC-----TCTTC-----ATACCATGACACAGTATATATTCCTCTTTT
ACAATATTTCCC-AA-TTTTGTGCTGCCCAATGTTCTTTACT----CTTATTTACTCAGTAACTTTCTTTAACATAT
A-CCCATTTTTAATTTAAATAAGACTACT-AATA-----TTTTGTGTCTCTACCATAACTGGAGATATAATGTTAC
TTGCAATAGATAAGAG----AAA-ATCATTAAAG----ataaaaacatagaatgtgg-----
--agtgacagacaacagatacacttagaagggta-aagggcaggatggg-gtggatgataagaaattctttaatgggtac
aatgtacattatttgagtgatgaatacac-taaagccctgacttcaccattgtgcagtaataacacatgt-----
----acatgtatcccatacatttatgcc----AAAATAATCCAC-----AAAAACATAACTACTACAAAAA---TCTA
ACTATGGTC-----CATACA-----AAATCATCTTATATATCAACAGTGGTACATATT-TTACCTTTTGTCAAAC-
ATTGCTCAATTGTACTGTTACTCAAATTATCAAAATGCAG-AC---TTAAGAGAGATATTTTCTGAAAGCTCTTTATA
GAACATTGAATAATCACAGCCTATAAAAAT-ACATACATTTGTAAAAGGTTTAAAGCAA-TCTTCAAATAATC

>Bushbaby

-CTTTTCAGGATCAAG-CACAGTTGATTATTC-----CTTTCTTT--ATACCATAACAGAGGACATATTCCTCTTGT
GCACTGTGTTCCC-AGTTTTGACTGTACCAATGTT-CTGCAGT----CTTATTTACTTAAAAGCTTTCTTTAATATAC
A-CACATTCTTAATTTAAATAAAACTATT-AAACAT-----TTTTACATTTCTACTGTCAATGCAGATACAATGTTAC
TCACAATAGATGCATG-----

-----CAAACCCACAAA-----AATAAAAAACATTGCTACAAACA---TCTA
ACCATGCTC-----CATCCA-----AAATCACCTGCGCCCAACAATGATGAACACA-CTACCCTTTGTCAAAGCA
AGTGTTCAATGGTACCGTTTGTCAAATTATCAAAAGGCAG-AATTTTAAAGAGAGAGATTATCTGGAGAATATTTCTA
GGCCATTGCACAAATATAGCTCACAAAATG-GCATCAATTTGTAAAAGGATTTAAACAAA-TCTTTGGATAATC

>Mouse_lemur

TCTTTTCGGGCTCAAG-CACAGTTGATTATTC-----CTTTCTTT--ACACCATGACATAGGATATATTCCTCTTTT
GCACTGTGTTCCC-AATTTTTTCTGTACCAATATTCTGTAGT----TGTATTTACTTAGTAGCTTTCTTTAATATAT
A-TTCATTCTTAATTTAAATAAAACTACT-AAAATT-----TTTTACATCTCTACTGTAAATGGAGATACAATGTTAC
TTGCAATAGATCTGTG-----

-----AAAACCATAAAA-----ATAAAAACA-TTACTATAAATA---TAT-
---TTGCTC-----CATCCA-----AAATCATCTGACA---TAACCATGATGCACATG-CTACCTTTTGTCAAAC-
ATTGCTCAATTATAACATTTGTCAAATTAACACAAGGTAG-ACT-TTATAGAGAGAGATTTTCTGGAGAATATTTTACA
GGCCATTGTATGATCATAGCTCATAAATAG-ACATAAAACTGTAAAAGGTTTAAACAAA-TCTTTGGATAATC

>Mouse

TCTTTCTAGATTCAAATAACAGTCACTTATTC-----TTTCATT---AGAAAATCATAGAGTATATACTTTTC-TTT
ACATTATTTTCT-AATGTTTGTATAGCAA-ACTAAATATAT----CTTGTTTTCTTAATAACATTCACAAACATAT
AGATGATTATTAACCTAAATAATACTGCT-TTAAAAAGAACATTTGTATTTCTGCACTAAATGGAAACTCAGTGTGAC
TTGCATTAGATATGAG-----

-----AAACCCATCAAA-----ATAAAAAAATAAATTGCTACAA---AAA-
TCTGTCTGCACCCAACATTTTTTAACATCATCTTGCATAACAACACTGGCATATTGG-TG---CTCTTACAAT-ACC
ACCCACATGCACTGTTGATTGCATCATT-GAAAATCC-AAG---TTACAGAGAG--AAGTTCTGGCAAATATTTCCA
GGGCATTATATAAAT-----TATGGAAGG--GTAAATTTGTGAAA--GATTGGATATG-TCTTTTGGT-ACC

>Guinea_pig

T-CTTTTCAGGCTCAAA-CACAATTGATTATTC-----TTTCCTTC--ACATAATCATGCAGTGTATATTCT---TTT
ACACTATTATCCC-CTTTTTGCAGTGTGGATTC-ACCTGTGAT---CTTG---TTGAATAGCTTTTCATTAACATGC
A-ACCATTCTTAACCTATATAAAGCCACT-GTAAACAGCA-----CTGTACT-----TTAC
TTGCAATAGATATGAA-----

-----AAAACCCATAA-----AAATAAAAAACATCTCTATAGAA--ATCT
AACTGTGCC-----CTTCCT-----AGTATTG--TGCACAGAACTCACGATATGTATGCTG----CTTTTGGAAAT-
TCTGCCCACTCGTACTATTTATTAATTAT--GTTG-TGG---TTAAAGAGAG--ATTTGTGGAGAATATTTTACA
GGTCACTGTACAACCATCCC-TGCAAAAGT---TAAATTTGTAAAT--GTGATTATCACACCTTTAGATGATC

>Dog

TCATTTCAAGGCTCAAG-CACAATTGATTATTC-----CTTTCTTT--ATGCCTCCATACACTGTATATTCCTCTTTT
GTATTGTTTTCCC-AATTTTTGCTGTAACAGTGTATCTGTAGT---CTTACTTACTTAATAGCTTTCTTTTACATAT
A-TCCATT-TTAACTTAAATAGAACTATC-CAAAAAGGAAATGTTCTATTTCTGCTATTTCATGGACATGCAGTGTAT
TTGCAGTAGATATGAG-----

-----AAAAACATAAAA-----ATAAAAAATATAACTATTACAAAAATCTA
TCAATTGCC-----CATGTA-----AAATCATCTCACACATCAGTGGCAATACACATG-CTACCTTTTGGAGCAT-
GCTGCTCAATTGTACCACTTATCAAATTATCCA-----AAGATTTATA
GGCCTTAGTATGATGATGGCTTATAAAAAAGATAGAAATT--TAAGAGGGTTTAAACAAA-TCTTTAAATAATC

>Horse

TCATTCCAAGCTGAAG-CACGGTTGATTATTC-----CTTTCTTT--ATACCATCATAGAGTGTATATTCCTCTTTT
GCACTGTTTTCCC-AA-ATTTGCTGTAATTGTGTACCTGTAGT---CTTGTTAACTTAATAGCTTTCTCTAATGTAT
A-TCCATTCTTAATTCAAACAAAATATT-CAAAAAGGAAACGTTATGTCTCTAGTGTAAATGGAGATGCAGTGTAC
TTGCAATAGATATGAG-----

-----AAAACACAGAA-----ATAAAAAACAATCTCTAGAAAA--ATCA
AACAATGCC-----CAGGTA-----AAATCATCTTGCATATCAATGTGAG---ACATG-CTACCTTTTGGAAAGC-
TCTGCTCAACTGTACCGCTTACCAAATTATCCAAATGTAG-GCTTTTAAAGAGAGA--TTTTCTGGAGAAGATTTACA
GACCATCATACAATCCCAGCTTATAAAAAAGATATATATTTGTAAAAAGGGCTAAACAAA-TCTTTAAATAATC

Marker L77

>L1PB4_3'-End

-----ctggagactcmgaaaggtgggaggggtgggaggggggtgagggatgagaaattacctawtggg
tacia-----tgtacac-----tattcggggtg
atggktacactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtaccccctaaatc
tataaaaataaaaaa-----

>Human

GGATGAAATATTCCAGGCACCAAGAA-GGTGCTT-ATACCAAAGCTATCGGTCTCCCCCTCTCAGTAACTCCAAGAT
CCCAAACAGCTATACTTGCT----AAATGTGTGTAA----tgtacactattgtgtacccaaaaaccactatttgggta
gtggttacaataaaaaatccagacttcaccactgtgtagtatatccttgtagcaaaaactgcacttgtgccacttaaatt
tatataaataaatag--ata-----AAT-AAATATATTCTGAA----TACCATAACACTTA--TCTGTATCATAG
CCTTCTCATCATATTCTAATCACATGTTTATTCTG-----TCTGTGTTTACAGACAGTG

>Chimp

GGATGAAATATTCCAGGCACCAAGAA-GGTGCTT-ATACCAAAGCTATCGGTCTCCCCCTCTCAGTTACTCCAAGAT
CCCAAACAGCTATACTTGCT----AAATGTGTGTAA----tgta-----cactatttgggta
gtggttacaataaaaaatccagacttcaccactgtgtagtatatccttgtagcaaaaattgaacttgtgccacttaaatt
tat-----ata-----AAT-AAATATATTCTGAA----TACCATAACACTTA--TCTGTATCATAG
CCTTCTCATCATATTCTAATCGCATGTTTATTCTA-----TCTGTGTTTACTGACAGTG

>Orangutan

GGATTAAATATTCCAGGCATCAAGAA-GGTGCTT-ATACCAAAGCTATCGGTCTCCCCCTCTCAGTTACTCCAAGAT
CCCAAACAGCTATACTTGCT----AAATGTGTGTAA----tgta-----cactatttgggta
gtggttacactaaaaatccagacttcacaactgtgtaatatatccttgtagcaaaaactgcacttgtgccacttaaatt
tatataaataaatag--ata-----AAT-AAATATATTCTGAA----TACCATAACACTTA--CCTGTATCATAG
CCTGCTCATCATATTCTAATCGCATGTTTATTCTA-----TCTGTGTTTACTGACAGTG

>Rhesus

GGATGAAATATTCCAGGCCTCAAGAA-GGTGCTT-ATACCGAAAGCTATCAGTCTCCCCCTCTCAGTTACTCCAAGAC
CCCAATTGGCTATAGTTGCT----AAATGTGTGTAA----tgta-----cactatttgggta
atggttacactaaaaatccagacttcaccactgtgtaatatatccttgtagcaaaaactgcacctgtgccacttaaatt
tatataaataaatag--ataaata----AATATGGTATATTTTGAA----TACCATAACA-TTG--TCTGTATCATAG
CCTGCTCATCATATTCTAATCGCATGTTTATTCTA-----TCTGTATTTGCTAACAGTG

>Marmoset

GGATGAAATATTCCAGGCCCCGGGAA-GGTCCCT-ACACCAAAGCTATTGGTCTCCCCATCTCAGTTACTCCAAGAT
CCTAAAGGGCTATATTTACT----AAATGTGTGTAA----tght-----cactattcaggta
atggttacactaaaagcccagacttcaccactgtgtaatatatccttgcagcaaaaactgcacttgtgccac-----tt
tat-----ataa-----ATAAAGTATATTCTGAA----TACC-TAACACTTA--GCTGTATCATAG
CTTCTCATCATATTCTAATCACATGTTTATTCTA-----TATGTGTTTACCAACAGTG

>Tarsier

GGATGAAATGTTCTAGGACCCAAGAAGGGTAATT-ACACCAAAGGCATGTGTCTCACCCCTCTCAGTTACTCCACGAT
TTCAAATGACTATACTTGCT----CAACAAGTATCA----tggg-----cactgtatggggtg
atgattacactaagagtctagaccttaccagtaagcaatatatccacaaaaacaaaattgtatttatatcccttaaatt
tacagaaataaaaatgtaaaaa-----ATAAAGCATATTCTGAA----TACCATAGCAC-----CTGTGTCAGAG
AATGCTCATCACATTCTATTTGCATGTTTATTTA-----TGTCTTTATCAACAACA

>Bushbaby

GGAGGAAATATTACAGACCCCAAGAAGATGACT-ACA-CAAAGGTGTCTATCTCAA-----TTGTTCCAAAAT
CCCAAAGGGCTATACTTACT-----

-----CAAAGTATGTTCTAAA----AACCATAACATTTA--TCTGTGTTGTAC
CATGCTCATCACATTCTAAATTCATGCTTATCCA-----TCTATCTTAACTGACAGTG

>Mouse_lemur

GTAGGAAATATTCCAGGTCCTCAAGAAGAGTGCCT-ATACCACAAAGTATCTGTCTCACTCTCTAAGGTACTCCAAGAT
CCCAAAGGGCTACACTTACT-----

-----CAACAGTGTATTCTGAG----TTCCATGGCATGTA--TCTGTGTCATAG
CATGCTCATCACATTCTAGTTGCAAGTTTATGCA-----ACTGTCTTTACTGACAGTG

```

>Tree_shrew
CAAGAAAATATTCCAAGTCCAATGAGAATGCCTAATACCAAAGTTTTCTGCCTCAACCTCTCATTTACTCCCAGCT
CTCAAAGCACTATACTTCCT-----
-----
-----TGGTAGCTCTGAA----TACCTTAACATTTTTTTCTGGGTTATAA
CTTGCTCATCACATTCTAATTGCATGTTAATTCATCCTTTTTGTTTTATTTTCATCTGTTTTTACCAACAGTG
>Mouse
AGCAGGAATGTGGTGGGTCTCATGAAGAATGACT--TTATGAATGGTGTGTCAGTCTAACTGTCTCACTTATTCTAAGAT
CCCAAAGTGCT-----TGCT-----
-----
-----CAAGAGCATATTTTGA-----TTCCACAGCAATCA--TTGTTCATAACAG
CATGAACTTTACCTTTTG-GTG--TGCTCATCCC-----TACTTAGTTAGTTAGCAAC
>Dog
GGG--GAACATTCCAGGCCCAAGTAAAGGGCTT-ATCTCTAAAGGTGTCTTTCTGACACTCTTCATTACTCCAAGAT
CCCAAAGGACCACATTTACT-----
-----
-----CAAAAAGTACTTTCTGAT----TACTGTAACAATTA--TCTGTGCCACAG
CATGCTCAGCACATTCTAAATACCTGTTTGTCCA-----CCTGTCTTTACTGATGGTG
>Horse
GGGTGAAATATTCCAGGCACCAAGAAGAGTGCCT-ATACCAGAAGGAGT-----AACTCTTAGTTTTTCCAAGAT
CCC-AAGGGCCAGATGTGCT-----
-----
-----CAAAATTACATTCTGAA----TACCAGAATGATTA--TCTGTGCCATAA
CATGCTCATCACATTGTAAGTGCAGGTTTGTGCA-----TCTGTCTTTACTGATAGTG

```

Marker L79

>L1PB4_3'-End

```
-----  
-----aaac---aatcaac-agagtgagagacaacctacagaatgggagaaaaatatttgcaaactatgca  
tctgacaaggggctaatatccagaatctataaggaactcaacaactca-----acaagaaaaaaacaaacaacccc  
attaaaaagtgggcaaaggacatgaacagaca-----  
-----  
-----tttttcaaagaagacatacaagcggccaacaaacatatgaaaaaatgctcaacatcactaatcatcag  
agaaatgcaaattaaaaccacaatgagataccatcttacaccagtcagaatggctattattaaaaagtcaaaaaaca  
cagatgttggcgaggatgctggagaaaaggaacgcttatacactggttggggaatgtaaattagtacaacctctatg  
gaaaacagtatggagatcttctcaaagaactaaaaatagaactaccattcgcaccca-gcaatcccactactgggtatct  
acccaaaggaaaagaaat---cattatatcaaaaagatacctgcactcgtatgtttatcgcagcactattcacaatag  
caaagatatggaatcaacctaagtgtccatcaatggatgactggataaagaaaatgtggt-----a  
tatatacaca-----tgggaacta  
ctcagccataaaaaagaatgaaatcatgtcttttgcagcaacatggatggaactggaggccattatcctaagtgaaat  
aactcag--aaacagaaagtcaaat-----accgcatgttctcacttataagtgggagctaaacaatgkgtacacatg  
gacatacagagtggaataatagacactggagactcmgaaaggtgggaggggtggga-ggggggtgagggatga-gaaat  
tacctawtgggtacaatgtaca-ctattcgggtgatggktacactaaaagcccagacttcaccactacgcaatatac  
catgtaacaaaactgcacttgtaccccctaactctataaaaaataaaaaa-----  
-----
```

>Human

```
ATGGGTTTATAGAGATAAGAGGCAATATCTTAGTAACCAACACAAGTGTCTTTCAAATCCCAGTCTCTTTTCAT---AAAC  
TCCTATTGGATTAAAT---aatcaac-agagtgagagagagcctacagaatgggagaaaaataacttgcaaactatgca  
tccaacagaaaactaatatccggaatttacaaggcactcctacaactcagtgacagcaaaaaacaacaaaaataacccc  
attaaaaagtggacaaggacatgaatatgta-----  
-----  
-----tttttcaaagaagatatacaaatgggtcagcaagcatatgaaaa-tgcttaacatcactaatcatcag  
aaaagagcaaattaaaaccacaatgagtttagcatcttataaccagttaggatggctattactaaaaatacaagaaataa  
cggatgtcgcagtaggatgagagaaaaatggaacactcatacacaattattgagaatataagttagaacaacctctatg  
gaaaacagtttggagatcttctcaaataactacaaatagaactaccattcaaacca-gcaatcccactactgggtatct  
acccaaaggaaaaaaaaa---ttgttatatcaagaagatacctgcattcatatgtttattgcaatactattcataatag  
caaagatatggaatcaacctaactgttcatctacagatgattggataaagaaaatgtggt-----a  
tacatatgtac-----aatggaacta  
ttcagtcatagaaaaagaatgaaattgtgtcttttgcactacatggatggaactggagggtcattgtcttaagtgaac  
aactcag--aaacagaaaaatactg-----tgcgttctcacttattcataggaagtaataatgtgtacacatgggca  
ta-----gagtgtagaataataggcattggagactaaaaggtgagggagtagaattgggggtagatgttga-gaaat  
tacctaattgggtataatgtaca-ttgttcaggtgatggctactctataaggccagacttcaccactacacaatatac  
tatataacaaaattatacttgtacttcttaattt---AAACCCCCAAAA--AT-----TTCCTACAGTATC  
ACTTGGAACACAGCTCTCACCTGCTCCAATATCTTCATGTCTATTGAGCAAAGGAAATTC AATAC
```

>Chimp

```
ATGGGTTTATAGAGCTAAGAGGCAATATCTTAGTAACCAACACAAGTGTCTTTCAAATCCCAGTCTCTTTTCAT---AAAC  
TCCTATTGGATTAAAT---aatcaac-agagtgagagagagcctacagaatgggagaaaaataacttgcaaactatgca  
tccaacagaaaactaatatccggaatttacaaggcactcctacaactcagtgacagcaaaaaacaacaaaaataacccc  
attaaaaagtggacaaggacatgaatatgta-----  
-----  
-----tttttcaaagaagatatacaaatggtaagcaagcatatgaaaa-tgcttaacatcactaatcatcag  
aaaagagcaaattaaaaccacaatgagtttagcatcttataaccagtcagcatggctattactaaaaatacaagaaataa  
cggatgtcgcagtaggatgagagaaaaatggaacactcatacacaattattgagaatataagttagtacaacctctatg  
gaaaacagtttggagatcttctcaaataactataaatagaactaccattcaaacca-gcaatcccactgctgggtatct  
acccaaaggaaaaaaaaaaattgtttatatcaagaagatacctgcattcatatgtttattgcaatactattcataatag  
caaagatatggaatcaacctaactgttcatcaagagatgattggataaagaaaatgtggt-----a  
tacatatgtac-----aatggaacta  
ttcagtcatagaaaaagaatgaaattgtgtcttttgcactacatggatggaactggagggtcattgtcttaagtgaac  
aactcag--aaacagaaaaatactg-----tgcattctcacttattcataggaagtaataatgtgtacacatgggca  
ta-----gagtgtagaataataggcattggagattaaaaggtgagcaagtagaattgggggtagatgttga-gaaat  
tacctaattgggtataatgtaca-ttgttcaggtgatcgtactctataagaccagacttcaccactacacgatatac  
tatataacaaaattatacttgtacttcttaattt---AAACCCCCAAAA--AT-----GTCCTACAGTATC
```

ACTTGGAACACAGCTCTCACCTGCTCCAATATCTTCATGTCTATTGAGCAAAGGAAATTCAATAC

>Orangutan

ATGGATTTAGAGCTCAGAGGCAATATCTTAGTAACCAACACAAGAGTCTTTCAAATCCCAGTCTCTTTTCAT---AAAC
TCCTATTGGATTAAAT---aatcaac-agagtgaacagagagcctacagaatgggagaaaataacttgcaaactatgca
tccaacagaaaactaatatccggaatttacaaggcacttctacaactcaatgacagcaacaacaacaaaaataacc
attaaaaagtggacaaaggacatgactatgta-----

-----tttttcaaaagaagatatacaaatgaccagcaagcatatgaaaa-tgcttaacatcactaatcatcag
aaaagagcaaattaaaaccacaatgagtttagcatgttaccagtcaggatggctattactaaaaatacaagaaataa
cggatgttgatgaggatgcagagaaaatggaacactcatacacaattattgagaatataagtttagtacaacctctatg
gaaaacagtatggagatctcacaataactacaaatagaactaccattcaacca-gcaatcccactactgggtatct
acccaaaggaaaaaaaaa--ttgttatatcaagaagatacctgcattcatatgtttattgcaatactattcataatag
caaagatatggaatcaacctaactgtccatcaacagatgattggataaagaaaatgtggf-----a
tacatttgtac-----aatggaatacta
ttcagtcatagaaaagaatgaaattgctgtctttttcaactacatggatggaactggaggtcattgtcttaagtgaac
aactcag--aaacagagaaaatactgtgctgtgcttctcacttatttggtaggaagtaataatgtgtacacatggaca
ta-----cagtgtagaataataggcattggagactaaaagggtgagggagtagaatggggatagatgttga-gagat
tatctaattgggtataatgtaca-ttgttcagggtgatggatactctataaggccagacttcaccactacacgatatac
tatatacaaaaattatacttgtactccttaattt-----AAACCCCCAAAA--AT-----TTCCTACAGTATC
ACTTGGAACACAGCTCTCACCTGCTCCAATATCTTCATGTCTATTGAGCAAAGGAAATTCAATAC

>Baboon

ATGGGTTTATAGAGCTAAGAGGCAATATCTTAGTAACCAACACAATATCTTTCAAATCCCAGTGTCTTTTAT---AAAC
TCCTATTGGATTACAT---aatcaac-agaatgaacagagagcctacagaatgggagaaaataacttgcaaactattca
tccaacagaataactaatatctggaatttacaaggaactcctacaaccaatgacagcaacaacaacaaaa--aatccc
attaaaaagtgggcaaggacatgaaatgta-----

-----tttttcaaaaggagatatacaaatggccagcaagcatatgaaaa-tgctt---atcactaatcatcag
aaaagggcaaattaaaaccacaatgagtttagcatcttataaccagtcaggatagctattactaaaaatacaaaaaataa
cggatgttgatgaggatgcagagaaaatggaacactcatacacaattgggtgagaatataagtttagtacaacctctttg
gaaaacagtatggagatctcacaataactacaaatagaactaccattcaacca-gcaatcccactactgagatct
acccaaaggaaaaaaaaa-attgttatatcaagaagatacctgcatttgtatgtttattgcaacagtatcacaatag
taaaaatattggaatcaacctaactgtccatcaacagatgattgaataaagaaaatgtgct-----a
tacatgtgtac-----agtggagtacta
ctcagtcatagaaaagaatgaaatcgtatctttttctactacatgaatggaaccggaggtcattgtcttaagggagac
aactcag--aaacagaaaagtaactg-----tgtgttctcacttattagtgagaaaataaataatgtgtacacatggaca
ta-----gagtgtagaatgataggcattggaaactgaaagggtgagggagtagaatgtggaatggatgttga-gaaat
tacctaattgctataatgtaca-tttttcagggtgatggatactctaaaaggccagacttcaccactacacgatatac
tatatacaaaaattatgcttgt-----

>Marmoset

ATGGGTTTATAGAGCTAACAGGCAGTAGCTTAGTAACCAACACAATATCTTTCAAATCCCAGTCTCTTTTAT---AAAC
CCCTATTGGATTAAAT---aattaac-agagtgaacagacagcctatggaatgggagaaaataactaacaactctgca
tccaacagaaaactagatctggaatttacaaggaattcctacaactcaatgatagcaagaacaacaaaaataatcct
attaaaaagtgggcaaggacatgaatacaaaccttttttaaaagaagatatacaaatggccagcaagcatatgaaaa
tacttaacatcactaatcatcagagaagtgc aaattaaaaccacaatgagatagcatcttataaccagtcagggtagct
aatacaaaccttttttaaaagaagatatacaaatggccagcaagcatatgaaaa-tacttaacatcactaatcatcag
agaagtgc aaattaaaaccacaatgagatagcatcttatacaagt cagggtagctattactaaaaatacaagaaataa
cagatgttgatgaggatgcagagaaaatagaacacttatacacaattggtaagaatataaattagtagcaacctccatg
gaaaacagtggtggagatctcacaataactacaaatagaactactattcaatcca-gcaatcctactactaggtatct
gccc aaaggaaaaaaat---gttatatcaaaaagatcctgcatttgtatgtttattacagcattgttccataatag
caaagatatggaatcaacctaactgtccatcaacagatgattggataaagaaaatgtggf-----a
tacatatgtac-----aatgaaatacta
ttcagtcatagaaaagaatgaagtcatgtctttttgcaactacgtggatgggactggaggccattgtcttaagtgaac
aactcag--aaacataaaaaactg-----tgtgttctcacttattagtggggagtaataatgtgtatgcatggaca
tt-----gaatatagaatgatagaccttggagactgaaagggtgagggagtagcaagtgaggatgtagatgttga-gaaat
tacctaattgggaataatttgca-ttattcagggtgatggatactctaaaaggccagacttcaccagtagcataatatttc
tatat-acaaaattgtacttttactccttaattt-----ATACCATATAAAA-TAT-----TTCCTGCAGTATT
ATTTGGAACACATCTCTCACCTGCTCAAATACCTTCATGTCTATTGAGCAAAGTAAATTCAATAC

Marker L84

>L1PB4_3'-End

```
gacatacagagtggaata-----atagacactggagactcmg
aaaggtgggaggg-----
-----tggggaggggggtgagggatgagaaattacctawtgggtacaatgtac
actattcgggtgatggktacactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgc---act
tgtaccccctaaatctataaaaaataaaaaa-----
-----
```

>Human

```
AAAATTTCTACCCATCTGTTTGTCTACATATCTATTTATTGAG-AGCATGAAGGATAAAGAAAATGTGGCAAATACC
AATATTTGGGAAATCTGGATTAAGGGAAAACAAGAATTCTTT-----TTTGGAAGTTTTT-GTAGGTC--AAA
TCATTTTATAAC---AAAAAGTTAATAA---taggggaggggtgagggatgagaaattathtaaggttactgtgtac
actatthgggtgatggctacactaaaaatgcagacttcaccagtatataatataatccatctaacaaaacaac---att
tgtac-cccaaatctataa----CAATAAAAATAA---GTTTTGT-AAATTAGAAAGACATCTTACCATTGTTTTAA
TTTGCAATTT--TTAA--TTTTTTGCAAGCGTGAACGTTTTTCATGTTTAATTGGTTTTGAGCCTTATTTACAAAGTTTT
CAATGTTTCAA
```

>Chimp

```
AAAATTTCTACCCATCTGTTTGTCTACATATCTATTTATTGAG-AGAATGAAGGATAAAGAAAATGTGGCAAATACC
AGTATTTGGGAAATCTGGATTAAGGGAAAACAAGAATTCTTT-----TTTGGAAGTTTTT-GTAGGTC--AAA
TCATTTTATAAC---AAAAAGTTAATAA---taggggaggggtgagggatgagaaattathtaaggttactgtgtac
actatthgggtgatggctacactaaaaatgcagacttcaccagtgatataatataatccatctaacaaaacaac---att
tgtac-cccaaatctataa----CAATAAAAATAA---GTTTTGT-AAATTAGAAAGACATCTTACCGTTGTTTTAA
TTTGCAATTT--GTAA--TTTTTTGCAAGGGTGAACGTTTTTATATTTAATTGGTTTTGAGCCTTATTTACAAAGTTTT
CAATGTTTAAA
```

>Orangutan

```
AAAATTTCTACCCATCTGTTTGTCTATGTATCTATTTATTGAG-AGAATGAAGGATAAAGAAAATGTGGCAAATACT
AATATTTGGGAAACCCGGATTAAGGGAAAACAGGAATTCTTT-----TTTGGAATTTTTT-GTAGGTC--AAA
TCATTTTATAAC---AAAAAGTTAATAA---taggggaggggcatggatgagaaattathtaacgggttactctgtac
actatthgggtgatggctacactaaaaatgcagacttcaccagtatataatataatccatctaacaaaacaacattatt
tgtac-ctccacatctataa----TGATAAAAATAA---GTTTTGT-AAATTAGAAAGACATCTTACTGTTGTTTTAA
TTTGCTTTT--TTAA--TTTTTTGTGAGGGTGAAGGTTTTTCATGTTTAATTGGTTTTGAGCCTTATTTACAAAGTTTT
CAATGTTTGAA
```

>Baboon

```
AAAAATTCTACCCATCTGTTTGTCTACATGTCTATTTATTGAG-AGAATGAAGGATAAAGAAAACACGGCAAATACC
AATATTTGGGAAATCTGGATTAAGGGAAAACAGGAATTCTTT-GTTCT-TTATTGGAACTTTTTT-GTAAGTA--AAA
TCATTTTATAAT---AAAAAGTTAATAA---tgggggaggggtgagggataagaaattathtaaggttaccatgtac
actatthgggtgacggctacactaaaaccagacttcaccactatgcaatatatctatgaaacaaaacaac---att
tgtacaatttaaatctataa----CAATAAAAATAA---GTTTTGT-AAATTAGAAAGACATCTTACTGTTGTTTTAA
TTTGCAATTT--TTAA---TTTTTGTGACGGTGAACGTTTTTCATATTTAATTGGTTTTGAGCCTTATTTATAAAGTTTT
CAATGTTTAAA
```

>Rhesus

```
AAAAATTCTACCCATCTGTTTGTCTACATATCTATTTATTGAG-AGAATGAAGGATAAAGAAAACATGGCAAATACC
AATATTTGGGAAATCTGGATTAAGGGAAAACAGGAATTCTTT-GTTCT-TTATTGGAACTTTTTT-GTAAGTC--AAA
TCATTTTATAAT---AAAAAGTTAATAA---tgggggagggagtgagggataagaaattathtaaggttaccatgtac
actatthgggtgatggctacactaaaaccagacttcaccactatgcaatgtatctatgaaacaaaacaac---att
tgtacaacttaaatctataa----CAATAAAAATAA---GTTTTGT-AAATTAGAAAGACATCTTACTGTTGTTTTAA
TTTGCAATTT--TTAA---TTTTTGTGACGGTGAATGTTTTTCATATTTAATTGGTTTTGAGCCTTATTTATAAAGTTTT
CAATGTTTAAA
```

>Tarsier

```
-----AAGAAAAATGTGGC---ATATT
AAATTTGGGAAATCTGGATAAAGGGAAAACAGGAATTCTTGTGTTAT-TTATGGGAACATTTTTGGTAAGTC-AAAA
TTATTTTATACT---AAAAGTTAAAAA---tggggaag-----agggatgagaaattacttagtggatagctgaac
actatthgggtgatggctacactaaaaccagacttcaccactatgcaatgtatctatgaaacaaaacaac---att
tgtaccccctaaatct-----A--TGAAAAAAA---GTTTTGA-AAATTATAAAGACATCCTTCTGTTATTTAA
TTTGCAATTT--TTAATTTTTTTTTTGGAGGATGGATA-GTTCATGTTTAATTGACTTTGAGTTTTCTTTACGAAGTTTT
```

CAGTGTTTAAA
 >Bushbaby
 AAAAATTCTATCCATTTGTTTATGTATCTATTTATTTATTGAG-AGAATGAAGGACAAAGAGAATGTGGCAAAA----
 ATCATGTGGGGAATCTGGATTAAGGGAAAACAGAAATTCCTTT-ATACTATTATTGCAGCTTTCTT-GTAAGTC--GCA
 TTATTTTACAAT-----

 -----AAAAAGTAAAAA---GTTTTTC-AAATTAGGTAGACATCTTATTGTTGTTTAG
 TTTACATTTTCTTGA--TATTTTGTGAGGATGGATGTTTTCATGTTTCATTGGCTTTGAGTCTTACTTGCAAAGTTTT
 CAGTGTTTAGA
 >Mouse_lemur
 AAAAATTCTGTCTATTTGTCTGTGTATC----TATTTATTGAG-AGAATGAAGGATAAGGAAAATCTGGCTAAATACT
 AATATTTTGGGAATCTGGATTAAGTGAAAACAGAAATTCCTTT-GTACTATTACTGTAACTTTTTTT-GTAAGTC--AAA
 TTATTTTACAAT-----

 -----AAAAAGTAAAAA---TGTTCTTCAAATTAATAGAGATCTTATTGTTGTTTAG
 TTAGTATGTTCTTGA--TTCTTTGTGAGGATGGATGTTTTCATGTTTAATTGGCTTTGAGTCTTATTTACAAAGTTTC
 CAATGTTTCAA
 >Tree_shrew
 AAAATT----CCGTTTGTCAATTTATCCATTTATTTATTGAGAAAAATAAATGAT--TAAAAATGTGGCATAATGCT
 AATATTTGGGGTATTTGGATTAAGGAATAATAGGATATTTTT-GTACT----ATTCAACTTTTTTGGTAAGTC--AAC
 TTAATTTA---C-----

 -----AAAAAGTAAAAA---GTCTTGT-GACTCAGAAATTTT---ATTGTTGTTCAA
 TTTATATTTCTTTAA--ATTTTTGCAAGGATGAATGTTTTTATTTTTAATTGGCTTTGAGTCTTAATTACAAAGTTTT
 CAGTGTTTAAA
 >Horse
 -----CCTCTCTATCCATTTGTCAAC-----TGAG-AGAATGAATAATAAAGAAAATGTGGTAAAAATATT
 AATATTTCGGAAATTTGGATTAAGGTATAACAAGAATTCCTTT-GTATTATTATTACAACGCTTTT-GTAAGTCAGAAA
 TTATTTTGAAT-----

 -----ATAAAGTAAAAA---ATTTTAC-AAGTTACATAGAC-----ATGTTTAA
 TTTGCATTT--TTTG--T---GAGTGAG--GAGGGTTTTAATGTTCAATTAGCTTTGAGTCTTATATGCAAAGTTTT
 CAATGTTCAA

Marker L85

>L1PB4_3'-End

```
-----ggggtgggaatg
-----taaat---tagtacaacctctatggaaaacagtatggagatttctcaaagaactaaa
aatagaactaccattcgatccagcaatcccactactgggtatctacccaaggaaaagaatcattatatcaaaaaga
tacctgcactcgtatgtttatcgcagcactattcacaatagcaagatatggaatcaacctaagtgtccatcaatgga
tgactggataaagaaaatgtggta----tatatacac-----
----ca-tggaatactactcagccataaaaaagaatgaaatcatgtccttttgagcaacatggatggaactggaggcc
attatcctaagtgaataactcagaaa-----cagaaagtcaaataccgcatgttctcacttataa
gtgggagctaaacaatgkgtacacatggacatacagagtggaata-----ataga
cactggagactcmgaaagggtgggaggggtgggaggggggtgagggatgagaaattacctawtgggtacaatgtacacta
ttcgggtgatggktactactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtacc
cctaaatctataaaaaataaaaaaa-----
-----
```

>Human

```
CTAACTCCACAACCTTAGTGATGGTCTGT-GCTTG--GACTAGTTATTTAATTTCCCTAGGACCTTAATACTGTCCACA
TAAGACTGTAGGATT---AAATAAAT---tagtacaacctctatggaaaacaatattggagatttctaaaagaactaaa
catagaactaccatttgatctggcaatactactactgggtatctacccaaggaaaataaatcattatattaaaaaga
tgcttgcataaggtatgtttatctcagcactattcacaattgcaagatatggaatcaacccaagtatccatcagtgga
tgattggatttttaaaatgtgggtg----tatatatat-----a
tgtgcaatggaatactactcaagcat-aagaagaacaaaatcatgtccttttgagcaacatggatggaactggaagca
a-----ttaagtg----aactcagaaa-----cagaaaatgaaacactgcatgttcttagttataa
gtgggagtgaataattcatatacgtgggcatagacactggagttataagcaggagtgaataattcatacacatgga
ataatggacactggagactgagaagagtgggaggggggtgagggatgagaaattacttgaggagtacagtggtgacta
ttcaggtaatggctataactaagagcccagatttcaccactatgcaatatatccatgtaacaaaactgcacttgtatcc
cctaaatctatatacgtttt-----AAA-AAAAAATT---ATGTCTCATGGCATAT-GTAAGCAC-TCAATTAATT
CGAG----TTATTA---ATGTTAATATTTTAGGTGAGATTA
```

>Chimp

```
CTAACTCCACAACCTTAGTGATGGTCTGT-GCTTG--GACTAGTTATTTAATTTCCCTAGGACCTTAATACTGTCCATA
TAAGACTGTAGGATT---AAATAAAT---tagtacaacctctatggaaaacaatattggagatttctaaaagaactaaa
aatagaactaccatttgatctggcaatactactactgggtatctacccaaggaaaataaatcattatattaaaaaga
tgcttgcataaggtatgtttatcttagtactattcacaatcgaagatatggaatcaacccaagtatccatcagtgga
tgattggatttttaaaatgtgggtg----tatatatat-----a
tatgcaatggaatactactcaagcat-aagaagaacaaaatcatgtccttttgagcaacatggatggaactggaagca
attatcttaagtgaataactcagaaa-----cagaaaatgaaacactgcatgttcttagttataa
gtgggagtgaataattcatatacataggtatagacactggagttataagcaggagtgaataattcatacacgtgga
ataatggacactggagactgagaagagtgggaggggggtgagggatgagaaattacttgagg-----agtgtgacta
ttcaggtaatggctataactaagagcccagatttcaccactatgcaatatatccatgtaacaaaactgcacttgtatcc
cctaaatctatatacgtttt-----AAA-AAAAAATT---TGTCTCATGGCATAT-GTAAGCAC-TCAATTAATT
CGAG----TTATTA---ATGTTAATATTTTAGGTGAGATTA
```

>Orangutan

```
CTAACTCCACAACCTTAGTGATGGTCTGT-GCTTG--GACTAGTTATTTAATTTCCCTGGGACCTTAACACTGTCCACA
TAAGACTTATAGGATT---AAATAAAT---tagtacaacctctatggaaaacaatattggagatttctaaaagaactaaa
aatagaactaccatttgatccggcaatactactactgggtatctacccaaggaaaataaatcattatattaaaaaga
tgcttgcataaggtatgtttatctcagtagtattcacaatagc-aagatatggaatcaacccaagtatccatcagtgga
tgattggatttttaaaatgtgatg----tatatatat-----a
tatgcaatggaatactactcaagcat-aagaagaacaaaatcatgtccttttgagcaacatggatggaactggaagca
attatcttaagtgaataactcagaaa-----cagaaaatgaaacactgcatgttcttagttataa
gtgggagtgaataattcatacacgtgggcatagacactggagttataaatgggagtgaataattcatacacgtgga
ataatagacactggagactgagaagagtggg-ggggggtgagggatgagaaattacttgaggggtacagtggtgacta
ttcaggtaacggctataactaagagcccagacttcactactatgcaatatatccatgtaacaaaactgtacttgtatcc
cctaaatctatataccttttt-a----AAA-AATATATT---ATGTCTCATGGCATAT-GTAAGCAC-TCAACTAATT
CAAG----TTATTA---ATGTTAATATTTTAGGTGAGATTA
```

>Boon

```
CTAACGCCACAACCTTAGTGATGGTCTGT-GCTTG--GACTAGTTATTTAATTTCCCTAGGACCTTAATCCTGTCCACA
TAAGGCCACAGGATT---AAATAAAT---tagtacaacttctatggaaaacaatattggagatttctaagagaactaaa
```

aatagaactaccatttggatccagtgataccactactgggtatctgcacaagggaaaagaaatcattatattaaaaaga
tgcctgcgatgtatgtttatctcagtactattcacaatagcaaagatatggaatcaattcaagtatccatcagtgga
tgattggatTTTTAAATgtggtg----tatacacac-----acacacacacacacacacacaca
catgcaattgaatactactcaacat-aagaagaacaaaatcatgtcttttgcagcaacatggatggaactggaggca
attatcttatgtgaaataactcagaaa-----cagaaaatgagacactgcatgttcttagttataa
gtggaagtgaataattcatacacgtggcatagacactggagttataagtgggagtgaataattcatacacatgga
ataatagacactggagactgagaagagtggg-agggggtgagagatgagaaattacttgatgggtacagtgtgacta
ttcaggtaatggctacactaagagcccagacttcaccactatgcaatataatccatgaaacaaaactgcacttgtatct
cmetaatctatatacttttmetaa----AAA-TATATATT---ATGTCTCATGGCATA---TAAGCAC-TCAATAAATG
CAAG----TTATTA---ATGTTAATATTTTAGATGAGATTA

>Rhesus

CTAAGGCCACAACCTTAGTGATGGTCTGT-GCTTG--GACTAGTTATTTAATTTCCCTAGGACCTTAATCCTGTCCACA
TAAGGCCACAGGATT---AAATAAAT---tagtacaacctctatggaaaacaatgagatttctaagagaactaaa
aatagaactaccatttggatccagtgataccactactgggtatctacacaagggaaaagaaatcattatattaaaaaga
tgcctgcgatgtatgtttatctcagtactattcacaatagcaaagatacggatcaactaaagtatccatcagtgga
tgattggatTTTTAAATgtggtg----tataatataatataacacacacacataatatacacatacacacacaca
tatgcaattgaatactactcaacat-aagaagaacaaaatcatgtcttttgcagcaacatggatggaactggaggca
attatcttatgtgaaataactcagaaa-----cagaaaatgagacactgcatgttcttagttataa
gtggaagtgaataattcatacacataggcatagacactggagttataagtgggagtgaataatacatacacatgga
ataatagacactggagactgagaagagtgggaggggggtgagggatgagaaattacttgaggggtacagtgtgacta
ttcaggtaatggctacactaagagcccagacttcaccggtatgcaatataatccatgaaacaaaactgcacttgtatct
cmetaatctatatacttttmetaa----AAA-TATATATT---ATGTCTCATGGCATAT-GTAAGCAC-TCAATAAATG
CAAG----TTATTA---ATGTTAATATTTTAGATGAGATTA

>Marmoset

CTAACTCCACAACCTTAGTGATGGTCTGT-GCTTG--AATTAATTATTTAATTTCCCTAGGACCTTAAGACTGTCCACA
TAAGGCTGTAGGATT---AAATAAAT---tagtacaacctctatggaaaacaacatgagattcctaaaagaactaaa
aatagaactaccatttggatccagcaatacactactgagatctacctaaggaaaagaaatcattaaattaaaaaga
tgcctgcgatgtatgtttatctcagtactattcacaatagcaaagatacagcatcaaccaagatccatcagtgga
tgactggatTTTTAAATgt-----aatatata-----a
tgcacaatgggatactactcaacat-aagaagaacaaaatcatgt-ttttgcagcaacatggataaaaactggaggcc
attatcttatgtgaaataactcagaaa-----tagaaaatgaaacactgcttgttcttagttataa
atgggagtgaataattcatacacatggacata-----gagt-----attga
ataatagacactggagactgagaagaatggg--aggggtgagggatgagaaattacttgaggggtacaggggtgcaca
tttaggtaatgtctacactaagagcccagatttcaccaccatgcaatataatccatgtaacaaaactggacttgtatcc
cmetaatctatatacttttmetaa----AAA-AAGATATT---ATGTCTCGTGGCATAT-GTAAGCAC-TCAATAAATG
CAAG----CTATTA---ATGTTAATATTTTAGGTGAGATTA

>Tarsier

CTAACTCCACAATTTAGTGACAGTCTAT-GCTTG--GCCAGTTATTTAATTTCCCTAACACCTTAATACCTTCCACA
CAAGGCTATAGGATT---AAATAAAT---tagtacagtctctatggaaagtaatgtggagatttccaaaagaactaaa
aacaggactaccattcaatccatc-attccactactgggtatctacccaaaggaaagtaaatattatgtcagaaaga
tgcctgcgatgtatgtttatcacattactattcacaatagc-----aagtatctatcaacaga
tgattgaa-ttttaacatgtagtt----tat-----a
tatgcagaggaatattgctcagccataaaaaagaattaaatcatgtctttttcagcaacatagatggaagcagagggcc
attatcttaactgaaataactcagaaacagaaataactcagaatcagaaagtcaaatattgcaagttctcactaataa
gtg-----tgga
ataatagatattggagactcaaaagtgtgtgagtggggtgacgaatgaggaactgcttgaggggtacagtgtaaacta
ttcagtaatagctacacaaaagcccagacttcaccactatgcaatataaccacattacaaaactgcatttgggtc
cctaaatctatgtaaattttgtt----CAA-AAGGTATT---ATGTCTCATGGTGCATGGTAAGCGT-TTCATAAATG
CAAG-ATATTATTG---ATGCTAATATTTTAGGTGAGATTA

>Bushbaby

CCGACTCCATAACTTAATGATTGTTTGCACCTTAATGACCAGTTATTTAATT-CCCTAAGACCTTAATACCTTCCACA
TTAGGCTGTGGGATT-----

-----AAATAAGATATT--ATAACTCATAGCACAAAGGTAAAGAC-TCAATAACTG
CAAT---TTATTATTGATGTTAATATTTTTCGGTGATACTA

>Mouse_lemur

CTGACTCCACAACCTTAATGACTGT----GCTTA--GACCAGTTATTTAATTGCCCTAAGACCTTAATACCTTCCACA
TCAGGCTGTAGGATT-----

-----AAACAAGATATT--ATATCTCGTGGCACATGGTAAACAT-TCAATAAATG
AAAG---TTATTGTGGATGTTAATATTTTTAGGTGATATTA

>Dog

CTGA-TCTACAACCTTAAAGGCTATCTGA-GCTTC--AACCACCTTATTTAATTTCTCTAAAGTTTTAATACCTTCCACA
CAAGGATTAAGT-----

-----AAGATA-T--ATGTCTCATGGCACGGCACATGGTGAATACTCAAAT
ACAAGTTTTTTTATTG--ATGTTAATAATT--TAAGATGA

>Horse

CTGACTCCACAATTCAATAGCTATCTGT-TCTTC--AACGAGTTATTTAATTTGCCT-AAGACTTAGTACCTTCCACA
AAAGACTGTGGGATT-----

-----AAATAAGATATT--ATGTATCATGGCACATGCTGAGCACTTGATTAAGTG
CAAG-TTTTTATTG--ATGTTAATATTTCAAGTAAGGTTA

Marker L87

>L1PB4_3'-End

```
-----actcagaa
acagaaagtcaaataccgcatgttctcacttataagtgggagctaaacaat-----
-----gkgtagacacatggacatacagagtgggaataatagacactggagactcmgaaaggtgggaggggtgggaggggg-
----gtgagggatgagaaattacctaawtgggtacaatgtacactattcgggtgatggktacactaaaagcccagactt
caccactacgcaatatatccatgtaacaaaactgcacttgtaccccctaaatctataaaaaataaaaaa-----
-----
-----
```

>Human

```
AA--TATAAATGAGGAACATAAAATGAAAATAGTGCAATTTACTAGAAAT-GACATCTGTAGTACAGATTTTCATCTA
GAAAATTGACT-----TTT-----TTTCCCTTTT-TACTAAAAATGACAGATTTTGCCTGGAA---AAA----TA
AT----gtgtgtacatggacatggagtgtggaatgatagacattggagacttagaaaagtgggggctcagaagagggg
agggacaggtgggtgacaaattatattaatgggtacagtgcattatatttgagtgactgggtgactaaaaggcaagactt
caccactatgcagtatactgggtgtaacaaaattgcactggatcccttaaatttagac----AAATACATT-----TC
TAAATTGTCCTCCCTAGAACATGGGTTATATCTATGTAGGTAGTCTCTTTGTTCTTCTTCTC-C TTATATTTCTGAG
TCATCTGAGATTTTAACTGAATTAATA-----TGGGGGGAGT-TTTT-GAATTCTCCCTATTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-CCTAAACTGAATAATTTTCTTTTCCATAACCAGTGTGTTTCGAAAG
```

>Chimp

```
AA--TATAAATGAGGAAAATAAAATGAAAATAGTGCAATTTACTAGAAAT-GACATCTATAGTACAGACTTTTCATCTA
GAAAATTGACT-----TTT-----TTTCCCTTTT-TACTAAAAATGACAGATTTTGCCTGGAA---AAA----TA
AT----gtgtgtacatggacatggagtgtggaatgatagacattggagacttagaaaagtgggggctcagaagagggg
agggacaggtgggtgacaaattatattaatgggtacagtgcattatatttgagtgactgggtgactaaaagccaagactt
caccactatgcagtatattagtttaacaaaattgcactggatcccttaaatttcaac----AAATACATT-----TC
TAAATTGTCCTCCCTAGAACATGAGTTATATCTATGTAGGTAGTCTCTTTGTTCTTCTTCTC-C TTATATTTCTGAG
TCATCTGAGATTTTAACTGAATTAATA-----TGGGGGGAGT-TTTT-GAATTATCCCTATTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-CCTAAACTGAATAATTTTCTTTTCCATAACCAGTGTGTTTCGAAAG
```

>Orangutan

```
AA--TATAAATGAGAAACATAAAATGAAAATAGTGCTATTTACTAGAAAT-GACATCTATAGTATAGATTTTCATCTA
GAAAGTTGAAT-----TTT-----TTTCCCTTTT-GACTAAAAATGACA--TTTTGCCTGGAA---AAA----TA
AT----gtgtgtacatggacatggagggtggagtgatagatatttgagacttagaaaagtgcgggctcagaagaggt-
----acaggtgggtgacaaattatattaatgggtacagtgcattatatttgagtgactgggtgactaaaagccaagactt
caccactatgcagtatattagtgtaacagaattgcactggatcccttaaatttagac----AAATACATT-----TC
TAAATTGTCCTCCCTAGAACATGAGTTATATCTATGTAGGTAGTCTCTTTGTTCTTCTTCTC-C TTATATTTCTGAG
TCATCTGAGATTTTAACTGAATTAAGA-----TGGGGGGAGT-TTTT-GAATTATCCCTATTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-CCTAAACTGAATAATTTTCTTTTCCATAACCAGTGTGTTTCAAAG
```

>Baboon

```
AAAATATAAATGAAGAACATAAAATGAAAATAGTGCAATTTACTAGAAAT-GACATCTATAGTACAGATTTTCATCTA
GAAAGTTGAAA-----TTT-----TTCCCCTTTT-TACTAGAAATGACAGATTTTGCCTGGAA---AAA----TA
AT----gtgtgtacatggacatggagtgtggaatgatagacatcggagacttagaaaagtgggggctcagaataggg-
----acaggtggcgacacattatattaatgggtacagtgcattatatttgagtgactgg-----
-----ccttaaatttagac----AAATACATT-----TC
TAAATGTATTTCCCTAGAACATGAGTTATATCTATGTAGGTGCTCTCTTTGTTCTTCTTCTC-C TTATATTTCTGAG
TCATCTGAGATTTTAACTGAATTAATA-----TAGGGGGAGT-TTTT-GAATTATCCCTGTTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-CCTAAACTGAATAATTTTCTTTTCCATAACCAGTGTGTTTGAAAG
```

>Rhesus

```
AAAATATAAATGAAGAACATAAAATGAAAATAGTGCAATTTACTAGAAAT-GACATCTATAGTACAGATGTTTCATCTA
GAAAGTTGAAA-----TTT-----TTCCCCTTTT-TACTAGAAATGACAGATTTTGCCTGGAA---AAA----TA
AT----gtgtgtacatggacatggagtgtggaatgatagacatcagagacttagaaaagtgggggctcagaacaggg-
----acaggtggcgacgcattatattaatgggtacagtgcattatatttgagtgactgggtacactaaaagccaggactt
caccactatgcagtatattcgtgtaacaaaattgcactggatcccttaaatttagac----AAATACATT-----TC
TAAATGTATTTCCCTAGAACATGAGTTATATCTATGTAGGTAGTCTCTTTCTTCTTCTTCTC-C TTATATTTCTGAG
TCATCCGAGATTTTAACTGAATTAATA-----TAGGGGGAGT-TTTT-GAATTATCCCTGTTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-----AATTTTCTTTTCCATAACCAGTGTGTTTCGAAAG
```

>Marmoset

AAAATATAAATGAGGAAAATAAAATGAAAATAGTGCAATTTACTAGAAAT-GATATCTATAGTACAGATTTTCATCTA
GAAAGTT-ACA-----TTT-----TTCCCCTTTT-AAC-AGAAATGACAGATTTTGCCTGGAA---AAA----TA
AT----gtgtatacatggacatagagtgtggaatgatagacattggagacttagaaaagtgggggtgcagaagaggg-
----atgggtgggtgataaagtatttaatgggtagaatgtgtattatttgagtgattgggtacactaaaagccaagactt
caccactatgcagtttacttgtgtaacaaaattgcactgataacccttaaatttagac----AAACACATT-----TC
TAAACCATCCTCACTAGAATGTAAGTTTTATTATGTAGGTAGTGTCTTTGTTCTTCTTCTC-CTTATATTTCTGAG
TCATCTGAGATTTAAATTAATTAAC-----TGGGGGAGT-TTTT-AAATTATACCTGTTCTC-----ATTCTGTG
ACCAGTTAAATTATAATCTCTTT-CCTAAACTGAATAATTTTCTTTGTCCAGAACCAGTGTGTTAGAAAAG

>Tarsier

AAAACATAAAGAAGAAACATGAAATGAAAATAGTGAGGTCTACTGGAAAT-GACATTTGTAGCACAGATTTTGTCTA
GAAAGTTG--T-----ATT-----TTCCCCTTTT-CCATAGACATGGCAGATTTTAATTTGCA---AAAATTTT
AT----gtgaacacatgggcatagagtgtagaatgacagacattggacactcagaaaagtgggagcaggggaaggggg-
-----tgggtattgggaagttgcttaacgggtacaatgtacgttatcag-gtgatggatacactaatagccaggatgt
cccc-ctgtac---cccccaatgtaataaaaattgcacgtgtgccccttaagttgtac---AAACAGATT-----TC
TAGACTGTCTCACTAGGACATAAGCTATATCTATCCAT-TGGTCTCTTTGTTCTGCTTCTC-CTTACGTTTTCTGAA
TCTTTAGAGATTCAAACGAATCAAAA-----GAGGGGAAT-TTCT-GAATTATCCCTGTTCTA-----ACTCTGTG
ATCCATTAAATTATAATCTTTTTTCTAAACTGATTAATTTTCTTTATTTCATAACCAGCAAATTCAAAAG

>Bushbaby

AGAGTATAAATGAGGAACATACAATGAAAATGGTGAATTTACTGGAAAT-GACATTTATAGCATAGA-TTTCATCTA
GAAAGTTGTAT-----CCTTTTT-TCAAAGGACTATCAGACTTTACCTTGAA-----

-----AACCAAC-----TC
TGAGTTGTCTCAGTAGAACATAAGCTACATCTATACACTGACTTTCTTCATTCTGTTTCTA-CTGACAATTCCTAAG
TCTTCGAAATT-AAACTGAATTGAAA-----GGGAGGAGT-TTCT-TAATTATTCTTCTTCTG-----ACTTTGTA
ATCAGTTAAATTATAATCT-TTT-CCTGAAGTGAATAATTTTCTTTTTCCATAACCAGCCAGTTCAAAG

>Mouse_lemur

A-----TAAATGAAGGACATAAAACGAAAATAGTGAGATTTACTAGAAAT-GACATTTATAGCAGAGA-TTTCATCTA
GAAAGTTGTGT-----TTT-----TTCCCCTTTT-TCATAGGAATGTCAGATTTTACTTTGAA-----

-----AAACAAA-----TC
TAAATTGTCTCACTAGAACATAAGTTACATCTATATGT--ACTCTCTTCATTCTGTTTCTA-TTTACATTTCTAAG
TCTTCAGGGGTT-AAACTGAATTGAAA-----GGGAGGAGT-TTCT-GAATTATTATTCTTATG-----ACTCTGTG
ATCAGTTAGATTATAATCT-TTT-CCTGAAGTGAATAATTTGTCTTTTTCCATAATCAGCTAGTTCAAAG

>Tree_shrew

AA--TATAAATGAAGAACATAAAGTGGAACAGTAAGATTTA-----GT-GATATTTATAACACAGATTTTCTTCCA
GAAAGTTGTATATTTTCAATTT-----CTTCTCTTTT-TCATAGAAATGAAAGATTTTACTTTGAA-----

-----AAA-AATTT-----TC
TAAATTGTTCTCACCAGAACATAAGCTACATCTGTGTATGTAGTCTTTTTGTTTCTGCTTTTA-CCCTCATTTCCTGAG
TCTTCAGCAATTTAAGCTGAATTAAT-----GAGT-TTCT-AAATC-TCCCTGTAATC-----ACTCTGGG
ATCAGTTAAATTATAATCTATTT-TCTAAACTGAATAGTTTTCTTTTCTTATAACCAGTGAATTCAAAAG

>Guinea_pig

AG--TATAAATGAGGAATATAAATTTACAAGA-----TCTATTAAAG-----TAACACAAATT--TTTATA
GAAAATTATAT-----T-----TTTCTTTT-TCATAGAAGTAACAAAATT-ACTGTGCA-----

-----GAAAAAAGAGAATT-----TC
TAAATAGTCTTCATCTGAGCATAAGCCACATCTATGTGTGTGGTCTGTT-----CCA-TTCATATTTTTTGA
TCTTCAGAAATTTAACTTGTAAATA-----GGGGGATGC-TTGCCAAATTA--CCTGTTACC-----ATGCTGTG
GCCAGTTCCATTATAATCTCCTT-TCTAAACTGAATAACTTCTTTTCTATGATCAGTGAGTTCAAAT

>Dog

AA--CAGAAAAG-----GTAAAAATAGTGAGATTTAGTAGATTTAGAAATTAGTAGTGT--TTTTTTTCTA
GAAAGTTATAA-----TTTTTCTTTTCTTCTTTTGTTCATAGAAATGACAGATTTTCTCATTGAA-----

```
-----  
-----  
-----ACAAAAAT-----CC  
AGAATTATCCTTACTAGCACACAGGTCACATCCACGTGCATAGG---T--ACTCCCTTCTACCTTACTGCTCCCAAG  
TCTTCAGAGATTT-AGCTGAATTGAGTAGCCAGGGCGGGAGTGTTCT-GAATTATCCTGGTTTCCTGATGACTCTGTG  
ATC---AAACTGTAGTATCTTT-CC-AAACTGAATGATTGTCCTTTTCCATATCCAGGGAGTTCAGAAG  
>Horse  
-----ATGAAAGTAGTGAGATTCACTAGAATTAGAAATTTATAGCACAGATTTTCTTCTA  
GAAAGTTACAA-----TTTTTCTTTTTTACCTTTT-TCATAGGAATGACAGATTTTCATTTTGAA-----  
-----  
-----AAAAAAT-----TC  
TAAATTGTCCTTCTGGAGCCTAGGCTACATCTGTGTGTGTAGTCTCT--ATTCTGCTTCCA-CTCACATTTTCTGAC  
TCTTCAGAGATTTAAGCTGAATTAAG-GTGGGAGGGGGAGT-TTCT-GAATTATCCTTGTTGCC-----ACTCTGTG  
ATCAGTTAAATTATAATATCTTT-CCTAAACTGAATAAGTGTCTTTCCCGTATCCAGTGAGTTCAAAAG
```

Marker L90

>L1PB4_3'-End

```
-----  
-----gacatacagagtggaataatagacactggagac-----  
-----tcmgaaaggtgg  
gaggggtgggaggggggtgaggggatgagaaattacctawtgggtacaatgtacactattcgggtgatggktacactaaa  
agcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtaccccctaaatctataaaaaataaaaa  
aa-----  
-----  
--
```

>Human

```
ATGCTCCTTCAACTTTTGAATTTTCATTCCATACCTGAGTTTCAAGATAAAAGCAGCAAGATTAATGATGCAATGAAAG  
TGCTGATCTTATTCTAAGAATTTTGCATATATGACTCCTAACAAAATAAA-AA-TGCTAAGTAAAAGCA---CATGC  
TCCTGGAACCACTGAAAAGGAGGTATTGAGATA-TTTGTTTTG---AACTAAGTGAAGAGAA---tcagaaggggtga  
gggggtgggaagtgggtggatgatgagaaattatttagtaggtacaatgtatggtatgtgggtaataacacctgaa  
agacctgatttcaccactatgcaatctatgcatgtaacgaaattacactagtagtcccataaacatgatgcaattttta  
aaaatttaaaaa-----AAAGAAAGTAATGTTAAA---TGGGAGCTTTCTCTGAAAAA-CTCTATTGATCTTTAGA  
AGTTACTTAAGGTACTAAAACATCAACCCA-TCTAGTGATTCACAGAAGAAGATATTATACTTGCTATCTCTAAGCC  
TT
```

>Chimp

```
ATGCTCCTTCAACTTTTGAATTTTCGTTCCATACCTGAGTTTCAAGATAAAAGCAGGAAGATTAATGATGCAATGAAAG  
TGCTGATCTTATTCTAAGAATTTTGCATATATGACTCCTAACAAAATAAA-AA-TGCTAAGTAAAAGCA---CATAT  
TCCTGGAACCACTGAAAAGGAGGAATTGAGATA-TTTGTTTTG---AACTAAGTGAAGAGAA---tctgaaggggtga  
gggggtgggaagtgggtggatgatgagaaattatttagcaggtacaatgtatggtatgtgggtaataacacctgaa  
agacctgacttcaccactatgcaatctatgcatgtaacgaaattacactagtagtcccataaacatgatgcaattttta  
aaaatt-aaaa-----AAAGAAAGTAATGTTAAA---TGGGAGCTTTCTCTGAAAAA-CTCTATTGATCTTTAGA  
AGTTACTTAAGGTACTAAAACATCAACCCA-TCTAGTGATTCACAGAAGAAGATATTATACTTGCTATCTCTAAGCC  
TT
```

>Orangutan

```
ATGCTCCTTCAACTTTTGAATTTTCATTCCATACCTGAGTTTCAAGATAAAAGCAACAAGATTAATGACGCAACGAAAG  
TGCTGATCTTATTCTAAGAATTTTGCATATATGACTCCTAACAAAATAAA-AATTGCTAAGTAAAAGCA---CATAT  
TCCTGGAACCACTGAAAAGGAGGAATTGAGATA-TTTGTTTTG---AACTAAGCAAGAGAA---tcagaaggggtga  
gggggtgggaagtgggtggatgatgagaaattatttagtaggtacaatgtatggtatgtggataataacaccagaa  
agccctgacttcaccgctatgcatgtaacgaaattacactagtagtcccataaacatgatgcaattttta  
aaaatt---aaa-----AAAAAAGTAATGTTAAA---TGGGAGCTTTCTCTGAAAAA-CTCTATTGATCTTTAGA  
AGTTACTTAAGATACTAAAACATCAACCCA-TCTAGTGATTCACAGAAGAAGGTATTATACTTGCTATCTCTAAGCC  
TT
```

>Baboon

```
ATGCTCCTTCAACTTTTGAATTTTCGTTCCATACCTGAGTTTCAAGATAAAAGCAACAAGATTAATGACGCAATAAAAG  
TACTGATCTTTTTCTAAGAATTTTGCATATATGACTCCTAACAAAATAAA-AA-TGCTAAGTAAAAGCA---TATAT  
TCCTGGAATCATCGAAAAGGAGGAATTGAGATA-TTTGTTTTG---AAACCAAGTAAAGAGAA---tcagaaggggtga  
aggggtgggaagtgggtgatgataggaaattatttagtaggtacaatgtatggtatgtaggtaataatcctgaa  
agctctgacttcaccactgtgcaatgtgtgcatgtaacgaaattacactagtagtcccataaacatgatgcaattttta  
aaaatt--aaaaaaag---AACTAAGTAATGTTAAA---TGGGAGCTTTCTCTGAAAAA-CTCCATTGGTCTTTAAA  
AGTTACTTAAGGTACTAAAATTATCAACCCA-CCTAGTGATTCACAGAAGAAGGTATTATACTTGCTATCTCTAATCC  
AT
```

>Rhesus

```
ATGCTCCTTCAACATTTTGAATTTTCGTTCCATACCTGAGTTTCAAGATAAAAGCAACAAGATTAATGACGCAATGAAAG  
TACTGATCTTTTTCTAAGAATTTTGCATATATGACTCCTAACAAAATAAA-----  
-----agggtga  
aggggtgggaagtgggtggatgataggaaattatttagtaggtacaatgtatggtatgtaggtaataatcctgaa  
agctctgacttcaccactatgcaatctgtgcatgtaacgaaattacactagtagtcccataaacatgatgcaattttta  
aaaattaaaaaaaaag---AACTAAGTAATGTTAAA---TGGGAGCTTTCTCTGAAAAA-CTCTATTGGTCTTTAGA  
AGTTACTTAAGGTACTAAAACATCAACCCA-CCTAGTGATTCACAGAAAAGATATTATACTTGCTATCTCTAATCC  
AT
```

>Tarsier

ATGTTTCCTTCAACTTTTAGAATTTTGTTCAA-ACCTGAGTTCAGAAT-AAAGCAGCAAAGTTAATGACACAATGAAAG
TAGTGATTTT-TTCTATGAATTTT----TAC-----AAATAAA-AA-TACTAAGTAAAAGCA---CATAT
TCCTGGAACCACTAAAAAGAGGAAGTCATATATTTTATTTTG---AAACTAAGCAAGAAGAC---ttagaagagtga
aggaatagga--gggtggataaagagaaattacttaataagtgaatgtatgttatttgggtgacagtttccctaaa
agccctgacttcaccacttcgcaatctatgcatgtggcaaaattacatttgtaccccat-----aaatttgta
aaaatg-taaaaaatg--AAACTAAGTAATGTTAAA--TGGGAGTGTTCCTCAAAAAA-CGGTATTACTCTTTAGA
AGTTACTTAAGCTGCTAAAATTATAAACCT-CTCAATGGTTCACAAAAGGGGATATTATACCTGCCATCACTAAGGC
AT

>Bushbaby

----TGCTTCAAGTTTTTTAATTTAGTTCATTCTGAGCTCAGAGAAAAGGCAACAAGGTTAATCGCACAAATAAAAG
TAGTGATTTTTTCTACAAATTTGGCAGTATATAGCTCCTAACCAAAACAAA-AA-TGCTAAGTAAACACA---CATAT
TCCTGGAATCAATAAAAAGGAAGAAGTCAGACATTTTATTGTG-----

-----AAACTAAGTAATATTTAAA---TAAGAACTTTCTCTGAAAAA-CCCTTTTAACTTTTAGA
AATTGCCTAAGCTGCTAAAACCTATAAACCTA-TCCAATGATTCACAGAAAGGGATGTTATACTTGCTATCATTAAAGCC
AT

>Mouse_lemur

----TCCTTCAAGTTTTTAGAATCTAGTT-CACACTTGAGCTCAGAGTAAAGGCAACAAGAAT-ATGATGCAATGAAAG
TAGTGATCTTTTTCTAGGAATTTTGCATATATAACTCATAACCAAAAAAAGAA-TGCTAAGTAAAAACA---CATAT
TCCTGGAATCATAAAAAAGAGGAAGTCAGATATTTTATTG-G-----

-----GAAACTAA---TGTTAAA---AGAGAGCTTTCTCTGAAAAA-CTCTGTTAATCTTTAGA
ATTTACTTAAGCTGCTAAAACCTATAAACCCACCCCAATGATTCACAGAAGGGGATGTTATACTTGCTACCACTAAGCC
AT

>Dog

ATATCTCTTCCAGTTTTTAGAATTTAATT-CATACCCAAGTTCAGAGTAAAAGCAATAAGGCTAATGATACAATAAGAG
TAGTGACTTTTTTCTAAGAATTTGGCAA-AAATAACTCTTAACCAAAATAAA-AA-TGCTAAG-AAAAAAAAGCCATAT
TCTTGGAACC-AAAGAAAGGAAGAAGTTAGATATGTTGTTTTG-----

-----AAACTAAGTAAAGTTAAA---TGAGAGCTTTTTTTGAAAAA-TTCTACTAATCTTTTAGA
AGTTACTAGAGCTAGCAAAACCATAAAAACG-CCCAATGACTCACAGAAGGGGATATTAGGCTTTCTATCATTAAACC
AT

>Horse

ATGTTCTTTCCCG-TTTAGAATTTGGTT-CATCCCTGAGTTCAGAGTAAGGACAACAGAG-TAAGGATACAATAAGAG
TAGTGATCTTTTTCGAAGAATTGCACAATATATAACTTCTAACTAAATAAA-AA-TGCAAGT-AAAAACA---CATAT
TCCTGGAACC--AAAGAAGGAGGAAGTCAGATGTTTTGTTTTG-----

-----AAACTAAGTAAAGTTAAA---TAAGAGCTTTCTCTAAAAAGTTCTCCTTATCTTT---
AGTTACTTGAGCTAGTAAAACCACAAACACA-TCCAGTGATTCACAGAAGAGGGTCTTACACTTGCTGTCAAGCC
GT

Marker L96

>L1PB4_3'-End

-----gacatacaggggtgg
gaggggggtgagggatgagaaattacctawtgggt-----acaat-gtacctattcg
ggtgatggktacctaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtacccccta
aatctataaaaaat-aaaaaaa-----

>Human

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-AGGAGTTAGCTGGGGG-----
-----AAA-AAAAAAA-----GC-----
-----ATGATGCAT-----TTGCTGG
AGAGGGTGATAGACA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAGGACCCGAAAACCTG
TAAAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCC---aacaatgggtattttgtttg
ggtgataggtaccctaaaagcccttacat--acactatgca-----tgtaacaaaattattcttataaccata
catttatgcaaat-aaaaaaa---TACACAAC---AGT---TCAGAAAG-----GAACTACAAAGAACATACAGGCA
TAACT--ATAGTA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGTAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCTC
ATCTG--CCA

>Chimp

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-AGGAGTTAGCTGGGGG-----
-----GAA-AAAAAAA-----GC-----
-----ATGATGCAT-----TTGCTGG
AGAGGGTGATAGACA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAAGACCCGAAAACCTG
TAAAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCC---aacaatgggtattttgtttg
ggtgataggtaccctaaaagcccttacat--acgctatgca-----tgtaacaaaattattcttatgcccata
catttatgcaaat-aaaaaaa---TACACAAC---AGT---TCAGAAAG-----TAACTACAAAGAACATACAGGCA
TAACT--ATAGTA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGCAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCTC
ATCTG--CCA

>Orangutan

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-ATGAGTTAGCTGGGGG-AAAA-----
-----AAAA-AAAAAAA-----GC-----
-----ATGATGTAT-----TTGCTGG
AGAGGGTGATAGATA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAGGACTGGCAAAAACCTG
TAGAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCT---aacagtggtattttgtttg
ggtgataggtaccctaaaagcccatacat--acactatgca-----tgtaacaaaattattcttataaccata
catttatgcaaat-aaaaaaa---TACACAAC---AGT---TCAGAAAG-----GAACTACAAAGAACATACAGGCA
TAACTAATAGTATTTTGTCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGCAAATGAA
AGCTAAATAAATATCTCCAGAAATTGGGGCTCCTTGGATCCTCTCATTTT--CTTCTGGTCATCTTGGCTTCTGCCTC
ATCCTGCCCA

>Baboon

GTTCCAGGAGATGACACTAGAGCTGACTTTTGAAGATATGGT-ATGAGCTAGCTGGAGGAAAA-----
-----AAAA-AAAAAAA-----GC-----
-----ATGATACAT-----TTGCTGG
AGAGAGTGATAGAGA-GG-----AG-----ATAAGGCTGGGATCAGATGACCAGGGACCCACAAAACCTG
TAGAC--TAGATAAGACTGAATCCACATTATGACATGACTCA---C--AGGCAGCC---agcaatgggtattttgtttg
ggtgataggtaccccaaaagcccttatat--acaccatgca-----tgtaacaaaattcttcttataaccata
catttacgcaaat-aaaaaaa---TACACAAC---AGTAGTTCAGAAAG-----GAACTACAAAGAGCATACAGGCA
TAACC--ACAGCA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGTATTGGAGACCTGTCAGGCAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCAC
ATCTG--CCA

>Rhesus

```
GTTCCAGGAGATGACACTAGAGCTGACTTTTTGAAGATATGGT-ATGAGCTAGCTGGAGG-AAAA-----  
-----AAAA-AAAAAAA-----GC-----  
-----ATGATACAT-----TTGCTGG  
AGAGAGTGACAGAGA-GG-----AG-----ATAAGGCTGGGATCAGATGACGAGGGACCCACAAAACCTG  
TAGAC--TAGATAAGACTGAATCCACATTATGACATGACTCA---C--AGGCAGCC--agcaatggtatthttg  
ggtgataggtacccccaaaagcccttatat--acactatgca-----tghtaacaataattcttcttataccccata  
catttacgcaaat---aaaaa---TACACAAC---AGTAGTTCAGAAAAG-----GAACTACAAAAGAGCATAACAGGCA  
TAACT--ACAGCA-TTTGTCCTGTATT-ACATCCAGTTCACCCCA-CCTTAGGTATTGGAGACCTGTGAGGCAAAATG-A  
AACTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCAC  
ATCTG--CCA
```

>Marmoset

```
TTTCCAGGAGATGACACCGGAACTGACTTTTTGAAGATATGAT-ATGAGTTAGCTGAGGG-----  
-----GAA-AAAAACA-----GC-----  
-----CCGATGCAT-----TTTCTGG  
AGAGGGTGATAGAAA-GG-----AG-----ATAAGGCTGGTATCAGAAGACGAAGGAGCCGAAAACCTA  
TAGAC--TAGACAAGGCTAAATCCACCTTATGACATGATTCA---T--ATGCAGTT--gaacaacggtactttatctg  
ggtgatgggtgtcctaaaagcc-----cactatgca-----tghtaacaataattattcttata-cccata  
catttatgcaaat--aaacaa---CAAAGAAC---AGT---TCAGAAAAG-----GAACTACAAAAGAACATACAGGCC  
TAACT--ACAGTA-TTTGTCCTGCATTAATATCCAGTTCACCCCA-CCGTAAGAATTGAAAATCTGTGAGGAAAAGG-A  
TGCTAAATAAATATCTCG--AGACTGAAGCTCCTTGAAT-CTCTCA-CTT--CTTCT-GTCATCTT-GCTTCTGCCTC  
GACGG--CCA
```

>Tarsier

```
TTTCCAGGAGATGACACTGGAGCTGACTTTTTGAAGCTATGGT-ATGTGTTAGCTGGGCA-----  
-----AAC-CAACAAA-----GC-----  
-----AC-----GG  
AGAGGGTGATAGAAA-GG-----AGTAGAGTAAGCCAGGGATCAGATCACGGAGGACCAGCAAAATGGA  
TGGAT--TGGACAAGGCTGAATTCACACAGTCACATGAATCA---T--ATGCAGTC--tacagtg--tacaatata  
ggtgataggtaccctaaaagccctgacttcaccactatgcaatgtatgcttghtaacaataattactcttgtacccata  
catttatacagatttagaaaa---TACGAAAC---AGT---T---AAAA-----TAATTATAAGGAACATGCAGGCA  
TAAAC--ATAGCA-TTTGTCCTATATTAATATCCAGTTCCTACT-TCTTAGAAAATTGGGGACCTATTAACCCAATG-A  
AGCTAAATAAACATTGAC--AGGC-AGAGCTCTTTGGAT-CCCCTT-TCT--CTTGA-GTCATCTT-TCTTCTCCATC  
ATCTG--CCA
```

>Bushbaby

```
TTTCCAGGAGATGACACTGGAGCTGACTTCTGAATATATGGC-ATGAGTTATCT-GGCC-AAAA-----  
-----AAAA-AAGAAA-----GAAAGAAAAGG  
GTGGGGAGAGACATCTAAAA-TCAAAAAGCATG---ATGATGCAT-----TT-----  
---GGTGATAAAGA-GAGAGAAGA-----AAG---ATACATCTGAGATCAGATCATAAAGGACCAGCAAAA--GG  
TGGACAAGGGTCAAGGCTGAGTCCACATCGTGACAGGAAACA--A--GCACAGTC-----  
-----TACGGAAC---AGT---TCAGGAAGCTCCTGAACTGCAAAGAGCCTCTGGGTA  
TAACC--ACAGGA-CTTGCCCTATGTTAATACCCAATTCCTCCT-CCTTAAGAATTGGGGACCTGTGAGCCAGATG-A  
AGCTAAATAAACATCTCC--AGACTGAGAGTGCTTGGAT-CCCTTT-TTT--CTCGT-GTCATCCATGCTTCCCCACC  
ATCTG--TCA
```

>Mouse_lemur

```
TTTCCAGCAGATGACACTGGAGCTGACTTTTTGAAGATATGGT-ATGAGTTAGCTGGGCT-AAAA-----  
-----AAAA-AAGAAA-----AA-----  
-----GTGGGACATCCAAAAGTTAAAAAGCATAAAGCATGATGCAT-----TTGCTGA  
ACAGGATGATAAAGA-CAGAG-----AG-----ATAAGCCTGAGATCAGATCATAAAGGACAAGCAAGACGGA  
TGGAC--TGGACAAGGCTGAATCCACATTGTGACATGAAACA---T--GTGCTGTC-----  
-----TACAGAGC---AGT---TCAGAAAAG-----GAACTACAAAAGACATGCAGATA  
TAACT--ATAGCA-TTTATCCTATGTTAATGTCCAGCTCCTCCT-CCTCAGGAATTGGGGACCTGTGAGCCAGATG-A  
AGCAAAATAAATATTTCC--AG---GGATCTCTTTGGAT-TCCTTT-TTT--CTTGT-GTCATCTA-GCTTCCCCATG  
ATCTG--CCA
```

>Guinea_pig

```
TGTTTCAGAAGATGGTGTCTTGATCTGATTTGTAAGGATATAGT-ATGAGTTAGCTGAGCC-AAAA-----T
AAATAA---AGATATA-----GG-----CGTCCAAAAG-TGGAAAACATGAG-----
-----GTTTAGGAG-----AACTGCATAAAGTTTCATTGTAGCCAG
AGAGAGTGATAATGCTGG-----AG-----AAGAGGCTGGGATCAGGCACAACAGA-ATAGCAAAATGGG
TGGA--TGGA-----TCTCTCTCATGTGAATGTGCATGG--T--GACTTGAA-----
-----TCCTCTGA---CAT---CTGCACAA-----TGGGTAAGAAAAGTAATCAAAAAC
AC-CA--AAC-TA-TTTGTCCTGTGTTAATATATAATTGCTCCT-CCTTAGGAAAATGGATCT-GTTAGCCAAATG-G
AGCTCAGTAAATATCGTC--ACATGAGGGCCTTTTGGAT-CCCTC--TTT--GACCT-GTCATCC-----
-----
```

>Dog

```
TTTTTCAGGAGATAGCACTGGAGCCGACTTTTCGAAGATACAAGTATGAGTTAAGTGGGCC-AAGAAATGAAATGAAATG
AAATGAAATGAGATGAAATAAAAACAAAGCAAGAAGGCAGAACCCACTTTAAAG-TTAGAAA---GT-----
-----ATGATACATTTGGGAACCTGCATATAGTTTGGGATTGTTGG
AGAGGGTG----ACA-GAGAGATAAGCCTAGAGC----AGTAGACTGGGATCAAATCATGGA-AATCAACAAAACGAA
TGGAT--TGAAGTAGGCTGAGTCCACACTGACATGATCATT--TAGAAACAGGC-----
-----TACAAAAC---ACT---TTGAAAT-----GACCTACAGACAACATACATACT
TAACT--ACAGCA-TTTATCCAGTATTCAAATCCAATTCCTTCT-CT-TAAGTACTGAGGTCTATCTGCCAAATG-A
GTCTAAATAAATATCTCT--ACACAGGAACCTTTGGAT-CTTTA-TTTT--CTTTT-GTCATCCT-GCTTCTCCATC
GTCTG--CCA
```

>Horse

```
TTTTTCAGGAGACAACACTGGAGCTGGCCTTTGAAGATATAGT-ATGAGTTAGCTGGATC-ATAAAA-----
-----GGATAA-----GG-----ACACCCAAAACCTTAGAAA---GC-----
-----CTGATGCATTTGAGGAACTGCATATAGTTTCAGGATGGCTGG
AGGGGGTGATGAAGA-GTGAGGTGAGCCTGGAGA----AGCAGACTGGGAGCAGATTATGAAGGATCAGCAAAAGGAC
TGGCT--TGAACAAGGCTGAATCCACATTGTGACGTAAATCA--T--AGGCAGGC-----
-----TACAAAAC---ACT---TTAGAAAC-----AACTGCAAACAACATATGGGTC
TAACT--ACAGCA-TTTGTCCTGTGTTAATATCCAGTTCCTTCT-CCATAGGAACTGGGGACCTGTGAGCCAGATT-A
AACTAAATAAATATCTCC--TTGTAGAGACTCTTTGGAT-CCCTG-TTTTTCTTTT-ATCATCCT-GCTTCTCGATC
ATCTG--CCA
```

Marker L99

>L1PB4_3'-End

-----gacatacaggggtgg
gaggggggtgagggatgagaaattacctawtgggt-----acaat-gtacctattcg
ggtgatggktacctaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtacccccta
aatctataaaaaat-----aaaaaaa-----

>Human

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-AGGAGTTAGCTGGGGG-----
-----AAA-AAAAAAA-----GC-----
-----ATGATGCAT-----TTGCTGG
AGAGGGTGATAGACA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAGGACCCGAAAACCTG
TAAAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCC---aacaatgggtattttgtttg
ggtgataggtaccctaaaagcccttacat--acactatgca-----tgtaacaaaattattcttatacccata
catttatgcaaat-----aaaaaa---TACACAAC---AGT---TCAGAAAG-----GAACTACAAAGAACATACAGGCA
TAACT--ATAGTA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGTAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCTC
ATCTG--CCA

>Chimp

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-AGGAGTTAGCTGGGGG-----
-----GAA-AAAAAAA-----GC-----
-----ATGATGCAT-----TTGCTGG
AGAGGGTGATAGACA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAAGACCCGAAAACCTG
TAAAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCC---aacaatgggtattttgtttg
ggtgataggtaccctaaaagcccttacat--acgctatgca-----tgtaacaaaattattcttatgcccata
catttatgcaaat-----aaaaaa---TACACAAC---AGT---TCAGAAAG-----TAACTACAAAGAACATACAGGCA
TAACT--ATAGTA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGCAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCTC
ATCTG--CCA

>Orangutan

TTTCCAGGAGATGACACTGGAGCTGACTTTTGAAGATATGGT-ATGAGTTAGCTGGGGG-AAAA-----
-----AAAA-AAAAAAA-----GC-----
-----ATGATGTAT-----TTGCTGG
AGAGGGTGATAGATA-GG-----AG-----ATAAGGCTGGGATCAGATGATGAAGGACTGGCAAAAACCTG
TAGAC--TAGATAAGGCTAAATCCACATTATGACATGACTCA---T--ATGCAGCT---aacagtggtattttgtttg
ggtgataggtaccctaaaagcccatacat--acactatgca-----tgtaacaaaattattcttatacccata
catttatgcaaat-----aaaaaa---TACACAAC---AGT---TCAGAAAG-----GAACTACAAAGAACATACAGGCA
TAACTAATAGTATTTTGTCTGTATTAATATCCAGTTCACCCCA-CCTTAGGAATTGGAGACCTGTCAGGCAAATGAA
AGCTAAATAAATATCTCCAGAAATTGGGGCTCCTTGGATCCTCTCATTTT--CTTCTGGTCATCTTGGCTTCTGCCTC
ATCCTGCCCA

>Baboon

GTTCCAGGAGATGACACTAGAGCTGACTTTTGAAGATATGGT-ATGAGCTAGCTGGAGGAAAA-----
-----AAAA-AAAAAAA-----GC-----
-----ATGATACAT-----TTGCTGG
AGAGAGTGATAGAGA-GG-----AG-----ATAAGGCTGGGATCAGATGACCAGGGACCCACAAAACCTG
TAGAC--TAGATAAGACTGAATCCACATTATGACATGACTCA---C--AGGCAGCC---agcaatgggtattttgtttg
ggtgataggtaccccaaaagcccttatat--acaccatgca-----tgtaacaaaattcttcttatacccata
catttacgcaaat-----aaaaaa---TACACAAC---AGTAGTTCAGAAAG-----GAACTACAAAGAGCATACAGGCA
TAACC--ACAGCA-TTTGTCCTGTATTAATATCCAGTTCACCCCA-CCTTAGGTATTGGAGACCTGTCAGGCAAATG-A
AGCTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCAC
ATCTG--CCA

>Rhesus

GTTCCAGGAGATGACACTAGAGCTGACTTTTTGAAGATATGGT-ATGAGCTAGCTGGAGG-AAAA-----
-----AAAA-AAAAAAA-----GC-----
-----ATGATACAT-----TTGCTGG
AGAGAGTGACAGAGA-GG-----AG-----ATAAGGCTGGGATCAGATGACGAGGGACCCACAAAACCTG
TAGAC--TAGATAAGACTGAATCCACATTATGACATGACTCA---C--AGGCAGCC--agcaatggtatthttg
ggtgataggtacccccaaaagcccttatat--acactatgca-----tghtaacaataattcttcttataccccata
catttacgcaaat---aaaaa---TACACAAC---AGTAGTTCAGAAAAG-----GAACTACAAAAGAGCATAACAGGCA
TAACT--ACAGCA-TTTGTCCTGTATT-ACATCCAGTTCACCCCA-CCTTAGGTATTGGAGACCTGTGAGGCAAAATG-A
AACTAAATAAATATCTCC--AGATTGGGGCTCCTTGGAT-CTCTCA-TTT--CTTCT-GTCATCTT-GCTTCTGCCAC
ATCTG--CCA

>Marmoset

TTTCCAGGAGATGACACCGGAACTGACTTTTTGAAGATATGAT-ATGAGTTAGCTGAGGG-----
-----GAA-AAAAACA-----GC-----
-----CCGATGCAT-----TTTCTGG
AGAGGGTGATAGAAA-GG-----AG-----ATAAGGCTGGTATCAGAAGACGAAGGAGCCGAAAACCTA
TAGAC--TAGACAAGGCTAAATCCACCTTATGACATGATTCA---T--ATGCAGTT--gaacaacggtactttatctg
ggtgatgggtgtcctaaaagcc-----cactatgca-----tghtaacaataattattcttata-cccata
catttatgcaaat--aaacaa---CAAAGAAC---AGT---TCAGAAAAG-----GAACTACAAAAGAACATACAGGCC
TAACT--ACAGTA-TTTGTCCTGCATTAATATCCAGTTCACCCCA-CCGTAAGAATTGAAAATCTGTGAGGAAAAGG-A
TGCTAAATAAATATCTCG--AGACTGAAGCTCCTTGAAT-CTCTCA-CTT--CTTCT-GTCATCTT-GCTTCTGCCTC
GACGG--CCA

>Tarsier

TTTCCAGGAGATGACACTGGAGCTGACTTTTTGAAGCTATGGT-ATGTGTTAGCTGGGCA-----
-----AAC-CAACAAA-----GC-----
-----AC-----GG
AGAGGGTGATAGAAA-GG-----AGTAGAGTAAGCCAGGGATCAGATCACGGAGGACCAGCAAAATGGA
TGGAT--TGGACAAGGCTGAATTCACACAGTCACATGAATCA---T--ATGCAGTC--tacagtg--tacaatata
ggtgataggtaccctaaaagccctgacttcaccactatgcaatgtatgcttghtaacaataattactcttgtacccccata
catttatacagatttagaaaa---TACGAAAC---AGT---T---AAAA-----TAATTATAAGGAACATGCAGGCA
TAAAC--ATAGCA-TTTGTCCTATATTAATATCCAGTTCCTACT-TCTTAGAAAATTGGGGACCTATTAACCCAATG-A
AGCTAAATAAACATTGAC--AGGC-AGAGCTCTTTGGAT-CCCCTT-TCT--CTTGA-GTCATCTT-TCTTCTCCATC
ATCTG--CCA

>Bushbaby

TTTCCAGGAGATGACACTGGAGCTGACTTCTGAATATATGGC-ATGAGTTATCT-GGCC-AAAA-----
-----AAAA-AAGAAA-----GAAAGAAAAGG
GTGGGGAGAGACATCTAAAA-TCAAAAAGCATG---ATGATGCAT-----TT-----
----GGTGATAAAGA-GAGAGAAGA-----AAG----ATACATCTGAGATCAGATCATAAAGGACCAGCAAAA--GG
TGGACAAGGGTCAAGGCTGAGTCCACATCGTGACAGGAAACA--A--GCACAGTC-----
-----TACGGAAC---AGT---TCAGGAAGCTCCTGAACTGCAAAGAGCCTCTGGGTA
TAACC--ACAGGA-CTTGCCCTATGTTAATACCCAATTCTCCT-CCTTAAGAATTGGGGACCTGTGAGCCAGATG-A
AGCTAAATAAACATCTCC--AGACTGAGAGTGCTTGGAT-CCCTTT-TTT--CTCGT-GTCATCCATGCTTCCCCACC
ATCTG--TCA

>Mouse_lemur

TTTCCAGCAGATGACACTGGAGCTGACTTTTTGAAGATATGGT-ATGAGTTAGCTGGGCT-AAAA-----
-----AAAA-AAGAAA-----AA-----
-----GTGGGACATCCAAAAGTTAAAAAGCATAAAGCATGATGCAT-----TTGCTGA
ACAGGATGATAAAGA-CAGAG-----AG-----ATAAGCCTGAGATCAGATCATAAAGGACAAGCAAGACGGA
TGGAC--TGGACAAGGCTGAATCCACATTGTGACATGAAACA---T--GTGCTGTC-----
-----TACAGAGC---AGT---TCAGAAAAG-----GAACTACAAAAGACATGCAGATA
TAACT--ATAGCA-TTTATCCTATGTTAATGTCCAGCTCCTCCT-CCTCAGGAATTGGGGACCTGTGAGCCAGATG-A
AGCAAAATAAATATTTCC--AG--GGATCTCTTTGGAT-TCCTTT-TTT--CTTGT-GTCATCTA-GCTTCCCCATG
ATCTG--CCA

>Guinea_pig

```
TGTTTCAGAAGATGGTGTCTTGATCTGATTTGTAAGGATATAGT-ATGAGTTAGCTGAGCC-AAAA-----T
AAATAA--AGATATA-----GG-----CGTCCAAAAG-TGGAAAACATGAG-----
-----GTTTAGGAG-----AACTGCATAAAGTTTCATTGTAGCCAG
AGAGAGTGATAATGCTGG-----AG-----AAGAGGCTGGGATCAGGCACAACAGA-ATAGCAAAATGGG
TGGA--TGGA-----TCTCTCTCATGTGAATGTGCATGG--T--GACTTGAA-----
-----TCCTCTGA--CAT--CTGCACAA-----TGGGTAAGAAAAGTAATCAAAAAC
AC-CA--AAC-TA-TTTGTCCTGTGTTAATATATAATTGCTCCT-CCTTAGGAAAATGGATCT-GTTAGCCAAATG-G
AGCTCAGTAAATATCGTC--ACATGAGGGCCTTTTGGAT-CCCTC--TTT--GACCT-GTCATCC-----
-----
```

>Dog

```
TTTTTCAGGAGATAGCACTGGAGCCGACTTTTCGAAGATACAAGTATGAGTTAAGTGGGCC-AAGAAATGAAATGAAATG
AAATGAAATGAGATGAAATAAAAACAAAGCAAGAAGGCAGAACCACCTTTAAAG-TTAGAAA--GT-----
-----ATGATACATTTGGGAACCTGCATATAGTTTGGGATTGTTGG
AGAGGGTG---ACA-GAGAGATAAGCCTAGAGC---AGTAGACTGGGATCAAATCATGGA-AATCAACAAAACGAA
TGGAT--TGAAGTAGGCTGAGTCCACACTGACATGATCATT--TAGAAACAGGC-----
-----TACAAAAC--ACT--TTGAAAT-----GACCTACAGACAACATACATACT
TAACT--ACAGCA-TTTATCCAGTATTCAAATCCAATTCCTTCT-CT-TAAGTACTGAGGTCCTATCTGCCAAATG-A
GTCTAAATAAATATCTCT--ACACAGGAACCTTTTGGAT-CTTTA-TTTT--CTTTT-GTCATCCT-GCTTCTCCATC
GTCTG--CCA
```

>Horse

```
TTTTTCAGGAGACAACACTGGAGCTGGCCTTTGAAGATATAGT-ATGAGTTAGCTGGATC-ATAAAA-----
-----GGATAA-----GG-----ACACCCAAAACCTTAGAAA--GC-----
-----CTGATGCATTTGAGGAACTGCATATAGTTTCCAGGATGGCTGG
AGGGGGTGATGAAGA-GTGAGGTGAGCCTGGAGA---AGCAGACTGGGAGCAGATTATGAAGGATCAGCAAAAGGAC
TGGCT--TGAACAAGGCTGAATCCACATTGTGACGTAAATCA--T--AGGCAGGC-----
-----TACAAAAC--ACT--TTAGAAAC-----AACTGCAAAACAACATATGGGTC
TAACT--ACAGCA-TTTGTCCTGTGTTAATATCCAGTTCCTTCT-CCATAGGAACTGGGGACCTGTCAGCCAGATT-A
AACTAAATAAATATCTCC--TTGTAGAGACTCTTTGGAT-CCCTG-TTTTTCTTTT-ATCATCCT-GCTTCTCGATC
ATCTG--CCA
```

Marker L101

>L1PB4_3'-End

```
ACACTGTTGGTGGGAATGTAAATTAGTACAACCTCTATGGAAAACAGTAT-----  
-----ggagattttctcaagaactaaaaatagaactaccattcgatccagcaat  
cccactactgggtatctacccaaaggaaaagaaatcattatatcaaaaa-gatacctgcactcgtatgtttatcgcag  
cactattcacaatagcaaaagatatggaatcaacctaagtgtccatcaatggatgactggataaagaaaaatgtg-----  
-----  
--tatatatacacca----tggaaactactcagccataaaaaagaatgaaatcatgtcttttgcagcaacatggatg  
gaactggaggccattatcctaagtgaataactcagaaacagaaagtcaaataccgcatgttctcacttataagtggg  
agctaaacaatgkgtacacatggacatacagagtggaaatagacactggagactcmgaaagggtggggagg--gtggg  
aggggggtgagggatgagaaattacctaawtgggtacaatgtacactattcgggtgatggktacactaaaagcccagac  
ttcaccactacgcaatataatccatgtaacaaaactgcacttgtaccccctaataatctataaaaaataaaaaa-----  
-----
```

>Human

```
TTGGATCCATCTCAGACTAATTAATCAGAACCCATGGGGATGAGGCCAGACATGAGTGGGTTTTTTTGTCTTTTTT  
A-----AAAAAAGCTCCCT-----aggagattttctcaagaactgaaaatagaactaccatgatccagcaat  
cccacttttgggtatctacccaaaggaagataaattattatataaaaaa-gatacctgcactcaaataattattgcaa  
cactatccacagtagcaaaaaatggaatcaacctaactgtccatccatggatgactggataaagaaaaatgtg-----  
-----  
--tatatatacacacacaatggaatactattcattcgtaaaaaagaacaaagtc-tgtcttttgcagcaaatatggaag  
gaactggaagccattctcttaagtgaagcaactcagaaacagaaaggcaaattccacatgttctcacttacaattggg  
agctaaataatgcatatgcatgggacagagtggtggaataatagacattggagactcggaaagggtggggggg-aatggg  
agaggg-tcaatgatgaaaaattacttaatgagtacaacgtacattatttgggtgatgaatacactaaaagcccacac  
tttaccactatgcaatatggccatgtaacaaaattgcccttacacccttaaatttatacaaaataaaaaataaaaa-  
-----t---AAAAGCTCCTTA---GGGCTGAGAACTACTGCTCCTGTCTATGGGTCCCAGCTTTATTT
```

>Chimp

```
TTGGATCCATCTCAGACTAATTAATCAGAACCCATGGGGATGAGGCCAGACATGAGTGGGTTTTTTTCTTTTTT  
T-----AAAAAAGCTCCCT-----aggagattttctcaagaactgaaaatagaactaccatgatccagcaat  
cccacttttgggtatgtacccaaaggaagataaattattatataaaaaa-gatacctgcactcaaataattattgcaa  
cactatccacagtagcaaaaaatggaatcaacctaactgtccatccatggatgactggataaagaaaaatgtg-----  
-----  
--tatatatacacacacaatggaatactattcattcataaaaaagaacaaagtc-tgtcttttgcagcaaatatggatg  
gaactggaagccattctcttaagtgaagcaactcagaaacagaaaggcaaattccgcatgttctcacttacaattagg  
agctaaataatgcatatgcatggacacagagtggtggaataatagacattggagactcggaaagggtggggggg-aatggg  
agaggg-tcaatgatgaaaaattacttaatgagtacaatgtacattatttgggtgatgaatacactaaaagcccacac  
tttaccactatgcaatatggccatgtaacaaaattgcccttacacccttaaatttatacaaaataaaaaataaaaa-  
-----t---AAAAGCTCCTTA---GGGCTGAGAATTACTGCTCCTATCCTATGGGTCCCAGCTTTATTT
```

>Orangutan

```
TTGATACATCTCAGACTAATTAATCAGAACCCATGGGGATGAGGCCAGACATGAGTGGGTTTTTTTCTTTTTT  
T-----AAAAAAGCTCCCT-----aggagattttctcaagaactgaaaatagaactaccatgatccagcaat  
cccacttttgggtatctacccaaaggaagatacattattatataaaaaa-gatacctgcactcaaataattattgcaa  
cactatccacagtagcaaaagatatggaatcaacctaactgtctatccatgaatgactggataaagaaaaatgtg-----  
-----  
--tatatatacacacacaatggaatactattcatccataaaaaagaacgaagtc-tgtcttttgcagcaaatatggatg  
gaactggaagccattctcttaagtgaagcaactcagaaacagaaaggcaaattccacatgttctcacttacaattagg  
agctaaataatgtatgcatggacacacagtggtggaatgatagacattggagactcggaaagggtggggggg-aatggg  
agatgg-tcaatgatgaaaaattacttaatgagtacaatgtacattatttgggtgatgaatacactaaaagcccacac  
tttaccactatgcaatatggccatgtaacaaaattgcccttacacccttaaattgatacaaaataaaaaa-aaataaa-  
-----t---AAAAGCTCCTCA---GGGCTGAGAACTACTGTTCTCTATCCTATGGGTCCCAGCTTTATTT
```

>Baboon

```
TTGGATTCAATTTAGACAAATTAATCAGAACCCATGGGGATGAGGCCAGACATGAGTGGGTTTTTTTCTTTTTT  
TTTTTA---AAAAAAGCTCCCT-----aggagattttatcaagaactggaaatagaactaccatgatccagcaat  
cccacttttgggtatctacccaaaggaagagaaattattacatagaaaaagatacctgcactcgaatgtttattgca  
cactattcacagtagcaaaagatacggaaatcaacctaactgtccatccatggatgactggataaagaaaaatgtg-----  
-----  
--tatacatatacacacacaatggaatactattcatccataaaaaagagtgaggtc-tgtcttttgcagcaaatatgggtg
```

aaactggaagccattctcttaaatgaagcaactcagaaatagaaaggcaaattccacatgttctcattttataattggg
agctaaatcatgtgtatgcatgaacacagagtggtggaatgatagacattg-agacttgaaagggcgggggcaatggg
agagca-tcaatgatgaaaaattacttaatgagtacaatgtacggtatttgggtgatgaatacactaaaagtcacac
tttaccactatgcaatatggccatgtaacaaaattgccctcacatcccttaaatttatacaaaataaaaa--aataa--
-----t---AAAAGCTCCTTA---GGGCTGAGAACTACTGCTCCTATCCTATGGGCCCTTGCTTTATTT

>Rhesus

TTGGATTCATTTAGACAAATTAATCAGAACCCATGGGGATGAGGCCAGACATGAGTGGGTTTTTTTTCTTTTTT
TTT--A---AAAAAAGCTCCTT-----aggagatttctcaagaactggaatagaactaccatgatccagcaat
cccacttttgggtatctacccaaaggaagagaaattattacataaaaaaagatacctgcactcgaatgtttattgcag
cactattcacagtagcaaaagatcgggaatcaacctaacctgtccatccgtggatgactggataaagaaaatgtg-----

--tatacatcacacacaatggaatactcttcatccataaaaaacaatggagtc-tgtcttttgagcaatacgggtg
aaactggaagccattctctcaaatgaagcaactcagaaatagaaaggcaaattccacatgttctcattttataattggg
agctaaatcatgtgtatgcatgaacacagagtggtggaatgatagacattg-agacttgaaagggcgggggcaatggg
agagcg-tcaatgatgaaaaattacttaatgagtacaatgtacggtatttgggtgatgaatacactaaaagtcacac
tttatacactatgcaatatggccatgtaacaaaattgccctcacatcccttaaatttatacaaaataaaaa--aataa--
-----t---AAAAGCTCCTTA---GGGCTGAGAACTACTGCTCCTATCCTATGGGCCCTTGGCTT

>Marmoset

GTGGATCCGTCTCAGACTAATTAATCAGAACCCATGGGGATGAGGCCCTAGACATGAGTGGGGTTTTTT---TTCTCT
A----A---AAAAAATCCTT-----aggagatttctcaagaactaaaaataaaaccacatgtgatctagcaat
ccccattttgggtatctacccaaaggaagataaattattatataaaaaaagaaacctacactcaaatgtttattgcaa
cacaattcatagtagcaaaagatagaaatcaacctaacctggtccatccatggatgattggataaagaaaatgtgatcat
gtgacatagtgtatatacatgtcacgtgtatatacatatgtatataatgtatatactcacatgtgtgtgta
tctatataatacacacagatggaatactgttcatccataaaaaagaatgaatttgtgtctttcgcagcaaatatggatg
gaactggaagccattttcttaagtgaagcaactcagaaacaaaaaggcaaattccacatgttctcacttataattagg
agctaaataatgtgtatgcatggatcggagtggtgaaatgatagacattagagact-ggaagagttggggg-aatggg
agggag-tcagtgtgaaaaattacttaatgactacaatgtacattattttgatgataaatacactaaaagctgatac
ttcaccac-atgcaatatggccatgtaacaaaagttgcctttgcacccttaaatttatacaaaataaaagcaataaat
aaaaac---AAAAGCTCCATA---GGGCTGAGAACTACTGCTCCTATCCTGTGGATTCCCTGCTTTATTT

>Tarsier

TCAGATCCATC-CAGACAAGTTAAATCTGAACCTATGGGAA-AAGATCTAGACATCAGTGTGTTTTTT-----
-----AAA--AAGTTTCCT-----aggagatttctgaaaaattacaaatagaactaccat--gatccaacagt
ttcactcctggatctacccagagaaaaagaaatcattttatcaaaaa-gatacctgcactggatgtttattgcag
cactatttgtgccagcaaaagtcatggaatcaaccaaaagtattcatcaactgatgactggataaagaaaacgtg-----

-----gtctgtgtacacaatggaatactacacagccataaaaaatgaatgaactcacatcttttgagcaaacgtggatg
aaactggaggcaattatcctgagtgaaaacactctgacatagaaagtcaaataccacatgtcctaccttcatgtggg
cgctaaacaatgtggacacatggacatagagtgacagaataatagacactggagacttggaggctaggag--agtgag
aggggg-tgagggaggagaatthagctaatgggtacaatgtacggtatttgggtggtggttacgctaggagccagac
ttgaccactgcacgatatacctatgtgccccaaaccggtcttctgtactccttacatttatacaaaatacaaa--aataa--
-----t---AAATGCTCCCTA---GACTTGAGAACCCTGCTC-TATCCTATGAGACCTCTGCTTTATTTG

>Bushbaby

CCAGATCCATCCCAAATTAATTAATCAGAACCCATGAAGATGAGGCCAGATATCAGTA---TTTTT-----

-----AAAAGCTCCCTA---AGGTTGAGAACTACTGCTC-TATCCTTTGAGAGCCCTCCCTCATTG

>Mouse_lemur

CCAGATCCATCCAGGTTAATGAAATCAGAACCCATGAAAATGAGGCCAGACATCAGTA---TTTTT-----

Marker L106

>L1PB4_3'-End

```
-----aatgaaatcatgtccttttg  
cagcaacatggatgg-----  
-aactggaggccattatcctaagtgaaatagacatacagagtggaataatagacactggagactcmgaaaggtgg---  
-----gaggggtgggagggggggtgagggatgagaaattacctawtgggtacaatgtacactattcgggtgatggkta  
cactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgcacttgtaccccctaaatctataaaa  
ataaaaaaa-----  
-----
```

>Human

```
GTTTTCTAATTTTTAAGAGGAGGTCAATTATACCTACCAACAAGGTAGTTATCAACAAGTTGTAGGGTTACAT-GAACA  
AGAATTATTAAGCAAGTTTTGGAAATGTG-AAAAGATCCTAGGTGCTTAATGAACTTT--AAAAAATACACTTAT--  
-aaatggaagctaaataa-tgtgtactcatggac-acagcatagaataagagacgctggagactcagaaggctgt---  
-----gggggggtgaggaggttgagggg-tgagaaattatgtaatgagtacaatgtacactatttgggtaatggcta  
cactaaaagctcagacttcaccactgtgcaatatatccatgtatcaaaaactgcgcttgta-cccctaaatgtatacaa  
ataaaataaattaataaat---TAAACAAGTAAGA---GAA-TGCTTACATTTTTCTTAAGCATTTTATTTAGAAGCA  
TG---TAT---CATGCAAATACACAAAAGAAATTTATTTTCAGAGCCT--GTTT---ATCTTTTAAAAGTACAC-T  
TTTTGTTTT-----C--ACTGTAAGGAGAC----GATTGAACATGCTCCATTCTTATCATCAATGCAGG
```

>Chimp

```
GTTTTCTAATTTTTAAGAGGAGGTCAATTATACCTACTAACAAGGTAGTTATCAACAATTTGTAGGGTTACAT-GAACA  
AAAGTTATTAAGCAAGTTTTGGAAATGTG-AAAAGATCCTAGGTACTTAATGAACTTT--AAAAAATACACTTAT--  
-aaatggaagctaaataa-tgtgtacttatggac-acagcatagaataagagatgctggagactcagaaggctgt---  
-----gggggggtgaggaggttgagcgg-tgagaaattatgtaatgagtacaatgtacactatttgggtaatgggta  
cactaaaagctcagactttaccactgtacaatatatccatgtatcaaaaactgcacttgta-cccc--aatgtatacaa  
ataaaataaattaataaat---TAAACAAGTAAGA---GAA-TGCTTACATTTTTCTTAAGCATTTTATTTAGAAGCA  
TG---TAT---CAAGCAAATACACAAAAGAAATTTATTTTCAGAGCCT--AATT---ATCTTTTAAAAGTACAC-T  
TTTTGTTTT-----C--ACTATAAGGAGAC----TATTGAACATGCTCCATTCTTATCA---ATGCAGG
```

>Orangutan

```
GTTTTCTAATTTTTAAGAGGAGGTCAATTATACCTACCAACAAGGTAGTTATCAACAAGTTGTAGGGTTACAT-GAACA  
AGACTTGTTAAGCAAGTTTTGGAAATGTG-AAAAGATCCTAGGTACTTAATGAACTTT--AAAAAATACACTTAT--  
-aaatggaagctaaataa-tgtatactcatggac-acagcatagaataagagacgctggagactcagaaggctgt---  
-----gggggggtgaggaggttgagggg-tgagaaattatgtaatgagtacaatgtacactatttaggtaatgggta  
cactaaaagctcagacttcaccactgccaatatatccatgtatcaaaaactgcgcttata-cccctaagtgtatacaa  
ataaaataaattaataaat---TAAACAAGTAAGA---GAA-TGCTTACGTGTTTCTTAAGCATTTTATTTAGAAGCA  
TG---TAT---CAAGAAAATACGCAAAGAAATTTATTTTCAGAGCCT--ATTT---ATCTTTTAAAAGTACAC-T  
TTTTGCTTT-----C--ACTATAAGGAGAC----GATTGAACATGCTCCATTCTTATCATCAATGCAGG
```

>Baboon

```
GTTTTCTAATTTTTAAGAGGAGATCAATTATACCTACCAACAAGGCAGTGATCAACAAGTTGTAGGGTTACAT-GAACA  
AGAGTTATTAAGCAAGTTTTGGAAATGTG-AAAAGATCCTAGATACTTAATGAACTTT--AAAAAATACACTTAT--  
-aaatggaagctaaataa-tgtgtatgcatggac-acagcatggaataagagacactggacactcagaaggctgt---  
-----gggtgttggggaggttgagggg-tgcaaaattatgtaatgagcacaatgtacactatttgggtaatgggta  
cgctaaaagctcagacttcaccactgtgcaatatatccatgtatcaaaaactgcacttgta-cccctaagtgtatacaa  
ataaaataaattaataaat---TAAACAAGTAAGA---GAA-TGCTTACATTTTTCTTAAGCAATTTCTTTAGAAGCA  
TG---TAT---CAAGCAAATACACAAAAGAAATTTATTTTCAGAGCCT--ATTT---ATCTTTTAAAAGTACAC-T  
TTTTGTTTT-----C--ACTGTAAGGAGAT----GATTGAACATGCTCCATTCTTATCATCAATGCAGG
```

>Rhesus

```
GTTTTCTAATTTTTAAAAGGAGATCAATTATACCTACCAACAAGGCAGTTATCAACAAGTTGTAGGGTTACAT-GAACA  
AGAGTTATTAAGCAAGTTTTGGAAATGTG-AAAAGATCCTAGATACTTAATGAACTTT--AAAAAATACACTTAT--  
-aaatggaagctaaataa-tgtgtatgcatggac-acaacatggaataagagacactggagactcagaaggctgt---  
-----gggtgttggggaggttgagggg-tgcaaaattatgtaatgagcacaatgtacactatttgggtaatgggta  
cgctaaaagctcagacttcaccactgtgcaatatatccatgtatcaaaaactgcactcgta-cccctaagtgtatacaa  
ataaaataaattaataaat---TAAACAAGTAAGA---GAA-TGCTTACATTTTTCTTAAGCAATTTCTTTAGAAGCA  
TG---TAT---CAAGCAAATACACAAAAGAAATTTATTTTCAGAGCCT--ATTT---ATCTTTTAAAAGTACACTT  
TTTTGTTTT-----C--ACTGTAAGGAGAC----GATTGAACATGCTCCATTCTTATCATCAATGCAGG
```

```

>Tarsier
GTTTTCTAATTTTTAAGAGGAGGTCATCATACTAGCAACAAGTTAGTTGTGAGCAAATTGTAGGATTACAT-GAATG
GGGGTTATTGAACAAGTTGAAGAAGCATGAAAAAATCTTACATGCTTCATGAACTTG---AAAAAATGGACTTAC--
-aatgggagctaaataa-tgtgtacacatggactagagtggtgggatgatagacattggagactcagaggaatgggag
agtagggaggagggtgaaggaagcgagga-tgaaaaattactcaaggggtaaaatgtatgctatttgggtgatgggta
cactaaaatcccagacttaactgctatgcaatatattcatgtatcaaaactgcatttgtatcccctaaatttatgcaa
atgaaataaataaaaaattt---CA---AAATAAGA---GAA-CCCTCAAGTCTTTCTTAGGTGATTCACTTGGGAAGCA
TGACATAT----CAACCAAATAACCAA-----TACAGGGCTT--GCTG----ATCTTTTAAAAGTACTC-C
TTTTTTTTTTTTGAC--TCTATGAGGTGAC----AATGGAGCATGTT--ATTCTTATAATTAATGCGAG
>Bushbaby
GTTTTCTAATTTTTAATAGGAAGTGATCATACTACCAACAAGATAGCTGTGAACAACCTTGCAGGGTTACATAAAACA
AGGCTTATTGAACAAGTTGGAGAAATGTG-AAAAGAT-TTAGCTGCTTAATGAATTTT-----
-----
-----
-----TAAAAATAAGA---GAA-TGCGCAAGTCTTTCTTAGGTAATTCACTCAGAAGTA
GGACATAC----CAACCAAATAAACAAAAGAGACTTATTTTCAAGGATTTATTTT---ATCTTTCAAAGTACAT-T
TA----TTT-----CTAACTATAAGGAGAT----GATCTAACATGGTCTATTCTTATAACCAGTGCAGG
>Mouse_lemur
ATTTCTAATTTTTAAGAGGAGGTAATCACACCTACCAACAAGGTAGTTATGAACAAGTTGTAGGGTTACAT-GAACA
AGGGTTATTGAACAGGTTGTAGAATTGTG-AAAACAT-----CTTAATGAACTTT-----
-----
-----
-----CAAAAATAAGA---GAA-TGCTCAAGTCTTTCTCAGGTAATTCACTTGGGAAGCA
TGATATAG----CAGCCAAATACACAAAAGTGATTTATTTTCAAAGCT---CTTTAAAATATTTTTAAAGGTGCAT-T
TT----TTC-----C--ACTATAAGGAGAT----GATCAAACACGATCTATTCTTATAATCAGTGC---
>Mouse
TTTTTTTAATTGTTAAGAGGAGGTAATTACATCTAAC-TCAGGAT-----
-----AGCTAATTCTACACGCTTAATGAACCTG-----
-----
-----
-----AAAGAAATAAAA---GAACTGCTTTTCATCTTTTGTGG-----TGACAGA
GGTTTTCCATGCCAATTAATACACAAAAGAACTT--ATTAGGATTT--GTTT---ATC-----T
TT----TTG-----T--ACTTTAAAGAAATGCTTATTTGAACCTCCTGGATTCTTACAACCAGTGCCTG
>Guinea_pig
GTTTTCTAATTTTTACAAGGAGGCTGTCCTGTCTACCATTAGGATA-----
-----CTTGAACAAATAGCATAAATGTG-AGGTGATCCCAGGGGCTTAATGAGCTTT-----
-----
-----
-----AAAGAAATAAAA---GAG-TGTCCTGTGTTTCTTAGATGTTTCACTTGGGAAGCA
TGATGTTT---CAACCGAATACAC-AAAAAATTCATATTTAGGACTT--ATTT---ATCTTTTAAATAC-CACAT
TT----TTC-----C--ATAATAAGAGACGATGGTTTTCAATATGCTTAG----TGTAATCAGTGCAGG
>Dog
GTTTTCTAATTTTTAAGAGGAGGTAAGCTCATCTACCAGC-----
AGAATTATTGAATAAGCTGTAGAAATGTG-AAAAGAT-TTATGTGCTTAATGAACTTT-----
-----
-----
-----AAAAAGT--A---AGA--CTCATCTTTTTTAGGCAGTTAACTTGGGAAGCATGA
TG---TAT---CAACCAAATACACAAAAGAAATTTATTTGGAGGACTT--GTTT---ACCTTTGTAAAGCACAT-A
TTGTTTTTG-----C--ACTAGAAAGAGATGATTGTTTGGAGCATGCTGTATTCTTATAATGAGTGCAG-

```

Marker L109

>L1PB4_3'-End

```
-----tgagggatgagaaattacctaw-----  
-----tgggatataatgtacactattcgggtgatggktacactaaaagc-----ccagacttcaccactacgcaat  
atatccatgtaacaaaactgcacttgtaccccctaaat-----ctataaaaaataaaaaaa-----  
-----
```

>Human

```
-CAGGCATTTACAAGCGCTAGCTAGCTTCCATGGCTAGCATTAAATTAATAAGA---GGTTTGAGAT---AAAACCTATA  
AATTAA---tggatataatgtgcattattcagatga--gttacctaaaagctgaccagactttaccactacacaat  
atatccatgtaacaaaactgcactggtagcccttacat-----ttatataaataa-a-----CAAACCTAAATT  
GT---ACCCGAAATGA-----GTCTTCGGCATCTCTGCCCAATTTCTCCAAGGAAGCCCGTAGAAG-
```

>Chimp

```
-CAGGCATTTACAAGTGTAGCTAGCTTCCATGGCTAGCATTAAATTAATAAGA---GGTTTGAGAT---AAAACCTATA  
AATTAA---tggatataatgtgcattattcagatga--gttacctaaaagctgaccagactttaccactacacaat  
atatccatgtaacaaaactgcactggtagcccttacat-----ttatataaataa-a-----CAAACCTAAATT  
GT---ACCCGAAATGA-----GTCTTCGGCATCTCTGCCCAATTTCTCCAAGGAAGCCCGTAGAAG-
```

>Orangutan

```
-CAGGCATTTACAAGTGTAGCTAGCTTCCATGGCTAGCATTAAATTAATAAGA---AGTTTGAGAT---AAAACCTGTA  
AATTAA---tggatataatgtgcattattcagatgatggttacctaaaagacgaccagactttaccactacacaat  
atatccatgtaaaaaaactgcactggtagcccttacat-----ttatataaataa-a-----CAAACCTAAATT  
GT---ACCCGAAATGA-----GTCTTCGGCATCTCTGCCCAATTTCTCCAAGGAAGCCTGTAGAAG-
```

>Baboon

```
-CAGGCATTTACAAGTGTAGTTACCTTCCATGGCTAGCATTAAATTAATAAGA---GGTTTGAGAT---AAAACCTATA  
AATTAA---tggatataatgtacattattcagatgatggttacctaaaagctgaccagactttaccactacacaat  
atatccatgtaacaaaactgcactggtagccctttacatttatacatttataaataa-a-----CAAACCTAAATT  
GT---ACCCAAAATGA-----CTCTTTGGCATCTCTGCCCAATTTCTCCAAGGAAGCCCGTAGAAG-
```

>Rhesus

```
-CAGGCATTTACAAGTGTAGTTACCTTCCATGGCTAGCATTAAATTAATAAGA---GGTTTGAGAT---AAAACCTAGA  
AATTAA---tggatataatgtacattattcagatgatggttacgctaaaagctgaccagactttaccactacacaat  
atatccatgtaacagaactgcactggtagccctttacatgtatacatttataaataa-a-----CAAACCTAAATT  
GT---ACCCAAAATGA-----CTCTTTGGCATCTCTGCCCAATTTCTCCAAGGAAGCCCATAGAAG-
```

>Marmoset

```
-CAGGCCTTTACAAGTGTAAATTACCTTCCATGTCTAGCATTAAATAATAAGA---GGTTTAAGAT---AAAACCTATA  
AATCGA---tggatataatatacattatttaggtgatggttacctaaaaccaccagactctaccactgcacgat  
atatccatgtaacaaaactgcacttgtactccttacat-----ttacataaataa-a-----CAACCTCTAAATT  
GT---ACCCAAAATGA-----CTCTTCGGCATCTCTGCCCAATTTCTTCAAGGAAGCCCGTAGCA--
```

>Tarsier

```
-CAGGCATTTACAAATGCT-GTTACTTTCTATGTCTAATGTTAATTAATAAGA---AGTTTGAGAT---A-----TA  
AATCAA---tgggtacaatgcacattatttaggtgatgggtcacattaaaagat---cagatttcactaccagccat  
atatccaagtaataaaaattgcacttgtactccttaact-----ttatacaaaatttta-----AAAACCTATAAGTC  
AT---ATACAAAAGGA-----CTCTTTGGCACCTTGCCCAATTTCTCCAAGAAGCTCATAGCT--
```

>Bushbaby

```
-CAGGCATTTACAAAACGCTAGTTACCTTCCAGGTCTGGGGCTAATTAATAAGA---GGCTTGAGAT-----  
-----  
-----AAGACTATAAATC  
AG---AACCAAAATGA-----CTCTTCGGCACCTTGCCCAATTTCTCCAAGAAGCCACAGCC--
```

>Mouse_lemur

```
-CAGGCATTTACAAATGCTAGTTACCTTCCATGTCTAAGGTTAATTAATAAGA---GGTTTAAGAT-----  
-----  
-----AAAACCTATAAATC  
AA---AACCAAAATGA-----CTCTTTGGCACCTTGCCCAATTTCTCCAAGAAGCCCATAGCCAT
```

>Tree_shrew

```
-CAAGCACTTACAAAATTAGCCACCTTCTTGTCTAACATGAATTAGTTAAA---GATTTGGGAT-----  
-----  
-----CAAACCTACAAATC  
AC---ACCCAAAATGA---AGCCTCCTTGATACCCACCCCAATTTCTCCAAGAAGCCCATAGCT--
```

>Mouse

ACAGGCGCATGCTAGCACCAGGAACTTTCCCTGGTGAACATTCTCGAATAAAG---GGTTTGGGAC-----

-----TTTACTATAAGTT
AT---AACC-AAATGATTAGGCCTCTTTGATACCCCTGCCCCATTTCTCCTAAGAAGCTGGTGCCT--

>Guinea_pig

-GAGGCATTTACACAT--GAGTTACCCTCCCTGGTTAACATAAATGAGTAAGATGAGTTTTAAGAT-----

-----ACAGCTATAAATC
AT---ACCC-AAATGATTGAATCTCTTTGATGCCCCACCTCTAATTTCTGCAAAGAAGCCCATCATT--

>Dog

-CGGGCACTTAGAAATGTTTCATTACTTTCCCTATCTAACATTAATTA-TAAGA---GGCTTGGAA-----

-----AAAAC TATAAATC
AT---ACCCAAAAGGACTAAGCCTCTCTGACACTCTCGCCCCGTTCTCCAAGGAAGCCCATAGCT--

>Horse

-CAGGCATTTACAAGTGTTTCATTACCTTCCCTGACTAACATTAATTAATAAGA---GGCTTGGGA-----

-----AA--CTATAAATC
AT---ACTCAAATGACTAAGCCTCTTTGACACCCCGCCGCAATTTCTC-AGAGGAGCCCAAAGCT--

Marker L111

>L1PB4_3'-End

```
tggatggaactggaggccattatcctaagtgaatagacatacagagtggaataatagacactggagactcmgaaagg
-----tgggaggggtgggaggggggtgaggg
atgagaaattacctawtgggtacaatgtacactattcgggtgatggktacactaaaag--cccag-acttcaccacta
cgcaatatatccatgtaacaaaactgcact----tgtaccctcctaaatctataaaaaataaaaaa-----
-----
-----
```

>Human

```
AATACTTTAA-----TTATT-TTTTCACTTACA---TTTTATAGTATTT--ATTGTATGCACCAGAGTG-ATTGGTGA
TAAAAATGGAGGCCCT-----ACTTAAG----TCT-----AAGAGAGTTCT----tgtgaaagtgggagggggatgaggg
ttggaaaattgcctggttaggtgccatggtcactattcagatgatggatacactaaaag--tgcag-acttcaccacta
cgccatatatgctgtaagaaattggcact----tgtacccttgaatacataaaaactttataaaaaa-tt-a---AA
AAGAGTTACT---GTAATGATT-----
ATAAAATGAAAATTCTACGTCATGAGAAAGCATTGTGCCATATTTTTACCAGGGAGCA---TTTTTTTTTTCCTTAGGGG
AAATGAAAAATAATGGCATCTATGATCT
```

>Chimp

```
AATACTTTAA-----TTATT-TTTTCACTTACA---TTTTATAG----T--ATTGTATGCACCAGAGCG-ATTGGTGA
TAAAAATGGAGGCCCT-----ACTTAAG----TCT-----AAGAGAGTTCT----tgtgaaagtgggagggggatgaggg
ttggaaaattgcctggttaggtgcaatggtcactattcagatgatgggtacactaaaag--cgcag-acttcaccacta
tgcaatatatgctgtaagaaattggcact----tgtacccttgaatacataaaaactttataaaaaa-tt-a---AA
AAGAGTTACC---GTAATGATT-----
ATAAAATAAAAATTCTAAGTCATGAGAAAGCATTGTGCCATATTTTTACTGGGAGCA--TTTTTTTTTTCCTTAGGGG
AAATGAAAAATCATGGCATCTATGATCT
```

>Orangutan

```
AATACTTTAA-----TTATT-TTTTCACTTATA---TTTTATAATATTT--ATTGTATGCACAAGAGCT-ATTGGTGA
TAAAAATGGAGGCCCT-----ACTTAAG----TCT-----AAGAGAGTTCT----tgtgaaagtgggagggggatgaggg
ttggaaaattgcctggttaggtacaatggtcactattcagatgatgggtacactaaaag--cgcag-acttcaccacta
cgcaatatatgctgtaagatattggcactggttaggtacccttgaatatataaaaactttctaaaaaa-tt-a---AA
AAGAGTTACT---GTGATGATT-----
ATAAAATAAAAATTCTAAGTCATAAGAAAGCATTGTGCCATATTTTTATTGGGAGCATTTTTTTTTTTTTTTTCCTTAGGGG
AAATGAAAAATAATGGCATCTATGATCT
```

>Baboon

```
AATGCTTTAA-----TTATT-TTTTCACTTACA---TTGTATAGTATTT--ATTGTACACACAAGAGCT-ATTGGTGA
TAAAAATGGAGGCCGTCATAGCCTTAGG----TCT-----AAGAGAGTTCT----tgtgaaagtggga-ggggatgaggg
ttggaaaactgcctggttaggtatagtgttccctggtcagatgatgggtacactaaatg--agcag-acttcaccggtta
cgcaatatacgcctgtaagaaatcggcact----tgtacccttgaatacataaaaacttcctaaaaaa-ttaa---AA
AAGAGTTACT---GTGATGATT-----
ATAAAATAAAAACTGTAAGTCATAAGAAAGCATTGTGCCATATTGTCATTGGAAGCA---TTTTTTTCCCCTTAGGGG
AAATGAAAAATCATGGCATCTATAATCT
```

>Rhesus

```
AATGCTTTAA-----TTATT-TTTTCACTTACA---TTGTATAGTATTT--ATTGTACACACAAGAGCT-ATTGGTGA
TAAAAATGGAGGCCGTCATAGACTTAGG----TCT-----AAGAGAGTTCT----tgtgaaagtggga-ggggatgaggg
ttggaaaactgcctggttaggtacaatggtcctggtcagatgatgggtacactaaatg--cgcag-acttcaccgcta
cgcaatatacgcctgtaagaaatcggcact----tgtacccttgaatacataaaaactttataaaaaattt-a---AA
AAGAGCTACT---GTGACAATT-----
ATAAAATAAAAACTGTAAGTCATAAGAAAGCATTGTGCCATATTTTTATTGGAAGCA--TTTTTTTTTCCCCTTAGGGG
AAATGAAAAATCATGGCATCTATAATCT
```

>Marmoset

```
AATGCTTTAA-----TCATT-TTTTCACTTAGA---TTTTATAGTATTT--ATTGTATCCACAAGAGCT-GTTGGTGA
AAAAAATGGAGGCCCT-----ACTTAAG----TCT-----AAGAGAGTTCT----tgtgaaagtgggagagggatgaggg
ttggaaaattgcctgctgggtacgatggtcactattcagatgacaggtacatgaaaag--cgcag-acttcaccgcta
cgcagtatatccatgtgagacctcggcacg----tgtaccctcgaatgtataaaaacttttgaaaaa-tt-----AA
-AGAGCTACT---GTGATGATTATAAAATAAAATTCTTTTTTTTTTTTTCACCTTGCTCTCATTGGCAAACAGCATGG
ATAAAATAAAACTTCTAAGTCAT-AGCAAGTATTATGCCATAGTTTTATTGGCAGCA--TTTTTTTTTTCCTTAGGGG
```

AAAGGAAAAATAATGGCATCTATAATCT

>Tarsier

AATGCTTTAG-----CCATTATTTTCACTTATA---TTTTATACTTTTT--ATTGTATGCACAAGGGCT-ATTGATGA
-GAAAATTGAGGTCT-----AATTAAG----CCT----AAAAGAGTTCT----tgtggaagtgggatgggaacgaagg
ttagaaaatgacctattgagttcaatgttcacgtttcaggtgatggctacactaaaagacttcatcacttcatcacta
tgcaatatatgcttgaagaatctgcatt---tggaccccc-aaatata-----cttttaaatt-tt-a---AA
AAGAGTTCTT---GAGCT-AGT-----
ATAAAATAAAGCTTCTAAGTGATAAGAAAGCATTGTGCCATATTTTAATTGGCAGTA---TTTTTTTCCCTTAGGAG
AAGATAAAAATAATGGCATCTATAATTT

>Bushbaby

AGAGCCTTGA-TCCCTTTTT-TTCTCACTTCTATTGTTACTTAGTTTTT--ATTGTATGCACAAGAGGT-ATCCATGA
CAAAAATAGAGGTCT-----AATTAAG----TCT-----

-----GA
AAGAGTTCTT---GTGATAAGT-----
ATAAAATCAAAGCCTGAGTGATAAGAAAGCGCTGTGCCATATTTTAATTGGCAACA--TTTTCTCTTTCCTTAGA-G
AAACATGAAACAAGGGCATCTGGAATCT

>Mouse_lemur

AATGCCTTGA--CCATTTTT-TCCTCACTTATA-----TTTTT--ATTGTATGCACAAGAGGT-ATCCATGA
CAAAAATAGAGGTCT-----AATTAAG----TCC-----

-----AA
AAGAGTTCTT---TTGATAAGC-----
ATAAAATAAAAATTCTGAGTGATAAGAAAGCATTGTGCCATATTTTAATTGGCAGCA--TTTTTCC--TCCTTAGG-G
AAAAATAAAAATAAAGGCAT-TGCAATCT

>Tree_shrew

AATGCCTTAAACATTTTTTTT-TTCTCACTTATA---TTTTCACATTTTTTAAATTGTATGCATAAGAGCC-ATCTATGA
CAAATGTAGAAATCT-----AATTAATCTAATCT-----

-----AATT
AAGAGTTCTT---GAGATAATT-----
ATAAAATAAAAATTATAAGTGGTAAGAAAGCATTATAACCATATTTTAATTGGCAGCA--TTTTTTTT---TAAAGTG
GAAAATAAAAATAATGACCTTTTATAATCT

>Dog

AATGCCTAATCA---TTCGT-TCCTTACTTAT-----GTTTTT--ATTGTATGCAGAAGAGTTAATCTATGA
CCAAAATGGAAGTCT-----AATTATG----TCT-----

-----AA
AAACGTTCTT---GCCATAA-----
GACAAATAAA-AGTCTAAGTGATCAAAAAGCATTGCACCATATTTTAATAGGCAGCA--TTTGTTTTTTCCTTGGT-G
GAAAATAAA-TAATGCCATCTACAATCT

Marker L112

>L1PB4_3'-End

```
aaaaaagaatgaaatcatgtccttttgagcaacatggatggaactggaggccattatcctaagtgaa-----  
-----atagacatacagagtggaataatagacactggagactcmg  
aaaggtgggaggggtgggaggggggtgagggatgagaaattacctawtgggtacaatgtacactattcgggtgatggkt  
acactaaaagcccagacttcaccactacgcaatatatccatgt-aacaaaactgcacttgtaccccctaaatctataa  
aaataaaaaaa-----  
-----
```

>Human

```
TCATAGCTCAATTTTCATT-----AAAAAAGTCCTCAGAATAATTTTTCTTTCCATCCA-TATTTTATCTACCT  
TTGTACATTCAAAGATTC---TTGAATTTACTCTC---attaacataaagggtggaataatagacattgcagactatg  
gaagatgggaggggtggaagtggggcaagccttgaaaatttaccttttgggtacaatgttcattatatt-ggtgggtgggt  
aaactaaaattccagatttcaccattacacagtgatgcatgtaagaaatccacacttgcattccctaaatctataa  
aaagaaaaaggaaaaaaa----agaaaacatattt---TTGAATGTACTCT---GCCAAAATAAACGTCATATAATCC  
AGGTTCCCTCTTTGGT----AGGACAGAGGAGCTGCC-GAAACCTTTGAAATT
```

>Chimp

```
TCATAGCTCAATTTTCATT-----AAAAAAGTCCTCAGAATAATTTTTCTTTCCATCCA-TATTTTATCTACCT  
TTGTACATTCAAAGATTC---TTGAATTTACTCTC---atgaacataaagggtggaataatagacattgcagactatg  
gaaggtgggagggtagaagtggggcaagccttgaaaatttaccttttgagtacaatgttcattatatt-ggtgggtgggt  
acactaaaattccagacttcaccactacacagtgatgcatgtaagaaatccacacttgtattccctaaatctataa  
aaagaaaaaggaaaaaaa----agaaaacatattt---TTAATGTACTCT---GCCAAAATAAACGTCATATAATCC  
AGGTTCCCTCTTTGGT----AGGACAGAGGAGCTGCC-GAAACCTTTGAAATT
```

>Orangutan

```
TCATAGCTCAATTTTCATT-----AAAAAAGTCCTCAGAATAATTTTTCTTTCCATCCA-TATTTTATCTACCT  
TTGTACATTCAAAGATTC---TTGAATTTACTCTC---attaacataaagggtggaataatagacattgcagactatg  
gaaggtgggtgggtggaatggggcaagccttgaaaatttaccttttgggtacaatgttcattatatt-ggtgggtgggt  
acactaaaattccagacttcaccgctacacagtgatgcatgtaagaaatccacacttgtattccctaaatctataa  
aaagaaaaaggaaaaaaa----agaaaaaatattt---TTAATGTACTCT---GCCAAAATAAATGTCATATAATCC  
AGGTTCCCTCTTTGGT----AGGACAGAGGAGCTGCC-GAAACCTTTGAAATT
```

>Baboon

```
TCATAGCTCAATTTTCATT----TAAAAAAAAGTCGGCAGAATAATTTTTCTTTCCAT----CATTTTATCTACCT  
TTGTACATCCAAAGATTC---TTTCATGTACTCTC---atgaacataaagggtggaataatagacattgtagactatg  
gaaggtgggagagtggaagtggggcaagccttgaaaatttacctggtgagtacaatgttcattatatt-ggtgggtgggt  
acactaaaattccagacttcaccaccacacagtatattcatgtaagaaatccacacttgtattccctaaatctataa  
aaag-----tattt---TTAATGTACTCT---GCCAAAATAAATGTCATATAATCC  
AAGTTCCCTCATTGGTAGGAAGGACAAAGGAGCTGCC-AAAACCTTTGAAATT
```

>Rhesus

```
TCATAGCTCAATTTTCATTAAAAAAGTCGGCAGAATAATTTTTCTTTCCATCCATTATTTTATCTACCT  
TTGTACATCCAAAGATTC---TTTCATGTACTCTC---atgaacataaagggtggaataatagacattgtagactatg  
gaaggtgggaaagtggaagtggggcaagccttgaaaatttacctggtgggtacaatgttcattatatt-ggtgggtgggt  
acactaaaattccagacttcaccactacacagtatattcatgtaagaaatccacacttgtattccctaaatctataa  
aaag-----tattt---TTAATGTACTCT---GCCAAAATAAATGTCATATAATCC  
AAGTTCCCTCATTGGTAGGAAGGACAAAGGAGCTGCC-AAAACCTTTGAAATT
```

>Marmoset

```
TCATAGCTCAATTTTCATT-----AAAGTCTGCAGAATAA-TTTTACTTTTCATCTATTATTGTATCTACTT  
TTGTACATCCAATGATTC---TTTAATATACTCTC---atggacataaatggtggaataacagacattgtagactatg  
gaaggtgtgaggggtgggaatggggcaagcattgaagatttacccggtgggtacaatgttcattatatt-actgggtgggt  
acattaaaagcccagacttcaccaccacacagtatatgtagtaagaaatccacacttgtattccctaaatataataa  
aaagaaatgaggaaaaacattattaaaaatatt---TTTAATATACTCT---GCCAAAATAAAGGTCATATAATCC  
AGGTTCCCTCTTTGGT----AGGACAGAGAAGCTATC-AAAACCTTTGAAATT
```

>Tarsier

```
TCATAACTCAATTTTCATA-----AAAATATGCAGATTAA-TTTTGTGTTGACATCCACTATTCTATCTAGCT  
TTGCACGTACAGAGATTA---TTTAATGCACTTTT---aggggcatacagagaaaaataatagacattagagactaca  
aaaggcaggcagggtgggagagggcatgaggggtgaaaaattacctgctgagatgatgttcacttttcaggtaaatgaat  
acactaaaaccagac--cgccactaccaatatatgcatg-taagaaatccaca----tgtaccctcaccataaaa  
ataaaaaataatagaaaaa-----gattc---TTAATGTTCTCT---GCCTAAATAAAGGTTATAAAATCC
```



```

AGGTTTCTCTTTTGGT----AAAACAGAGAAGCTGTC-AAAAACTTTGAAATT
>Bushbaby
TCATAACTCAATTTTCATA-----ATACATCTGCAGAATAG-TTTCACTTTCCATCTATTATTCTACCTACTT
TTGGATATCCAAAGATTC-----
-----
-----ATTAATGTTCTCT--GCCAAAATTAAGTCCATATAGTCC
AGGTTCCCCCTTCGGT----AAAACAGAGAAGTTGTC--AAAGCTTTGAAGTT
>Mouse_lemur
TTGTAACTAAATTTTCATA-----ATGAATCTGCAGAATAA-TTTTGCTTTCCATCTATTATTCTGCCTATCT
TTGCATATCCAAAGATTC-----
-----
-----ATTAATATGCTTT--GCCAAAATAAAGG-CATGTAATCC
AGGTTCCCCCTTTGGT----AAGACAGAAGAGCTGTC-AAAAGCTTTGAAATG
>Tree_shrew
TCATAACTCAGTTTTTCATA-----ACAAATCTGCTGAATAATTTTTTCTACCA---ATTATTCTGCCTATCT
CTGCATATCTAAAGATTC-----
-----
-----TCTAAAGTAATCT--GCCAAAATAAAGCCATATAAATTC
GTTTTCTGTTTTTCAT---AGGGCAGAGGAACTACC-AAAAGCTTTGAAATT
>Mouse
TTCTAAGTCAATTTCCATA-----GCATATCAGTTGAATAA-TGTGACTTTTCAACTATTACTCAATCTGCCT
CTGCATATCCA-GGATTC-----
-----
-----TCTGTGTATTCTT--TCC-AAATCAAACCAATATAATCC
AGATATTCTCTTTTATT---AGCCAGATGGGTTTTTCAAAAAATTTAA--GAT
>Guinea_pig
TCAAAACTCAATTTTGTGTA-----ACAAATTGGCAGAAAAA-TATTCTTTTCCATCTATTATTTGATTTATTT
TTGCATATTCAAAGATTA-----
-----
-----TTTAATGTACTCT--TCAAAAATAAAATCCATATAATCC
AGATTTCTCTTTTGAT---TGAATGTAAGAGTTATC-ACAAGCTTTAAAATT
>Dog
TCATAACTTAATTTT-----CAAATAA-TTTTGCTTTTCTATCCATTATTCTACTTGCCT
TTGCCTATTCAAAAATC-----
-----
-----T--AATAT--CCT---CCAAA-TAAAGGCCATGTG-TTC
AGACTTCTCTTTAGC---AGGACAGAGGAGCTGTC-AAAAGCTTTGAAATC
>Horse
TCATAACACAATTTTCATA-----ACAAATCTGCAAAATAA-TTTTGCTTTTCTATCCATTATTCTATCTATCT
TTGCATGTCCAAAGATTT-----
-----
-----TTTAATATACTTT--TCCAAAAGAAAGGCCATATA-TCC
ATATTTCCCCTTTGGT----AGGACAGAGGACCTGTC-AAAAGCTTTGAAATT

```

Marker L113

>L1PB4_3'-End

```
-----agtgatccatcaatggatgactggataaagaaaatgtggtatatatacaccatgga
-----atactactc-----
-----agccat
aaaaagaatgaaatcatgtccttttgagcaacatggatggaactggaggccattatcctaagtgaa---actcagaa
acagaaagtcaaataccgcatgttctcacttataagtgggagctaaacaatgkgtacacatgatagacatacagagtg
gaataatagacactggagactcmgaaaggtgggaggggtgggaggggggtgagggatgagaaattacctawtgggtaca
atgtacactattcgggtgatggktacactaaaagcccagacttcaccactacgcaatatatccatgtaacaaaactgc
acttgtaccccctaaatctataaaaaataaaaaa-----
-----
-----
-----
-----
-----
```

>Human

```
CTCAGAAGTGCAAAGGAGAAGTATTCAACAGGGTAT-AACTAGATCTAGTGTGCATTTTAAACATTTGAAATACATATT
AAAATTGATGCATTT---AAAATGAACTCATG---atattattc-----
-----agccat
aaaagagaatgaaaccatgtccttttgagcaacatggatggaactggagtctattatcataagtgaacaacacagaa
acagaaagtcaaatactgcatgttctcatttatcagtgagagctaaaaaatgggtacacatg---gacatacagtggtg
gagtaatagacactgaagactcgggaaggggtgagagagtcagagggggatgggggaatgagaaattatthaatgggtaca
atgtatattat---ggtgatgaatacaccagaagcctggacttcaccactacataatatccatgtaacaaaacgggt
acttgtactcattaaatattatacaataaattaaatttaaaat---AAAATAAGCTCATG---AACACCAGTCTATCT
--GCACCTTCCAATACTTTCTG--AAAAAAAAA-----CACATAA-----ATTACATGG
-----TATACTGTATACTCTG-ATGCTAAAGAA-TAAGTGTCTATTTTTCAATTAAATA---TATATA---AAAAAA
GATTTGAATGTTTAAATTAATTGACAGCTGATCTAAAAAAAAA---AGGTAATCAGAA-TTTTTTCAT-----
TAGTTGTCACTACCTAGCAAATGTACAA-CCAGAAAGGAATTCACAGTGGAACTAGACTCCTGTGTCCTCC-----
TGACTGCTATAGAATGTAG-GAACATCACCATA
```

>Chimp

```
CTCAGAAGTGCAAAGGAGAAGTATTCAACAGGGTAT-AACTAGATCTAGTGTGCATTTTAAACATTTGAAATACATATT
AAAATCGATGCATTT---AAAATGAACTCATG---atattattc-----
-----agccat
aaaagagaatgaaaccatgtccttttgagcaacatggatggaactggagtctattatcataagtgaacaacacagaa
acagaaagtcaaatactgcatgttctcatttataagtgagagctaaaaaataggtacacatg---gacacacagtggtg
gagtaatagacactgaagactcgggaaggggtgagagagtcagagggggatgggggaatgagaaattactthaatgggtaca
atgtatattat---ggtgatgaatacaccagaagcctggacttcaccactacataatatccatgtaacaaaacagt
acttgtactcattaaatattatacaataaacttaaaatttaaaat---AAAATAAGCTCATG---AACACCAGTCTATCT
--GCACCTTCCAATACTTTCTG--AAAAAAAAAC-----CACATAA-----ATTACATGG
-----TATACTGTATACTCTG-ATGCTAAAGAA-TAAGTGTCTATTTTTCAATTAAATA---TATATA---AAAAAA
GATTTGAATGTTTAAATTAATTGATAGCTGATCTAAAAAAAAA---GGTAATCAGAA-TTTTTTCAT-----
TAGTTGTCACTACCTAGCAAATGTACAA-CCAGAAAGGAATTCACAGTGGAACTAGACTCCTGTGTCCTCC-----
TGACTGCTATAGAATGTAG-GAACATCACCATA
```

>Orangutan

```
CTCAGAAGTGCAAAGGAGAAGTATTCAACAGGGTAT-AACTAGATCTAGTGTGCATTTTAAACATTTGAAATACACATT
AAAATCGATGCATTT---AAAATGAACTCATG---atattattc-----
-----agccat
aaaaatagaatgaaaccatgtccttttgagcaacatggatggaactggagtctattatcataagtgaacaacacagaa
acagaaagtcaaatactgcatgttctcatttataagtgagagctaaaaaatgggtacacatg---gacatacagtttg
gagtaatagacactgaagactcgggaagggtaagagagtcagagggggatgggggaatgagaaattatthaatgggtaca
atctatattat---ggtgaagaatacaccagaagcccagacttcaccactacataatatccatgtaacaaaacgggt
acttgtactcattaaatattatacaataaattaaatttaaaat---AAAATAAGCTCATG---AACACCAGTCTATCT
--GCACCTTCCAATACTTTCTG--AAAAAAAAA-----CACATAA-----ATTACATGG
-----TATACTGTATACTCTG-ATGCTAAAGAA-TGAGTGTCTATTTTTCAATTAAATA---TATATA---AAATAA
GATTTGAATGTTTACATTAATTGATAGCTGATCTAAAAAAAAA---GGTAATCAGAA-TTTTTTCAT-----
AAGGTGTCACTACCTAGCAAATGTACAA-CCAGAAAGGATTTACGACTGGAACTAGACTCCTGTGTCATCTCCG-----
```

TGACTGCTATAGAATGTAG-GAA-----
>Baboon
CTCAGAAGTGCAAAGGAGATATATTCAACAGGGTAA-AACTAGATCTAGTGTGCATTTTAAACATTTGAAATACACATT
AAAATTGATGCATTT----AAAATGAACTC-----atattattc-----
-----aaccat
aaaaaagaatgaaaccatgctcttttgcagcaacatggatggaactggagtctattatcataagtgaaacaacagagaa
acagaaagtcaaatactgcatgttctcatttataagtgggggctaaataatgggtatacatg--gacatacagtatg
gaataatacacactgatgactcggaagtgtggaagagtcagagggcggatggggaatgagcaattatttaattgggtaca
atgtacattaatt-ggtgatgaatacaccaaaaagcccagacttcaccactacataatataatccatgtaacaaaactgt
atgtgactcattaaatttatacaaaataaattaaatt-----a---AAAACAAGCTCATG---AACACCAGTCTATCT
--GCACCTTCCAACACTTTCTG--AAAAAATAA---ACCACATAA-----ATTACATGG
-----TATACTGTATACTCTG-ATGCTAAAAAA-TGAGTACTATTTTTCAGCTAAGTA---TATATA---AACGAA
GATTTGAATGTTTAAATTAATTGATAGCTGACCTAAAAAATAATGGGCAATCAGAA-TTTTTTCAT-----
TAGTTGTCACTACCTAGCAAATGCACAA-CCAGAAAGGAATTCACAGTGGAACTAGATTCCCTGTCATCCTCC-----
TGACTGCTATGGAATGTAA-GAACATTGCCATC
>Rhesus
CTCAGAAGTGCAAAGGAGACGTATTCAACAGGGTAT-AACTAGATCTAGTGTGCATTTTAAACATTTGAAATACACATT
AAAATTGATGCATTT----AAAATGAACTCATG---atattattc-----
-----aaccat
aaaaaagaatgaaaccatgctcttttgcagcaacatggatggaactggagtctattatcataagtgaaacaacagagca
acagaaagtcaaatactgcatgttctcatttataagtgggggctaaataatgggtatacatg--gacatacagtatg
gaataatagacactgacgactcggaagtgtggaagagtcagagggcggatggggaatgagaaactatttaattcgggtaca
atgtacattaatt-ggtgatgaatacaccaaaaagcccagacttcaccactacataatataatccatgtaacaaaactgt
atgtgactcattaaatttatacaaaataaattaaatt-----a---AAAATAAGCTCATG---AACACCAGTCTATCT
--GCACCTTCCAACACTTTCTG--AAAAAATAA---CCACATAA-----ATTACATGG
-----TATACTGTATACTCTG-ATGCTAAAAAA-TGAGTACTATTTTTCAGCTAAGTA---TATATA---AAAGAA
GATTTGAATGTTTAAATTAATTGATAGCTGACCTAAAAAATAATGGGCAATCAGAA-TTTTTTCAT-----
TATTTGTCACTACCTAGCAAATGTACAA-CCAGAAAGGAATTCACAGTGGAACTAGATTCCCTGTCATCCTCC-----
TGACTGCTATGGAATGTAA-GAACATTGCCATC
>Marmoset
CTCAGAAGTGCAAAGGAGAAGTATTCACTGGGGTGT-AACTAAATCTAGTGTGCATTTTAAACATTTGAAATACACATT
AAAATCAATGCATTT----AAAATGAACTTGTA---ctattcagccataaaaaagaatgaggtcagtggggtgtaact
aatctagtgatgcattttaacatttgaaatacacattaaatcaatgcattttaaatgaacttgactattcagccat
aaaaaagaatgagggccatgctcttttgcagcaac----atggaaccagagttcattatcataagcaaaacaacacagaa
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gaataatcgatactgaagactcagaaggggtgagagatcgatggggaatggggaatgagaaattatttaattgggtaca
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--GCACTTCCAATACTTCTG--GAAAGAAAAA-----ACATAA-----ATTACATGT
-----TGTACTGTATACTCTG-ATGCTAAAGAA-TAAGTGGCTATTTTTCAACTAAATT---TATATA---AAAGAA
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TAGCAGTCACAACCTAGCAAACATACAA-CCAGAAAGGAATTCACAGTGGAACTAGGCTCCTGTCATCCTCC-----
TGACTGCTATGGAATGTAA-AAACATCACTGTA
>Tarsier
CTCAGAATACCAAAGG-----GAGCAT-AGCTAGATCTAGTGTGCA-ATTAATAATTTGAAACACACATC
AAAATGATACATTT----AAAATGAGCTCAA---atactattc-----
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GATTTGAATGTTGAAATTAATGGATTGCTGATCTGAAAAATAG-----TAACCACAA-TTTTTTCATTACGTTTACA
TGAATGCCACAACCAAGCATGTGTACGA-CCAGTGGGAATTCACAATGGAAGTAGACTCCTGCCATCTTCT-----
-----AG-GAA-----

>Bushbaby

CTCAGAATTCCAC-----GGATGTAAACTACAGGCAAGGTGCATTTTTAAAATCGGAAACACAGGTT
AAAACCTGATGCATTC-----

-----AAAATAAGCTCATG---AACACGAGTCTATGT
TTGTACTCTCCAGTACATCCTG-----AACAAAAG-----CATCAAG-----ATTACAGGG
-----CTATGCTG-----CACTC-TCACTAGAGTA-TGAGTGACTATTCTTCAACCAAATA---TATGCT---A---AA
GATTTGAATGCTTAAATTAAGTGACAGCTGACCTG---AAAA---AGTAATCACAG-TTTTTTCAG-----
TAGTGGTCACAACCTAGCAATGGTACAACCCAGGCAGGAATTCACGTTGGAAGTCAACTCCTGCTGTTTCACCTCT-
AGACTGCTATAGAATATAG--CACACCAGGG-A

>Mouse_lemur

CTCAGAATTCAAAAGACAAGTGTCTACGAGGCATAAACTATATCCACTGTGCACTTTAAAATTTGAAACACACATT
AA----TATGCATTT-----

-----AAAATAAGTCCATG---AACACTAGTCTATGT
CAGTACCCTCCAGTATTTCTGGAGAAAAAAAAAAAA-----CCCCACA-----CTAATTTTG
-----TGGTTCTA---CTCAG-ATGCTAAACAA-TGAGTGACTATTTTTCAACCAAATA---TATGTT---A---AA
GATTTGAATGTTTTAACTAACTGATAGCTGACCTG---AAAA---AGTAATCACAA-TTTTTTCAT-----
TAGTGTTCATAACCTAGCAAATGTACCA-CCAGGGAGGAATTCACCGTGAATTCAACTCCTGTATCCACCCCCA
AGACTGCTATGGAATGTCA-GTACACCAAGGTA

>Mouse

CTCAGAATTCCAA--AGCCACGCTCTGTGAGGCAT-GACCATGCCTCCTGTACATTTCAAAGTTTGAAACACATCTT
AAAAATTACGTAATT-----

-----GGAGCTCA-----CAGTGCCATTCTTTT
TAAGTTTCCTCCACATTTGCTA-AAAGGAAAATTATGTATCACTTCAG-----GCTACATAG
-----GATTATATT---CTTTGGATAATAAGGAA-CAGGCAGCTAGTTATCATGTAAACA---TATATC---A---AA
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TACTGGCCACAACCCAAAAAATGTACAT-CCAGTGTGGAAGTCCAGAAGAGGAGTGGAC-TCCAACAGCCTCT-----
AGAACTCTTTGGAGTTGAG-G-----TG

>Dog

CTCAGACTTCCAAAGGCGAAGTGTCTACAGGAAAT-AAATGTATCTAATGTACATTTAAAAGTTGAAATACACATC
AAAATTGATGAATTT-----

-----AAAGTGAGCTTATG---AATTCCAGTCTATTT
CTGTGCCCTCCAATAATTCTTT--AAAAACAACA-----ACAACAACAACAACAACAACAACAATTG
-----GCACATTTTCCACTCTGGATGCTAAAGAA-TAAGTGAATATTTTTCAACCAGATA---TATA-----AT
GATTTCAATGTTTTAAATTAATTGAAAGCTTAC-----AA-----AATTACAATTTTGTAT-----
TAGTGGTCACAGTCTAGCAAACCTTATAG-TCAGTGAAGAATTCTATAGGGTTGTTAGACTTTGCCATTCTCT-G-----
GGACTGCTATGGAATGGAACACACACCAAAGTC

>Horse

CTCAGATTTCTATAGGAGAAGCATTCTGT-GGGCAT-AACTATATCT-ATGTGCATTTAAAAATTTGAAACACACACT
AAAATGTATGCATTT-----

-----AAAAGGAGCTTATG---AATTACAGTCGACTT
CATTGCCCTGTAATACTTCCTG---ACAAAAAAGC-----ATAA-----ATTACATTG
-----GCATGTTTTCTATTCTGGATGCTAAAGAA-TGCGTGGATATTTTTTTCAGCCAAATA---TATATT---AAAGAA
GATTTGGGTGT-----TTAATTGATAGCTGATGTGA---AAAA-----AATCACCATCTT-TTAT-----
GAGTGGTCACGATCAAGCAAATGTATAG-TCAGCGAGGAATTCTACAGTGGGACTAGACTCCTATCATCCG-C-----
AGGCTGTTATGGAATGTAG-GCACACTGAGGTA

Marker L114

>L1PB4_3'-End

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aaaaataaaaaaa-----  
-----
```

--

>Human

```
AGGAATGTTGCACTTAGTCTTATCGTGATAACAGAACAATCCTTATAAGTTTCAACAACATCTGC- TTACAAACATGT  
AGGAGGTGAGAACAAGTCCAATTTTT--ATTTTATCTCA--ttacttaatgagtacaatggacattattcaggtgatg  
gacacacttaaagcccagacttcaccactatgaaatatgtctctgtgaggaaattgcacttgtactccttaaatttat  
acaaataaaaaaacag--CAATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAGTGTTCTTGCAGTTGGTTCACA  
GGTCCTATCCGAGCATAACA-AAATTATTTACACAGCTTGTAACGACCTATTATAGATGGTATTAGAAGAATTCTTCT  
AA
```

>Chimp

```
AGGAATGTTGCACTTAGTCTTATCGTGATAGCAGAACAATCCTTATAAGTTTCAACAACATCTGC- TTACAAACATGT  
AGGAGGTGAGAACAAGTCCAATTTTT--ATTTTATCTCA--ttacttaatgagtacaatggacattattcaggtgatg  
gacacacttaaagcccagacttcaccactatgaaatatgtctctgtaaggaaattgcacttgtactccttaaatttat  
acaaataaaaaaacag--CAATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAGTGTTCTATGCAGTTGGTTCACA  
GGTCCTATCCGAGCATAACA-AAATTATTTACACAGCTTGTAACGACCTATTAGAGATGGTATTAGAAGAATTCTTCT  
AA
```

>Orangutan

```
AGGAATGTTGCACTTAGTCTTATCATGATAGCAGAACAATCCTTGTAAGTTTCAACAACATCTGC- TTACATACATGT  
AGGAGGTGAGAACAAGTCCAATTTTT--ATTTTATCTCA--ttacttaatgagtacgatgaacattattcgggtgatg  
gacacacttaaagcccagacttcaccaccatgaaatatgtccctgtaaggaaattgcacttgtactccttaaatttat  
acaaataaaaaaacag--CAATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAGTGTTCTATGCAGTTCGGTTCACA  
GGTCTTATCCGAGCATAACA-AAATTATTTACACAGCTTGTAACGACCTATTATAGATGGTATTAGAATAATTCTTCT  
AA
```

>Baboon

```
AGGAATATTGC-CCTTAGTCTTATTGTGATAACAGAACAATCCTTTTTAAGTTTTCAGCAACATCTGC- TTACATACATGT  
AGGAGGTGAGTACGAGTCCAATTTTT--ATTTTATCTCA--ttacttaatgagtacaatggacattattcaggtgatg  
gatacacttaaagcccagacttctccactatgaaatatgacctgtaagaaaattgtacttttacttcttaaatttgt  
gcagat-aaaaaacag--CCATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAATGTTCTATGCAGTTCGGTTCACA  
GGTCCTATCTGAGCATAACA-AAATTATTTGCACAGCTTGTAATGACCTAGTTTAAAGTGGTACTAGAACAATTCTTCT  
AA
```

>Rhesus

```
AGGAATATTGC-CCTTAGTCTTATTGTGATAACAGAACAATCCTTTTTAAGTTTTCAGCAACATCTGC- TTACATACATGT  
AGGAGGTGAGAACGAGTCCAATTTTT--ATTTTATCTCA--ttacttaatgagtacaatggacattattcaggtgatg  
gatacacttaaagcccagacttctccactatgaaatatgacctgtaagaaaattgtacttttacttcttaaatttgt  
gcagat-aaaaaacag--CCATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAATGTTCTATGCAGTTCGGTTCACA  
GGTCCTATCTGAGCATAACA-AAATTATTTGCACAGCTTGTAATGACCTAGTTTAAAGTGGTACTAGAACAATTCTTCT  
AA
```

>Marmoset

```
AGGTATATTGCACTTTGTCTTATCATGATAGCAGAACAATGCTTGTAAGTTTCAAGGACATCTGC- TTACATACATGT  
AGGAGGTGAGAACAAGTCCAGT-----GTTTATCTCA--ttacttaatgagtcacaatgaacattattcaagtgcta  
gatatacttaaagctcagacttcaccactatgaaatatgtccatgtaagaaaattgcacttgtattccttaaatttat  
gcaaat-aaaaaacag--CAATA--AATA--CATA-AAGTGTCTGTAAAA-TTCAGTGTGCATGCAGTTCGGTTCACA  
GGTCCTATCTGAACATAA----AATTATTTACACAGCTTGTAATGACCTATTATAGATGGTATTAGAATAATTCTTCT  
AA
```

>Tarsier

```
AGGAATATTGCACTTAGTCTTA---TGAGAGCCAAACCATGCTTATAAATTTCAACAATGTCTGCTTTGTGTACATAC  
AGAAGGTGAGAAAAAGCCCAATTTTT--AATTTATCTTA--ttacttactgggtatagtggtgacattattcaggtgatg  
gacacactaaaagcccagacttcaccaccaaccaatgtatccatgtagcaaaattgcatttgcgccccttaaatttat  
acaaat-aaacaaca--CAACAACAATA--AATACAAGTGTCTGTCAACA-TTCAGTGCTCGTGAGGTCAGTTCACA  
GGTCTTATCCAAACATAATA-AAATTATTTACACAGCTTCTAATGACGTATTATAGATGGCATTGTAAAGACTCTTCC
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AA
>Bushbaby
AGGAACACTGCCCTGAGTTTTATTACGATAGCCAAACAATGCCTGTAAGTTTTCAACAACATCTGCTTTCCATGCACAT
AGAAGGTGCACATAAGCCCAATTTTT-----

-----AATTCTTTTCA--TTTA-AAGTATCCTATACAA-TCAAATGCTTATGCAGTCCCTTACCA
GATCCTTTCTGGACATAATA-AAATTATTTACATAGCTCTGAATGGTGTATCATAGATGGTATTATAGTGATTCTTCT
AC
>Mouse_lemur
AGGAATATTGCACTTCGTCTCATCGAGATAGCCAAACAATGCATATGAGTTT---CAACATCTGCTTTACATACACAT
AGAAGGTGAGCAC-AGTCCAATTTTT-----

-----AATTTATTTCA--TTGA-AAGTATCCTGTAAGA-TTCAGTGCTCATGCAGTCAGTTTACA
GGTCCTATCTGGACATAATA-AAATTATTGATATAGCTTCAAATGGCATAGTATAGATGGTAGTGTAAATGATTCTTCT
--
>Tree_shrew
AGGACGAATGCACTTAGTAGTCAAATGGTAGCCCAATAATGGTTACGAGTTT---CAATATCTACTTTACATACACCC
GGAAGGTAAAGAAAACGTCCAATTTTT-----

-----AATTAATCCCA--TTT-----AAAA-TCC-----TAGTTCAGA
GATTATATCTGGGCATAAAA-AACTTTTTTACATAGC-----ACAGTAATGATTCTCTCT
GA
>Guinea_pig
GAAAATATTGTACTGCATCTAACCAGGATGACAAAACAGTGCT-----GTGTGCAGATGTC-----TGCACACTC
AAAAGGTGAGAATAAGCCAAAATTTTT-----

-----AATCTC-CATA-----AAGAGCTTTGTAAAA-TTCAGT-ATTCTTGATCAGTGTGAA
GAGCCTAGCTGGGTACAACA-CAATTAGTTGCACAGCTTCTAATGCCATATTATAGATGGTATTGCAGTGATTTGCC
AA
>Dog
AGTAATATCGCACTTAACCTAATCATGATAGTCAAATGGTGTGAGAAGTTTTGACAACATCTGCTTTACAAGTATAT
GGAAGGCAAAGACAACCCCAATTTTT-----

-----AGTTTATCTGA--TTTA-ATGTGTTCTATAAACTTCAGTGTTACATCATCGGTTTACA
GACCCTCTCTGAACATAATA-AAGTTATTTACACAGCTGCTGATGGCATAGTCGAGGTAGAATTATTAGGATTCTCCC
AA
>Horse
AGTAACATTGCACTTAGTCTAGTCATGACAGTCAAACAATGCTTAGAAGTTTTCAATTGTGTCTGCTTTACACATATAT
AGAGGATGAGGACAAACCTAAGTTTT-----

-----AATTTATCTCT--TTTA-ATGTGTTCTGTAAAAATTCAATGTTACACCAT-----
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AA

Marker L122

>L1PB4_3'-End

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wtgggtacaatgtacactattcgggtgatggkta-----cactaaaagcccagacttcaccactacgcaatataccc
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>Human

AGTTTCATGAGTTCACATCAGAACCAAATGAATGTTTTCT----ATGTTAAGAAAAA-TATCAATTCCTC---TTTC
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TTACTTGGGGGAAATATAGTCTATGGTATGTAAATATTCTGAAAGTTTTTC-ATTGA

>Chimp

AGTTTCATGAGTTCACATCAGAACCAAATGAATGTTTTCT----ATGTTAAGAAAAA-TATCAATTCCTT-----TT
TCAGATTCAATGTCATGAAAGCTG---TTAAATACT----catagacttatctcagcacaattcacaatagcaaagat
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TTACTTGGGGGAAATATAGTCTATGGTATGTAAATATTCTGAAACTTTTC-ATTGA

>Orangutan

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TTACTTGGGGGAAATATAGTCTATGGTATGTAAATATTCTGAAAGTTTTTC-ATTGA

> Baboon

AGTTTCATAAGTTCACATCAGAAGCAAATGAATGTTTTCT----ATGTTAAGAAAA-TGTCAATTCCTC---TTTT
TCAGAT-CAATGTCATAAAGCTA---TTAAATACT----aatatacttatatcagcacaattcacaatagcaaagct
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TTACTTGGGGGAAATATAGTCTATGACACGTAAATACTCTGAAAGTTTTCCATTGA

> Rhesus

AGTTTCATAAGTTCACATCAGAAGCAAATGAATGTTTTCT----ATGTTAAGAAAA-TGTCAATTCCTC---TTTT
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>Marmoset
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TTACTTTGGGGGAAATATAGTCTATGGTATCTAAGTATTCTGAAGGTTT-C-ATTGA
>Tarsier
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ATAAAT----GTCATAAAAAGCTA---TATAAATAT---ttgtgtgtttattgcaagttctattcccaataacaaagat
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-----gaaatcatatatttgtca----caacatggatggaaactggagaccattgttttaggtaaaa
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atgggtacagtgacatttttgggg---ggtaattgtt-----gccctgatttcacctcaacacaatatatcc
atgtaaaaaactgcacttgtatcccctaaatttaacaaaataa---AACAAAATATT----TCATGTT-----AT
TTAATTAGGGGAAGTACACTTTATGGTAAATAAATATTTTTGAATGTTTTTA-ATTGA
>Bushbaby
CATTTTTATGAACTCACATTAGAGCTGAGTCAATGTTTTCTGTTCTTCTTAAGAAAAAATCTCAGTTGCTCATTCTTCT
GAGGAT-CAATGCTGTAAAAGTTA-----

-----TATGAG-TACT-----TTATCTTTCATGTTAT
TTAAATGGGGGAAATATAATCTATGGTAAATGAATATTCTG----TTTCG-ACTGA

>Mouse_lemur

AATTTTCAGAAACTCATGGTAGAGCTGAAAGAATGTTTTCTATTCCATCTTAAGAAAAA-TGTCAA--ATC--TTTT
GCAGGC-CAATGTCATAAAAGCTA-----

-----AAAGAA-TAAT-----TGATCTTTCATGTTAT
TTATTTGGGGGAAATATAATCTATGATAACTAAATAT-----

>Tree_shrew

-----TGATGAACTTGCATTATATTCAAATGAATGTTTTCTATTCTATCTTGAAAACAC-TGTCAGTTCCTCTATTGG
GCAGCT-AAATATCAT-AAAGCTA-----

-----TATAAA-TCCT-----TGATGTCTTATGTATT
TTG-----AATACAATCTATGGCAACTAAATATTCTGAATGTTTAT-ATTAA

>Guinea_pig

AGTTTTCATGAACTCACATAGGATTCTAGTGAATGTTTTCTATTTTATGTTAAGAAAAA-TGTGAATTTCTCATCTTTT
GAATGT-CAGT-GGATAACAGCTA-----

Marker M02

>MSTB1

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```

>Human

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TCCTTCACAAAAATTTAAGATCTTGATCTATAAATTTATACTCTAAACTTTTACATGAATCAGAACTGTGA-AAAA-
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>Chimp

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>Orangutan

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>Baboon

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>Dog

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>Orangutan

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> Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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Marker M12

>MSTB

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>Human

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>Chimp

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```

>Orangutan

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>Baboon

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>Rhesus

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Tree_shrew  
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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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> Baboon

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> Rhesus

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> Marmoset

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>Horse

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> Baboon

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> Rhesus

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> Marmoset

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>Tarsier
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>Mouse_lemur
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>Dog
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Marker M17

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Tarsier

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>Bushbaby

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>Dog
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>Baboon

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>Rhesus

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>Marmoset

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Marker M20

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Orangutan

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Dog

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>Horse

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Mouse

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>Dog

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>Horse

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Dog

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>Horse

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Marker M25

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Guinea_pig

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>Mouse

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>Rhesus
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>Tarsier
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>Bushbaby
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>Mouse_lemur
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>Tree_shrew
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Marker M28

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur
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>Mouse
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Marker M29

>MSTB1

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>Human

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>Chimp

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>Baboon

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>Orangutan

GCTCAG-----ATTCTCACTGCCAAGGTGCTGCTTCCCTTCC-CTTT---GGATCTCACTAATAGCCACTGCCACCTC
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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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-----  
-----  
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>Mouse_lemur

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GACACAACCAAGCCATGTGGCTGGAAC-AGACTTTACCTGAGACCCAGGATACCACCACACCCCT-----TCAGG  
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>Guinea_pig

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GCTT---CAAAGCACTCTCTTAAAACCCAGAAGCATGTGCTTACATGTCTGAACATAAAT-TCCCTTCT---GACACC  
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>Mouse

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-----GTGGTA---CTAGGTAATCAA  
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>Dog

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>Horse

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Marker M30

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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GCCCCGAGAGACGACGTTGGGGGACCTGTACAGGGG-AG-AGACTA-GGAAACAT--GATGGCATCCGGTGGCAGCC-
CC-----TGAAG-----AAGT--ATGTCCTTCGAGGTGAATTGCTTCCAATCTTGCCATTTCT--TGTTTATT
TACTCC-AGAA---TTTGTAGTGAAGCCGAATC-----CAGG---GGGCC---tgatataatttgaatg-tttgt
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gcagaat--cctcatgaccagcttgggtgctattctcctcttggtaatgcatgagtgctaata---tattagttcca
taagagctgattggtgaaaagagcctggcaactcctcccc-actctctctggttctctcttgcctatgtga-----
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cctttctagaaaacacaaaag-actaagaca---GAGAT---C-----CTTCTGGTTTTAGCTCC-ACCCGAGGC
AACAAGGAAGGGCCTTAGCATCCA-AGTT--GTCCTCTC-

>Tarsier

GGCTAATGCTCG-TCCCTCTCCCTCCCAAG-AAGCAGGTTAAGCAGGAAAGTGTCTCCATGAAAACAGGTTTTCACAGAAG
GCCTGAAAGATGGGAGAGTGGAAACCTGTACATGGG-GGCAGACCA-GGAGACAG-AGAAGGTATCTGGTGGCAACCT
CCTCACCAAAGTTGAAG-----AAGTAAATATCCTACGAGGTGAATTTTCTCTAGTCTTGCCA---CC--TATTTATT
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ATGAGGGAAGGCCTTAATTTCTG-AGTA--GTGCTTTCT

>Bushbaby

-----AGGC-----CTTGTTGAGGGTAGGTTTTCATCCTAG
GCTTAAGAGATGGTGTGTGGGACTTCCCATGTGGACAG-AGACTA-GGAGAATG--AAGCCACCTAGAGGGAGCCT
TCTGTC-----TGGAG-----AAGA-AATGTTCTGTGAGGCGAATGGTTTCCAGTCTGCAATTTTT--AGTTTACT
TTCTCT-GGGA---TTGAA-----GCATCATTCGGGGCAGG-----

-----GGGC---C-----TTTGTGGTCTCAGCACT-ATC-----
-----GAAAGATCTTTGCATCTG-TGTT--G--CTTATC

>Mouse_lemur

-----AGGT-----CACGCTGAGGGTGTGTTTTCATTGTAG
GCCTAAGAGATGGTGTGTGGGACCTGCCATGTGGGCAG-AGACCA-GGAGACAGAAACAGGCAGCGGGAAGTAGCCT
CTTTAT-----TGAAG-----AAGT-AATGTCCTCTGAGATGAATTGTCTCCAGTCTGCACTTCT--TGTTTATT

Marker M34

>MSTB1

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gaagcagatgctggcgccatgcttctgtacagcctgcagaaccgtgagccaaataaacctcttttctttataaatta  
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```

>Human

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TTTTCTCTTTATCATCTAAGGTTGGATATCTCCTCCAGGTTACACAGGAC-----ATAGCAGTTGCTTGAGATG  
GAACAA-----TCTAAAAGCAAATGATGTAAGTTAAAAGAACATA---CAACC---tgatatagtttggatatttg--  
-----ttccctccaaatcacttggtgaaatgatcctcagtggtggaagtggggcatagtgaggcacttgggtca  
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gaagcaaatgctggcaccatgcttcatgtacagcatgcagaactatgaaccaaataaacctctctctgtataaatta  
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TGC-TT-ATTCTTACTGGCAAAACTTCCCCTTCC-AACCAACT
```

>Chimp

```
TTTTCTCTTTATCATCTAAGGTTGGATATCTCCTCCAGGTTACACAGGAC-----ATAGCAGTTGCTTGAGATG  
GAACAA-----TCTAAAAGCAAATGATGTAAGTTAAAAGAACATA---CAACC---tgatatagtttggatatttg--  
-----ttccctccaaatcacttggtgaaatgatcctcagtggtggaagtggggcatagtgaggcacttgggtca  
tgggagcagatcgctcatgaacaacttggtgtcaccct-cagggtaatgggtgag-----tcgctctattagttcc  
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gaagcaaatgctggcaccatgcttcatgtacagcatgcagaactatgaaccaaataaacctctctctgtataaatta  
ctcagcctctgggtatttctttattgcaatgcaaa-taaactaagaaa---TGGCC---ATTTTCAGTTCTATGTATAAC  
TGC-TT-ATTCTTACTGGCAAAACTTCCCCTTCC-AACCAACT
```

>Orangutan

```
TTTTCTCTTTATCATCTAAGGTTGGATATCTCCTCCAGGTTACACAAGAC-----ACAGCAGTTGCTTGAGATG  
GAACAA-----TCTAAAAGCAAATGATATAAGTTAAAAGAACATA---CAACC---tgatatagtttggatatttg--  
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gccacgtgacctctgcacatgccagctgccctttgccccatctcaccatgaag-----tgaaatcctcacca  
gaagcaaatgctggcaccgtgcttctgtacagcatgcagaactatgaacaaaaaacctctctctgtataaatta  
ctcagcctctgggtatttctttattgcaatgcaaa-taaactaagaaa---TGGCC---ATTTTCAGTTCTATGTATAAC  
TGC-TT-ATTCTTACTGGCAAAACTTCCCCTTCC-AACCAACT
```

> Baboon

```
TTTTCTCTTTATCATCTAAGGTTGGATATTTCTCCTCCAGGTTACACAAGAC-----ATAGCAGTTGCTAAAGATG  
AAACAA-----TCTAAAAGCAAATGATGTAATTTAAAAGAACATA---CAACC---tgatatagtttggatattcg--  
-----ttcccttcaaatcacttggtgaaatgtaatccccaatggtggaagtggggcttagtgggaggcatttgggtca  
tggg-gcagatccctcacgagcagcttgttgcacatccttcatggtaatgaatgag-----taagtctattagttcc  
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gaagcaaatgctggcaccatgcttctgtacagcatacagaactatgaaccaaataaatctcttttctgtatgaatta  
ctcagcttccagcatttctttattgcaatgcaaa-taaactaagaaa---TGGCC---ATTTTCAGTTCTATGTATAAC  
TGC-TTTATTCTTACTGGCAAAACTTCCCCTTTC-AACCAGCT
```

>Rhesus

```
TTTTCTCTTTATCATCTAAGGTTGGATATTACCTCCAGGTTACACAAGAC-----ATAGCAGTTGCTAAAGATG  
AAACAA-----TCTAAAAGCAAATGATGTAATTTAAAAGAACATA---CAACC---tgatatagtttggatattcg--  
-----ttcccttcaaatcacttggtgaaatgtaatccccaatggtggaagtggggcatagtgaggcatttgggtca  
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Marker M34

>MSTB1

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ccctcgggggtggg--gatgagtgagttctcactctattagtt-----cccgcgagagctgggtggt-----aaaaag  
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gcttctgtacagcctgcagaaccgtgagccaaataaacctcttttctttataaattaccagcctcaggtattcctt  
tatagcaacacaaaatggactaagaca-----  
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```

>Human

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gcttctgtacagcctgcagaactgtgagccaaataaacctcttttatttataaattaccagcctcaagtattcctt  
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AGTAGGTTCT-----TAGAATTACAAATAT-----ATTGTATACAA  
AGGCAGAACTTTCCATATTTTCAGT---TGGCCAGTTCATTGCCATCCAAGCTGTGACGGTGTGAGAAGGAAAATAG  
GAATGCTTTTATT
```

>Chimp

```
CCTCCTCCCTCATAGCCTCTTTCTGAAGAGCATTCCCTCGATAAATAATGGCACCTGAAT-CCTTGTCTCAGGCTCTG  
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TTAGATTGTATTGGAAT---AAATG---tgctatagtttagagattcatccc-cccaaaccccatggtgaaagtcttat  
cc-caatggttagagatggggcctgatgaaaggtgtttgggtcatgagggtggattccccatgaatag----atgccct  
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AGTAGGTTCT-----TAGAATTACAAATAT-----ATTGTATACAA  
AGGCAGAACTTTCCATATTTTCAGT---TGGCCAGTTCATTGCCATCCAAGCTGTGACAGTGTGAGAAGGAAAATAG  
GAATGCTTTTATT
```

>Orangutan

```
CCTCCTCCCTCATAGCCTCTTTCTGAAGAGCATTCCCTCAATAAATAATGGCACCTGAAT-CCTTGTCTCAGGTTCTG  
CTCCTGAAAGTCCAACATAAAACAGTGTACCTCCAGGTTAGGCTATTGTCTCAAAACCT-GAATTATTTTGGCTTAAT  
TTAGATTGTATTGGAAT---AAATG---tgctatagtttagagattcatccc-cccaaaccccatggtgaaagtcttat  
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AGTAGGTTCT-----TAGAATTACAAATAT-----ATTGTATACAA  
AGGCAGAACTTTCCATATTTTCAGT---TAGCCAGTTCATTGCCATCCAAGCTGTGACAGTGTGAGAAGGAAAATAG  
GAATGCTTTTATT
```

>Baboon

caccgtgagtggaagcagcttatgaccttcactag- agcagatgctggcaccatgcttcttgaacaacctgcagaacc
atgagccaaataaacctcttttctttgtaaattacctagcctcagatattcctttatagcaacacaaaatggactaag
aca---AAGCT-----TCTATTCAAACCCAGAT-AGGCTCCTTGTTGTTTGAAGAATAAGAAGTACAGAACAACA
GCACAGCTGTAGGAATAAACCCATATAATTCAGT-GGGCATCCAGTTTCTATTTAC-----AA-GGAACAGG-TACA
GTTTCATCTTTTTATTTTCTA-TTTTTATATTCATGTGAAACGA

>Rhesus

TA----TTTGTGATGCAAATTTTATGGAGGTCAACCAAGGGCACAGT-----TCGCTATTAGGTACCTTGCA
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AA-----CTGGAATAA---AGACT---tcatatagtttggtatggttcttcccccttaaattctcatgttgaaa-ttgat
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aca---AAGCT-----TCTATTCAAACCCAGAT-AGGCTCCTTGTTGTTTGAAGAATAAGAAGTACAGAACAACA
GCACAGCTGTACGAATAAACCCATATAATTCAGT-GGGCATCCAGTTTCTATTTAC-----AA-GGAACAGG-TACA
GTTTCATCTTTTTATTTTCTA-TT-----ATGTGAAAAGA

>Marmoset

TA----TTGGTGATACAAGTTTTATAGAGGTCAACGAAGGACACAGT-----TAGCTATTAGGTACCTTACA
ATGCAGGATAAAGGGAAAATACAATCCAGAG-----TGGAATAAGAAAATGAAATGGTAAACAGAAAGAAAATGTCTT
AA-----CTGGAATAA---AGACT---tgatatagtttggtatggttcatcccccttgaatttttatgttgaaa-ttgat
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aca---AAGCT-----TCTATTCAAACCCAAATATAGGGTCTTGTTGTTTGAAGAATAAGAAGTACAGAACAACA
GCACGGATATAGAAATACACCCATATAAATCACT-GGGCATC-----ATATTTAC-----AA-GGAACAGG-TACA
ATTTATCTTTTTATTTTCTA-TTTTTATATTCATGAGAAAAGA

>Tarsier

TC----TTTTTTATGCCA-----AGTTCAACCAAGGGCATATTCAACTTACTGTATCTATTAGGTACCTTGCC
GTGCAG-----GAGAATAGGATCAGGGGACAAAAAAAAAAGAAAATGGAAAGGTAAAGCAGAAGAAAATACCTT
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atg---AGGCT-----TCGATTCAAACCCAAGC-AGGGCCCTTGTCCTTTGAAGGATAGGGGTACAAAACAA-A
GCAAGGCATTAGGAATAAACCCACCTGAATCGCTGGGGCATCCAGTTTCTATTTAC-----AAGGGAATAGC-TACA
GTTAATCTT-----TTTTTATATTCATGAGAAAAA

>Bushbaby

TC----ATTCTGATTCAAGTTTTATAGAGGC-----GCTTGCCGTAGCTATTGAGTCACCTTCCA
AGGCAGAGTAAATGAAAATAGGATCAAAGG-----TCAAAAAGAAAATGGAATGGTAAAGCAGAAGAAAATGTCTT
AA-----CTAGAATGA-----

-----AGGCT---CGCTTCTATTTAAACCCAAGCAAAAATGCTTGTCTTTTGGAGGGTGG-----
-----TAGGAATATAACCCACATAAATCACTGGGGCGTCCAGTTTCTATTTATTTACAAG-GAAAAAACTGCA
GCTTATTTTTTTTTCTA-TTTTTATATTCCTAAGAAAAA-

>Mouse_lemur

TC----ATTTTGATACAAGTTCTATAGAGGTCAACCAAGGGCACAGTCAGCTTGCCATAGCTATTAGGTACCTTGCA
CTGCAGGGTCAGTGAAAAT--GATCAGGGG-----TCAAAAAGAAAATGTAATGGTAAACAGAAAGAAAATGTCTT
AA-----TTGGAATAC-----

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-----AGGCT-----TCAATTCAAACCCACGC-AGAGTACTTGTCTTTGAAGGATAGTAGGTGCAAAACAATA
GCAAAGCAATAGGAGTAAAACCCACATAAATCACTGCGATATCCAGTTTCTATCTAC-----AA-GGAAAAAGCTACA
GTTTCATCTTTTATTTTCTA-TTTTTATATTAATGGGGAAAAAC
>Tree_shrew
CC----TTTTTGATACAAGTTTTCATGAAGGTCAACTGAGAACATAGC----TTGCTACAGCTAT--GGTCACCTTACA
GAG-AGGGTCAAGGAGACATAGGATTAAGGG-----CAGAAAAGGAAAGTGAATAGTAAAAGAGAAGAAAATGGCTT
CTTCTGAACTGGAATA-----
-----
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-----AGGCT-----TCTATTCAAATCCAAGG-----TCCTTG-----GAGGCACAGAACAGTA
GCGAGACAATGGAAATAAAACCCACATAAATCACT-GTA--ATAGTTTCTATTAG-----AAGGGAAAAAA-ACCA
GTTTCATCTTTAATTTTCTATTTTTTGTATTCATGAGAAAAAA
>Guinea_pig
CT----TCTTTAGTACAAATTTAATTAAGGTCAAGGGCATGGTCAGCCTGCTGCAGCTATTAGGTCACTCTCACA
AAGGAAGGTCAAGGGGAAGCAGAATCAAGGG-----CCAAAAAAAAA-AAAGAATGAAAAAACAGAAGAAAATATGTT
AA-----CTGGAATAA-----
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-----
-----AGGCT-----TCTGTACCAAACCCATGC-A-GGTCCTGGTCTTCTAGG-ATTCAAAGTATAAAACAATA
GCAAATAACAGGAATAAGAGCCACACAGATCGCTGGGGAGAGTAG-----ATC-----CA
GGTCATCCTTTGTTTTT-C-A-TTCCTGTGTTTCATGAGAAGCAA
>Dog
TCTTTTTTTTTTGGAACGGGTTTTATAAGGGCAACCCAAGGGTACAGCCAGCTTGCTCTAGCAGTTAGGTGCTCAACA
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AA-----CTGGAATAA-----
-----
-----
-----
-----AGACT-----TCTTTTCAAATGCAAGC-AGAATCCTTGCCCTTGAAGAACAGAAGGTACAAAACAATG
GCAAGACAACAGGAATAAAAGCCACAT-AATCATTGGGCTATTAGTTTCTCTTTAC-----AA-GGAAGAAGCTCCA
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Marker M40

>MSTB

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```

>Human

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-CAATTGGACAGAGGAGTCTGGG-TTCAGGGAAGCGGTTTAAGCTAGAGTTATCAAGATTATAGTTGCATGAAATTTT  
GTGATATTGCATGTGATCATGGTAGAAATGAGTGTGTA-
```

>Chimp

```
AGAACAT--TTTCTCTTAAGTTCAGTATAG-CTATACAACCTGCTTTCTATAATGATTTAATTTTTTCCACTACTTTAC  
AAAATGCTTATTAGACATATAAA-GGGATAATTGG---TAGGT---aaatatagtctgcatatattgtctc-tccaaat  
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GTGATATTGCATGTGGTCATGGTAGAAATGAGTGTGTA
```

>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Dog

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>Horse

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Marker M42

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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Marker M45

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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TGAAGGTTG-----

>Bushbaby

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>Mouse_lemur
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>Tree_shrew
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>Guinea_pig
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Marker M47

>MSTB

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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-----GCCTT---G
-----AATTATTAATAAAACTATTATCTGCTAAACTGTCCTC

>Mouse_lemur

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-----ACCGT---G
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>Horse

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-----AACTT---A
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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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TGCA-----

>Bushbaby

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>Mouse_lemur

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TTCCTGTTGCCAAAATGAACTCAGCATC--CACTTT-----TCCCGCAAAGTTCCCCCAATCATACTAAC
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>Mouse

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>Dog

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TTCCCATTCAGAGAAG-AGCTCACCATC--CCCTTT-----CTTGCCAATATGCCCCCTATCATGCAAAG
TGGAAGAA-----

>Horse

TTC----TAACACTGAGCCCTTCTT-----GTCACATCTTTCTAAGGGACCTTGATTTTGGAGGTGTCTCAGGTGACC
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Marker M51

>MSTB1

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aggccctcaccagaagca-----gatgctggcgccatgcttcttgtacagcctgcagaaccgtgagccaaataaac  
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-----
```

>Human

```
GAATTGGCAAGATCAGATTATT---AACTGAGAAACAGCTATAACTAGCATTATTATTGGCACTTCCTACATA---CCA  
A---G---tgctatacttttgatggtt-gt-cctcccgaacattatggtgaaattcag-tgccaaattctggaa----g  
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aggccctcaccagaagca-----gatgctgggtgctcatcttcttgtacagcctgtggaactgtgagccaaataaatc  
tcttttggtttacaaa-tatcatgcctcaggcattcctttgtagcaacacaaa-atggattatgaca---TGAGG---CA  
ATATAAAATTATTGGAACTTACTAAAAGAGGATGAAGTGATATCAAAGAT---C
```

>Chimp

```
GAATTGGCAAGATCAGATTATT---AACTGAGAAACAGCTATAACTAGCATTATTATTGGCACTTCCTACATA---CCA  
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ATATAAAATTATTGGAACTTACTAAAAGAGGATGAAGTGATATCAAAGAT---C
```

>Orangutan

```
GAATTGGCAAGATCAGATTATT---AACTGAGAAACAGCTATAACTAGCATTATTATTGGCACCTCCTACATA---CAA  
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ATATAAAATTATTGGAACTTACTAAAAGAGGATGAAGTGATATCAAAGAT---C
```

>Baboon

```
GAATTGGCAAGATCAGATTTGT---AACTGAGAAACAGCTATAACTAGCATTATTATTGGTACTTCCTACATA---CCA  
A---G---tgctatacttttgggtggtt-gt-ccccacaaacattatgctgaaattcag-tcccaaatttggag----g  
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GTATAAAATTATTGGAACTTACTAAAAGAGGATGAAGTGATATCAAAGGT---C
```

>Rhesus

```
GAATTGGCAAGATCAGATTTTT---AACTGAGAAACAGCTATAACTAGCATTATTATTGGAACTTCCTACATA---CCA  
A---G---tgctatacttttgatggtt-gt-ctccacaaacattatgctgaaattcag-tcccaaatttggag----g  
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```


Marker M51

>MSTB

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-----  
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```

>Human

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-----AAATAGTTTTCTGCTTTGTTGAGTGAGTGCTTTGAAGACCTAAGAACTTTAGG-----GAAGCAAAGAA  
TGA---CATCT---tg-----ttgga  
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-----ttaccctatctcaggtagtcctttacagcaatgtaa-aacagactaatgaaa---CATAC---AGAGGCTGTG  
GACGAGTTTTAACCTGCGCCG-----ACATGAGAGAGGCTTAAGCACTATTGGGGGTAGAAGAGGAG  
GGAGGCATATCAACCCTGAAGACAGCACA-----AAGAGGGAGGAAAAACAGGAATTGAGGTCAACCTTCACTCG  
CTGAAAAGCTTA-----AATATTGTGTGCATGTGTTTT-T
```

>Chimp

```
TGAGGTCTAACAACTCATTGCATGTAATTGATAATTTGCAATATGTCCTGGATCTACAGAATAGCAAACTATGGTAT  
-----AAATAGTTTTCTGCTTTGTTGAGTGAGTGCTTTGAAGACCTAAGAACTTTAGG-----GAAGCAAAGAA  
TGA---CATCT---tg-----ttgga  
ggtggggcctgaagggaggtattttgg-ttatggggcagatctctcatgaactg-tttggtgccttctggcagtaa  
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GACGAGTTTTAACCTGTGCCG-----ACATGAGAGAGGCTTAAGCACTGTTGGGGGTAGAAGAGGAG  
GGAGGCATATCAACCCTGAAGACAGCACA-----AAGAGGGAGGAAAAACAGGAATTGAGGTCAACCTTCACTCG  
CTGAAAAGCTTA-----AATATTGTGTGCATGTGTTTT-T
```

>Orangutan

```
TGAAGCCTAACAACTCATTGCATGTAAGTATAATTTGCAATATGCCCTGGATCTACAGAATAGCATAACTATGGTAT  
-----AAATACTTTTTCTGCTTTGTTGAGTGAGTGCTTTGAAGACCTAAGAACTTTAGG-----GAAGCAAAGAA  
TGA---CATCT---tg-----ttgga  
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GACAAGTTTTAACCTGTGCCG-----ACATGAGAGAGGCTTAAGCACTATTGGGGGTAGAAGAGGAG  
GGAGGCATATCAACCCTGAAGACAGCACA-----AAGAGGGAGGAAAAACAGGAATTGAGGTCAACCTTCACTCG  
CTGAAAAGCTTA-----AATATTGTGTGCATGTGTTTT-T
```

>Rhesus

```
TGAAGCCTAACAACTCATTGCATGTAAGTATAATTTGCAATATGTCCTGGATCTACAGAATAGCATAACTATGGTAT  
-----AAATACTTTTTCACTTTGTTGAGTGAGTGCTTTGAAGACCTAAGAACTTTAGG-----GAAGCAAAGAA  
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```

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GACGAGTTTTAACTGTGCCA-----ATATGAGAGAGGCTTAAGCACTATTGGAGGCAGAAGATGAG
GGAGGCACATCAACCCTGAAGACAGCAGC-----AAGAGGGAGGAAAAACAGGAAATGAGGTCAATCTTCACTCG
CTGAAAAGCTTA-----AATATTGTGTGCATGTGTTTT-T

>Baboon

TGAAGCCTAACAACTCATTGCATGTAAGTATAATTTGCAATATGTCCTGGATCTACGGAATAGCATAACTATGGTAT
-----AAACTTTTTCTACTTTGTTGAGTGAGTGCTTTGAAGAACTAAGAACTTTAGG-----GAAGCAAAGAA
TGA---CATCT---tg-----
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GACGAGTTTTAACTGTGCCA-----ATATGGGAGAGGCTTAAGCACTATTGGAGGCAGAAGACGAG
GGAGGCACATCAACCCTGAAGACAGCACA-----AAGAGGGAGGAAAAACAGGAACTGAGGTCAATCTTCACTCG
CTGAAAAGCTTA-----AATATTGTGTGCATGTGTTTT-T

>Marmoset

-----TGCATGTAATTAATAATTTGCAATAGGTCTCTGGATCTACAGAATAGCATAACTATGGTAT
-----AAACTTTTTCTGCTTTGTTGAGTGAGTACTTTGAAGACCTGAGAACTTTAGG-----GAAGCATAGAA
TAA---CATCT---tg-----
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GATGAATTTTTAACTGCCTG-----ACATAAGAGAGGTTTAAGCACTACTGGAA-TGCGGGAGGAG
AGAGACACATCAGCCCTGAAGACAGCACA-----AACAGTGAGGGAAAAACAGGAACTGAGGTCAACCTTCACTGG
GTGAAAAGCTTA-----AATATTGTGTGGATGTGTTTT-T

>Tarsier

TAGAGTCTAACAACTCATTGCAAGTAATTGAAAATTTGCAATGCCTCCTAGATGTACAGAATTACATAAGGGTGGTAT
-----AAATATTTTTCTGCTTTGCTGAGTGAGCACTTTTTAAGATCACAGAACTTTAGG-----GAAGCAAGGAA
TCA---CATC-----tgatatagtttggatggttgggtccctctaaatctcatggtgaaatgctagccctaacattgga
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GAGTAGTTTTAATCTCCACAGGGATGGGGACAGCAGGGCTAAGAGAAGCTTAAGCAGCATTG-----AGAAGGGGAG
AAAGTCACATCAACTCTGAGGATAGCACAGAGTGACAAAGTGGGAGGGAAAAACAGGAACTGAGGTCAACCTTCAATTTG
CTGAAAAGCTTA-----AATACTGTGTAGGTGTATTTT-T

>Bushbaby

TGCTTTGAAA-----TGCATGTAAGTATGATTTCCAACAATTCCTGGATCTACAGAATAGCAAAAAGGTGTAT
-----AAATATTTTTCTGATTTGTTGAGTGAGTGCTTTTAAGGCTTCAGAACTCTAGG-----GAAGCAAAGAA
TAA-----

-----CAGCC---TAAGGTACTG
CAGCAGACTTAACCTGTCCTT-----AAGCACTGCTTAAGCACTCCTAGGG-CAGAAGGGGAG
AGAGTCATGTTAGCACTGAGGACAGTACA-----AAGTGGGAGGAGAAACAAG-AGCCAAGGTCAACCTTTACTCA
CTGAAAAGTTTTA-----AATACTGTGTAGGAGTGTTTTTAT

>Mouse_lemur

-----TTTGTGAGTGAGTGCTTTGAAGGCCTCGGAACTTTAGG-----GAAGCAAAGAA
TAA-----

Marker M53

>MSTB1

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-----
```

>Human

```
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A-AAA-----CAATGCCCTTAAGAATGTAATCTCTGAATACTTCCTTGTCTTGTTCGTTAAGTATGTCACTT----  
-----TTGACC--ACCATGAGCTTGTC----CACTGATGATGCAAGTGT---GCAGC---tgctttgggttggat  
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-tcagtctcaggtatttctttagcaacac-----agacttagaaa---GAAGC---TCATCATGATTCT-AGCTAA  
CTGGAGGTCTGAGAAGCATGAGCCATGGAAGATGAAGTAAATCACAACAAAGGCAAGTA
```

>Chimp

```
TGTTGCTTCAATAA-TCTTTTTGTCACCACCAA-----CCA-GAAAATGGTTTG-AGAGAGGAGAAGGTTTCCTTTG  
A-AAA-----CAATGCCCTTAAGAATGTAATCTCTGAATACTTCCTTGTCTTGTTCATTAAGTATGTCACTT----  
-----TTGACC--ACCATGAGCTTGTC----CACTGATGATGCAAGTGT---GCAGC---tgctttgggttggat  
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CTGGAGGTCTGAGAAGCATGAGCCATGGAAGATGAAGTAAATCACAACAAAGGCAAGTA
```

>Orangutan

```
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A-AAA-----CAATGCCCTTAAGAATATAATCTCTGAATACTTCCTTGTCTTGTTCATTAAGTATGTCACTT----  
-----TTGACC--ACCATGAGCTTGTC----CACTGATTATGCAAATGT---GCAGT---tgctttgggttggat  
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```

>Baboon

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TGTTGCTTCAATAA-TC--TTTGTACCACCAA-----CCA-GAAAATGGTTTG-TAGAGAGGAGAAGGTTTCCTTTG  
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-----TTGACC--ACCATGAGCTTGTC----CACAGATGATGCAAGTGT---GTAGT---tgctttgggttggat  
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CTGGAGGTCTGAGAAGCATGAACCATGGAAGATGAAGTAAATCACAACAAAGGCAAGT-
```

>Rhesus

TGTTGCTTCAATAA-TC--TTTGTACCAACAA-----CCA-GAAAATGGTTTGTAGAGAGGAGAAGGTTTCTTTTG
AGAAA-----CAATGCCCTTAAGAATATAATCTCTGAATACTTCCTTGTCTTGTTCATTAAGTATGTCGCTT----
-----TTGACC--ACCATGAGCTTGTC----CACAGATGATGCAAGTGT--GTAGC---tgctttggtttggatat
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>Marmoset

-----CAA-----CCA-GAAAATGGTTTGTACAGAGGAAAAAGTTTCTTTTG
AGAAACAATGCCCAATGCCCTTAAGAATATAATCTCTGAGTACTTCCTTGTTTTGTTCATTAAGCATGTCGCTT----
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>Tarsier

TGTTGCTTTCAGTAC-TCATTTTGTATTATTGTGAGAAAATTACA-GAAAATTATGTCTAGAG-----AAGTTTTCTTTG
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>Bushbaby

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CTT--TTGACC--ACCTTGACCTTGTC----CAAAGAAAATACCAGTGG-----

-----GCGAA---TCACCATGATTCC-TGCTAA
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>Mouse_lemur

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-----ATAACC--ACCACAAGCTTGTC----CAAACATAATGCAAGTTT-----

-----GCCGA---TCTTCATGACTTC-AGCTAG
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>Mouse

CATAGCTTCAATTA-ATTTTTTCATTATAACCAGTCACCCCCCAAAAACTATGTATTGGCAGCAGAGGTTTTCTTTCT
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>Dog

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>Horse

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Horse

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Horse

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>MSTB1

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>Human

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>Chimp

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>Baboon

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>Rhesus

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Marker M68

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Tarsier

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>Marmoset

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>Bushbaby

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>Mouse_lemur

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GTA----

>Horse

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Marker M71

>MSTB1

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Horse

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 >Rhesus
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 >Bushbaby
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 ----TGACCTCCAGGTGTGGATG-GGG-GTTAGAGTTATCTTATAAAGCACAGGTAATTTAAACCCCAAATCACCT
 TGACCTATGGAAAACAG-----

 -----GC
 GTC---TTTATAGATAGGAATCGCCCTCTCCATGGAAAAATGTTCTCGCCTGGAGACACCTGAGAAGTGGGACCTGGA
 GGGGAC--CGGAGGAAA-CGTGAGATTGCTGCTCTCCC--TCGGGCTCAGGCTAAAGCACGAACCTATGGAGCAGGAT
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 >Mouse_lemur
 CAGCTTCTTTCAATTGTTAGCCAGTTGTGCTTACTCCAATCCAGGCCATGGAGCACAACACCTATATGAAGGTCCACCA
 CC----AGCAATGCCACTGTGCTCACCC-ATGTGCCTCCCACCAGCCAGATCAAGAAGAAGGAAACCTTTGCATGGAG
 ----TCATCTCCAG-TGTGGATG-GGG-GTTAGAGTTATCTTATAAAGCACAGGTAATTTAAACCCCAAATCACCT
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 -----GC
 ATC---TTTACAGGTAGGAATCACTTTACCATGGCAGGATGTTCTCACACGAAGGCACCTGAGAAGTGCAGACCCAAAG
 GGAAACAGCA-----GGTTCCTGTCTCTC---T---GCTCATTCTAAAGCATAAAGCTATGGAGTGGGAT
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>Mouse

TTGTGCTTTCTGATTCAT---CTGCTCTGTTTCATTAGAACCCATGCCACAGAGTACCATGTTTACATGAGGATCACCA
CC----AATAATGACGCAGCTCTTGCCACAAGTACCCTCCACCATCT-----
-----TTCCATGAGGATA-GGA-GTTAGAGCTGTCATATAAG-AAAATATAATCCCGACTTTAAGTTGCCCT
C-----AGCAGAT-----

-----GA
GTC---TTTATAGATAGAACTACCCTGGCCGTGAAAGAGGCTCTAGC-TGAAAAACAAGGGGACAGCGACCAAGA
GCACACAGTGAACAGGAGCAAC---TGATTTCTCTCAGCTCAGACTGATTCTCAA-----TAGGAT
GGGGGCCACCT--TCTGGCACAAGC-AAAGGACTCTCTATC-----CCCCCTGAACTGGC-TGACTGACTTGCTGTA
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>Guinea_pig

TGGTCTCTCCTAATCCAC---CTGCTTGGCTTGTTTTCAATCTGTGCTGTGGAGCAGGATGGG-ATGGGAGGGTCAC-A
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T-----GAATATG-----

-----AC
-TC---TTTGTAGATAGGAATCATGCTTGCTATGGAAAGATGCTCCAACATAAAGGCACATGAGGTCTGATACCAAGA
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GGGGTGCAA---CTTAGCATTATCTCAATGACTCTCTCTTT-----CTCCCTCAATTGGTACAAGTACTGATTCTCTTAA
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>Dog

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---TTACCATCTATGTAGGGATG-GGG-ATTACAGTCATCTTATAAGGCA-AAGAA-TTTAAATCCT-----
-GAGGAGTGAATAATAT-----

-----GC
ATC---TTTACATATAGGAATCA-CCTTTACCTGG-AAGATGTTCTCATGTGAAGGCATATGGGAATTGAGAA-AGGA
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>Horse

TGGCATCTTTCTAATTAGC---CTGTTGTGCCTGCTCCAACCCACACCATGGAGCACGACGTCTACATAAGGATCACCA
CC----AC--ATGCCATTGTGCCCACTGAAAGTGCCCCACACCAGCA-----TTTATGCAGAG
---TCACCTCCTATGTAGG-ATG-TA-----TCATCTTATAAGGCA-AGTAA-TTTAAACCCA-----
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-----GC
ACC---TTTATACATG-----CATTGCCCAGG-AAGATGCTCTCATGTGAAGGCACATGAGAAGTGGAAACAGCA
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>Baboon

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>Rhesus

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TACTTTGTGACATAAAACTTTAAACT

>Tarsier

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>Bushbaby

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CAGTTATATATGGCACT--TGATTTAGGTATTT-GAGGATATA--GCCAGCCTATCCTATGAATATTTTTATGGCCA
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>Mouse_lemur

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-----CCCTG---CAA-TAGGAAAAGTCTTG
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>Mouse

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-----C--TAGTATATGTAGATAAACTTC-AACATCATTTAC
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-----ACTTG---CA-GTAAGG--AAGCCTTG
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CAGTTTGAGATTATTAGCTTCAAACA

>Guinea_pig

GTGACAATATATAATAGAT-----GCCTTGTAACCTTAAT---TA---TTATTATTGTTTGAAATGTAAAT--
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-----CCTTA---AC-ATAGGC--GAGTCTTA
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ATCAGTAAATTCAGAGAGTTTAGTATATAGAATTGCTTTTAATGCTAACAGCTAGGTTTTGG-AAGCAAATCGAATT
TCCTTTGAGATACTAAACTTCAAATG

>Horse

AAGATAATGTAATTTAAATGGATGCGTGTTAGAT-----CCAAAT---A---TTATTATTATTTCAAATATAAAT--
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-----CTCTG---CAG-CAGGGCAAAGTCTTA
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GC-----CAGAAGTTTTAGCTTAGAGAAGTCTTTTAATAGGAACAATTGGGTCTTGA-AACCAAACCTACCTT
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Marker M74

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Guinea_pig

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-----CCAGG---
TCACCAAATTTAGAGGATAC-----AATAATTTAAATGGAGATT
T---AAA--AAATATCTTA-TCTCCATAGGATGAAATTATGTGTAGTTTTATTCTA

>Dog

TTTCAACTAGAGTTTATTGTGGTGAAATTTCTGAGGCTATCAGATTAGAGGAGAAGAGTTTTTGTAAAATTTGTCTTA
GAAAACAAG--AATCAGAGCAAAAGTAAAGGGGAGGTAAC TGAAC TGGAAA-----

-----CCCGG---
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TTTAAAAA-CACTATTCTA-TTGTAATAGGATGAAATTATGCCAAGCCT--TATTTT

>Horse

TTTCAACTAGAGTTCATCGTGGTAAAATTTCTGAGCTTATCAGACTGGAGAGGAAGAGCTTTTGGAAAATTTGTCTTG
GAAGACAAG--AATCAGAGTAGAAATAAAGGAGGGCATAACTG-GGCTTGAAA-----

-----CTTGG---
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Marker M75

>MSTB2

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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>Marmoset

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>Tarsier

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>Bushbaby

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>Mouse_lemur

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>Mouse
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>Guinea_pig
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>Horse
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> Baboon

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> Rhesus

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> Marmoset

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>Dog  
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Marker M78

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Guinea_pig

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>Dog

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>Horse

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Marker M80

>MSTB1

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>Human

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>Chimp

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gagtcctgggggcagaaccttcatgaatggcctgggtgcccttctcaa-----
-----agtaaagactgagctcttgctctattagttcctttgagaatggattgttaaaaagaggctggca-----
-----tctctctcccttc-----tga
aaccatgtgatgcctg-----ctccccttcaccttcctccacaagtgggggcagcctgagggcactcaccaaat
gcagatatcagcgccatgcttcttgtagcagcctgcagaattatcagctaattaaacct-ctttctttatcaattacac
gctctcacgtattcctttatagcaatgc-caacagactaaaaca---A-AATT---GAGAACTTCCCAAATAGATCA
CTCTGGGCTAAGTTGTCTAGTAGA-ATAACATGCAGAAAACCTTTACCAGTAAAACCTGCA-----TAGAAATTACCAG
AAA--ACAATA---ATATATGAAAAATCATTTCCATGACTAAAGT
```

>Orangutan

```
TCTTCTTTTCTGCATTGCTATTACTTCTAAATGATATAGTTGAAATGATATTCTTTC---AAATT---tgacctagtt
tagctgggttatccactgaaaaatctcttggtgaaatttgatgtccaatggtggaggtcgggcctagtgagggtgt-t
gagtcagtggggacagaaccttcatgaatggcctgggtgcccttctcaa-----
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caccatgtgacacctg-----ctccccttcaccttcctccacagtggggggcagcctgagggcctcaccaaat
gcagatatcagtgccatgcttcttgtagcagcctgcagaattatccgctaattaaacct-ctttctttataaattacat
gctctcacgtattcctttatagcaatgc-aaacagactaagaca---A-AATT---GAGAACTTCCCAAATAGATCA
CTCTGGGCTAAGTTGTCTAGTAGA-ATAACATGCAGAAAACCTTTACCAGTAAAACCTCA-----TAGAAATTACCAG
AAA--ACAACA---ATATGTGAAAAATCATTTCCATGACTAAAGT
```

>Baboon

```
TCTTCTTTTCTGCATTGCTGTTATTTCTAAATGATATAGTCGAAATGATATTCTTTC---AAATT---tgacctagtt
tagctatthtattcactgaaaaatctcttgctgaaatttgatgtccaatggtggaggtggggcctagtgagggtat-t
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-----tctctctcccttc-----ttt
caccaagtgatgcctg-----ctccccttcaccttcctccacagtggggggcagcctgagggcctcgccaaat
gcagatatgggtgccatgcttcttgtagcagcctacagaattatcagctaattaaatct-ctttctttataaattacgc
actcccaggtattcctttatagcaatga-aaacagactaagaca---A-AATT---GAGAACTTCCCAAATAGATCA
CTCTGGGCTAAGTTGTCTAGTAGA-AAAACCCGCAGAAAACCTTTACCACCAAACCTG-----TAGAAATTTCCAG
AAA--ACAATA---ATATATGAAAAATCATTTCCATGACTAAAGT
```


Marker M81

>MSTB1

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tggcacctccctcctctct-ctcttgcttcctctc--tcgccatgtgatctctgcacacgcggctccccttcacctt  
ccgccatgagtggaagcagcctgaggccctcaccagaagcagatgctggcgccatgcttcttgtagcagcctgcagaac  
cgtgagccaaataaacctcttttctttataaattaccagcctcaggtattcctttatagcaacacaaaatggactaa  
gaca-----  
-----
```

>Human

```
GATTCTT-TAAGAGCACCCAGGTCAGTGTGGCCACAAAAGGGCC--AAACCTATTGGTTTCAATACTCTAGGTTTGA  
AAGAATATAACCAGGCTTG---GGCTC---tgatataatgttggatattttcccctccaaatctcatggtgaaatttc  
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cgtgagccaaatctctctttcatt-ataaattactcagctgcaggtgttcccttatagcaatacaaaa-cagactaa  
gaca---GGCTC---CAAGGAAACCTGAGTGGGGAGGAGGGA-GTGGGCAGGGGTTGAGGAAGGAGGCTGCATGGAGA  
AAGATAGGCTTGCATGGCCTTTTCT
```

>Chimp

```
GATTCTT-TAAGAGCACCCAGGTCAGTGTGGCCACAAAACGGCC--AAACCTATTGGTTTCAATACTCTAGGTTTGA  
AAGAATATAACCAGGCTTG---GGCTC---tgatataatgttggatattttcccctccaaatctcatggtgaaatttc  
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cgtgagccaaatctctctttcatt-ataaattactcagctgcaggtgttcccttatagcaatacaaaa-cagactaa  
gaca---GGCTC---CAAGGAAACCTGAGTGGGGAGGAGGGA-GTGGGCAGGGGTTGAGGAAGGAGGCTGCGTGGAGA  
AAGATAGGCTTGCATGGCCTTTTCT
```

>Orangutan

```
GATTCTT-TAAGAGCACCCAGGTCAGTGTGGCCACAAAAGGGCC--AAACCTATTGGTTTCAATACTCTAGGTTTGA  
AAGAATATAACCAGGCTTG---GGCTC---tgatataatgttggatattttcccctccaaatctcatggtgaaatttc  
atccctaattggtggaggtgaggcctaattgggacctggttgggttatgggggtgggaggtgggtccctcctgaatgcctt  
ggtgccatcctt---gtgtaatgagtggttttcatgctattatttccc--aggagaactgagtggtggacaggagcc  
tggcacctccctcctcctct-ctcttgcttccttcctctcaccatgtgat-----gccgactccccttcgcctt  
ctgtcatgagtggaagcttccctgagg-cctcaccaggagcaggtgctgggtgccatgcttctatactgcctgcagaac  
cgtgagtcgaatctctctttcatt-ataaattactcagctgcaggtgttcccttatagcaatacaaaa-cagactaa  
gaca---GACTC---CAAGGAAACCTGAGTGGGGAGGAGGGA-GTGGGCAGGGGTTGAAGAAGGAGGCTGTGTGGAGA  
AGGATAGGTTTGCATGGCCTTTTCT
```

>Baboon

```
GATCCTT-TAAGAGCACCCAGGTCAGTGTGGCCACAAAAGGGCC--AAACCTATTGGCTTCAATACTCTAGGTTTGA  
AAGAATAAACCAGGCTTG---TACTC---taatataatgttggatataatttcccctccaaatctcatggtgaaatttc  
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ggtgccatcctg---gtagtaatgagtggttttcatgctattcgttccct-gggagaactca--ctggaaaggagcc  
tggcacctccctcctcctct-gtcttgcttccttcctctcaccatgtgat-----gccgactccccttcacttt  
ctgtcatgagtggaagcttcccagg-cctcatcaggagtaggtgctgggtgccatacttcttatacagcctgcagaac  
cataagccaactttatctatttctcatt-ataaattactcagctgcaggtgttcccttatagcaatacaaaa-aaactaa  
gaca---GGCTC---CAAGGAAACCTGAGTGGGGAGGAGGGA-GTGGGCAGGGGTTGAAGAAGGAGGCTGTGTGGAGA  
AGGATAGGCTTGCATGGCCTTTTCT
```

>Rhesus

```
GATCCTT-TAAGAGCACCCAGGTCAGTGTGGCCACAAAAGGGCC--AAACCTATTGGCTTCAATACTCTAGGTTTGA  
AAGAACAAACCAGGCTTG---TGCTC---taatataatgttggatataatttcccctccaaatctcatggtgaaatttc  
atacctaattggtggaggtggggcctaattaggacctggttgggttatgggatgggtgggtccctcctgaatatctt  
ggtgccatcctg---gtagtaatgagtggttttcatgctattcgttccct-gggagaactca--ctggaaaggagcc  
tggcacctccctcctcctct-gtcttgcttccttcctctcaccatgtgat-----gccgactccccttcacttt
```


Marker M82

>MSTB1

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gagtgagttctcactctattagttcccgcgagagctgggtgttaaaaagagcctggcacctccctcctctctc--tct  
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-----  
-----
```

>Human

```
ATGTTCTGTTGCAATAGCAAGTCACCTGGCAGCCAGGAGGAAATACTTCCCCACTGCCTTGTAATTGGCAGGTAGTGA  
GACAAAAGATGTGTTATCATTGGCAAGGGAGAACTTTCCTGA-TAATTCCTCTTAGATGAGCAAGCAATTT-AATCAA  
A---TATGT---tgatatagtttggacgtttgtccct-ctaaatctcatggtgaaatctgatccccagtggtgaaagt  
ggggcctactgggagatattttgatcgtgggggtggatctat---gaatggcctgggtgctattggtgcattac----c  
gagtgagttctcaaactattagttcccaccagatcttattgttaaaaagaatctggcaccttctccttcat---ttc  
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ccctcaccagaaacagatgctggcaccaggcttcttatacaccctgcagaatcatgagccaaataaacctctttttaa  
aaataaattaccagcctcaagtattcctttat-agcaacaca-aatggaataagaca---TATAT---AAAATCAGA  
AGATTGGATCTTCCAACCCCTCCCCCAGAATAGCAAAGCTAGAAATATGGAAGAAGCAATCCAGTTTTTATAAAT  
GGT-AAAAGCTGTTAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTTATTTCCAGCT  
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT
```

>Chimp

```
ATGTTCTGTTGCAATAGCAAGTCACCTGGCAGCCAGGAGGAAATACTTCCCCACTGCCTTGTAATTGGCAGGTAGTGA  
GACAAAAGATGTGTTATCATTGGCAAGGGAGAACTTTCCTGA-TAATTCCTCTTAGATGAGCAAGCAATTTAATCAA  
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gagtgagttctcaaactattagttcccaccagatcttattgttaaaaagaatctggcacattcgtcctctat---ttc  
tttcttctctcttactg-----tgtagcgccttctctct---actttccgccatgagtagaagctccctgaag  
ccctcaccagaaacagatgctgggtaccaggcttcttatacaccctgcagaatcataagccaaataaacctctttttaa  
aaataaattaccagcctcaagtattcctttat-agcaacaca-aatggaataagaca---TATAT---AAAATCAGA  
AGATTAGATCTTCCAACCCCTCCCCCAGAATAGCAAAGCTAGAAATATGGAAGAAGCAATCCAGTTTTTATAAAT  
GGT-AAAAGCTGTTAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTTATTTCCAGCT  
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT
```

>Orangutan

```
ATGTTCTGTTACAATAGCAAGTCGCCTGGCAGCCAGGAGGAAAAACTTCTCACTGCCTTGTAATTGGCAGGTAGTGA  
GACAAAAGATGTGTTATCATTGGCAAGGGAGAACTTTCCTGA-TAATTCCTCTT-GATGAGCAAGCAATTTAATCAA  
A---TATGT---tgatatagtttggacatttgtccct-ctaaatctcatggtgaaatctgatccccagtggtgaaagt  
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gagtgagttctcaaactattagttcccaccagatctgattgttaaaaagaatctggcaccttctcccctat---ttc  
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aaataaattaccagcctcaagtattcctttat-agcaacaca-aatggaataagaca---TATAT---AAAATCAGA  
AGATTGGATCTTCCAACCCCTCCCCCAGAATAGCAAAGCTAGAAATATGGAAGAAGCAATCCAGTTTTTATAAAT  
GGTAAAAAGCTGTTAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTTATTTCCAGCT  
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT
```

>Baboon

```
ATGTTCTGTTGCAATAGCAAGTCACCTGGCAGCCAGGAGGAAATCTTCCCCACTGCCTTGTAATTGGCAGGTAGTGA  
GACAAAAGATGTGTCATCACTGGCAAGGGAGAACTTTCCTGA-TAATTCCTCTAAGATGAGCAAGCAATTTAATCAA  
C---TATGT---tgatatagtttggacttttgtctct-ctaaatctcatggtgaaatctgatccccagttatgaaagt  
ggggcctagtgagggtatttggattatgggggtggatccat---gaatggcctggtgctattggtgcattac----t  
gagtgagttctcaaactattagtttcccaccagatctgattgttaaaaagaatctggcaccttctcccctat---ttc  
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```

ccctcaccagaaacagatgctggcaccaggcttcttgtagaccctgcagaatcataagccaaataaacttctttt-aa
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AGATTGGATCTTCCAACCCCTCCCCAGAATAGCAAAGCTAGAAATATGGAAGAAGCAATCCCAGTTTTTATAAAT
GGT-AAAAGCTGTAAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTATTTCAGCT
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT

>Rhesus

ATGTTCTGTTGCAATAGCAAGTCACCTGGCAGCCAGGAGGAAAATCTTCCCCTGCCTTGTAAATTGGCAGGTAGTGA
GACAAAAGATGTGTCATCACTGGCAAGGGAGAACTTTCTGA-TAATTCCTCTAAGATGAGCAAGCAATTTTAATCAA
C---TATGT---tgatatagtttggacatttgtctct-ctaaatctcatggtgaaatctgatccccagattgaaagt
ggggcctagtgggaggtatttggattatgggggtggatccat---gaatggcctggttgcatttgggtgattac----t
gagtgagttctcaaactattagtttccaccagatctaattgttaaaaagaatctggcgccttc-tcccctat---ttc
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GGT-AAAAGCTGTAAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTATTTCAGCT
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT

>Tarsier

ATGTTCTGTTCCAACCACAAGTCATATGGGAACAAGAAGGCCAAAATGTCCCATTGTCCCATAGTTGGATGG-----
---ATGGGTTGTGTCAACATTGGCAAGGGAGAGATTTCTGA-TAATTCCTCCA-GGTGAGTAAGCAATTTTAACCAA
A---TACAT---tgatttagtctggacatctgtcccttccaaatctcatggtggcatggtgctcaacattggaggt
ggggccttgttaggatgt---ttggtcttgggggcagatccctcgcggctggcttgggtgccatTTTTgcagtaa---t
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ATATTGGATCTTCCAACCCCTCCCCTAGAATAGAAAATCTAGAAATATGGAAGAAGCAATCTCAGTTTTTATAAAT
GGT-AAAAGCTGTAAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCATGTTATTTCAGCT
CCTCTTTTTT-ACTGCTAGTAAGCCTCATGGAATTATAACCAGTAAAATATTCCCCTTA-CTCT

>Marmoset

ATGTTCTGTTGCAATAGCAAGTCACCTGGCAGCCAGGAGGAAAAACTTCCCCTGCCTT--AATTGGCAGGTGATGA
GACAAAAG-----ATTGGCAAGAGAGAACTTTTCTGA-TAATTCCTCTAAGATGAGAAAAGCAATTTTATCAA
A---TATAT---tgacatagtttggacatctg-ccct-ctaaatctcatggtgaaatctgatccccagcgttgaagt
ggggcctagtgggaagtatttggatcatgggggaggatccgt---gaatgacttgggtgctattgggtcagtat---c
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GGT-AAAAGCTGTAAATTTTGCAGTGAATTTTATACATG---TTTATTACAGCAGAGAAATCGTGTATTTCAGCT
CCTC-TTTTT-ATTGCTAGGAAGCCTCACAGAATTACAACCAGTGAAATATTCCCCTTTTCTCT

>Bushbaby

AAA--CTTTTGTCCCTCTAGTACTATGGAGCCTAGGAAGCAA--CTTCCCCTGCCTTGTAAATGGG-----
---GCAAGCCATATTACCACTGGCAAAGAAGAGTTTTCCATGC-TAATTCCTCTCAGCCAAGCAATCAGTTTGAATTAA
A-----

-----AATAT---CAAATCAGA
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GGT-TAAACTGTAAATTTTGCAGTAAATTTTATATATAGTTTTTTTACCACAGAGCAATCATGTCATTTCTTGCT
GTTT-TTTT-ATTGCTAGTAAGCTACAAAGAATTACAAT-AGTGAAATATTCCCCTTTTCTCT

>Mouse_lemur

ATATTCTTTTGAACAGCAAGTGACATGGAGGCAGGGAGGCCAAAACCTTCCCCTGCCTTATAATGGG-----
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A-----

Marker M93

>MSTB1

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tctttataaattaccagcctcaggtattcctttatagcaacacaaaatggactaagaca-----  
-----
```

>Human

```
GAGTTGACACTGAGATGATCACTAGTTTTCTTGGCAGAATGGCAAGGTCATAATTCACAAAGTTGTGAGGGC-----  
-----TGGGAGAAGAGAAAATGCAGACAACAATGTAGG---CTACT---tgctata--  
-ggttgatatttgactctcc-----taacctcatggtgacattagatccccagtgctggaggtg  
gggcctaataaggaggtgtttgggtcatgggagtagaagccttatgaattgtgtggtgtcatcctca----tggaatg  
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gcttcctttctcaccatgtgatctcagtacatgctggctttgcttcaccttcaccatgagtggtggcagcctgagct  
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AACGCTACTTTTGCAGAAGAAGCCCC-----CAAAAAGAGAAGGATGGGACGATACCTGGAAAGGATGCATACAAC-  
ACATGT
```

>Chimp

```
AAGTTGACACTGAGATGATCATTAGTTTTCTTGGCAGAATGGCAAGGTCATAATTCACAAAGTTGTGAGGGC-----  
-----TGGGAGAAGAGAAAATGCAGACAACAATGTAGG---CTACT---tgctata--  
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gggcctaataaggaggtgtttgggtcatgggagtagaagccttatgaattgtgtggtgtcatcctca----tggaatg  
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tctttatcaattaccaggtcaggtattccttcagagcaa-tgtaaatggactaaggta---TTATT---CTTGTAG  
AAGGCTACTTTTGCAGGAGAAGCCCC-----CAAAAAGAGAAGGATGGGACGATACCTGGAAAGGATGCATACAAC-  
ACATGT
```

>Orangutan

```
GAGTTGACACTGAGATGATCACTAGTTTTCTTGGCAGGATGAAAAGGTCATAATTCACAAAGTTGTGAGGGC-----  
-----TGGGAGAAGAGAAAATGCAGACAACGATGTAGG---CTACT---tgctata--  
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cctcattagaagcagatgctgggtgccgtgtttctgtacaacctgcagaacagaactgtgagccaaataaacctgttt  
tctctatccattaaccaggtcaggtattcctttagagcaa-tgtaaatggactaaggta---TTGTT---CTTGTAG  
AAGGCTACTTTTGCACAAGAAGCCCC-----CAAAAAGAGAAGGATGGGATGATACCTAGAAAGGATGCATACAAC-  
ACATGT
```

>Baboon

```
GAGTTGACACTGAGTTGATCACTAGTTTTCTTGGCAGGATGCCAAGGTCATAGTTTCACAAAGTTATGAGGGC-----  
-----TGGGAGAAGCAAAAATGCAGACAACGATGTAGG---CTAGT---tgctata--  
-gtttgcatatttgaccctccttgcatatttgaccctcctaactcatggtgacatttgatccccagtggtggaggtg  
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cctcattagaagcagatgctgggtgccatgtttctgtacagcctgcagaacagaactgtgagctgaataagcctgtct  
tctttatcaattaccaggtcaggtgttctttggagcaa-tgcaaatggactatggca---TTATT---CTTGTAG  
AAGGCTACTTTTGCACAAGAAGTAGCCTTCAACAAAAGAGAAGGATGGGATGATACCTTAGAAAGGATGCATACAAC-  
ACATGC
```


>Dog

TAACTGGCAGTTAGATGATGGTGGGTTTTCTTCCACAAGGTGCCAAGGCCACCATTTCAGGGGGTTGTGAGGATAGAAAG
CAGTTGATCTCATTGAAGAATTAATGGGAGGAGTACAAACAGAGACATTGATGTAGA-----

-----CCATT---CATATAG
AAGGCTACTCTTGTA--AGAAGCCCAA-----CACGAAGAG---GACAAGATAGTACCTAGAGGGGAGGCATACAAC-
TGACAT

>Horse

GAGCTGGCAATTAGATGATCGTTGGTTTTTCTTGCAGGGTGGCAAGGCCGTATTTAGTGGAGTTGCGAGAGCAGAAA-
-AGTTTGTATAATTTCAAGAATGAATGGGAGGAGAGAAAATGGAGACAATGACGTAGG-----

-----CCACC---CGTGTAG
AAGGCTACTCTTGTA--GGAATCCCAA-----CACAAAAGAAGGACAAGCTGGTACCTAGAGGGGATGCATACACC-
AGATTT

Marker M94

>MSTB1

```
-----  
-----  
--tgctatagtttggatgtttgtcccctccaaacc--tcatggtgaaatgtgatcccagtggtggaggtggggccta  
atgggaggtgtttgggtcatggggcgatccctcatgaatagattaatgccctccctcgggg-tgggga-tgagtg-  
---agttctcactc-tattagttcccgcgagagctggttgtt-----aaaaagagcctggca---cctccc  
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agca-----gcctgaggccctcaccagaagcagatgctggcgccat  
gcttctgtacagcctgcagaaccgtgagccaaataaacctcttttctttataaattaccagcctcaggtattcctt  
tatagcaacacaaaatggactaagaca-----  
-----  
-----  
-----
```

>Human

```
TCTCGTAAACACCCCTCAAATCTGTCCTCTGTGCTCTGTCTCCAACACTGAGTTTGGAGCAGGCTAAGTTTTAGGCCT  
CGTTAGCCTGGACAACCTGCTG-----CCTCCTAATGGGTC-----TCCTATATTCCCTC-TTA---CCCTC-  
--cgctatagtttggatgtttgtcccctaaacctcttcatggtgaaagtcatcccagtggtggaggtggggccta  
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-tgagctctcattcttcttagttcccacatgagaactggttgtt----aaaaaaaaaaaaaagcctggaatttcccccc  
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gaacttttctag-caacagaatctcgagccaaa-gaaaccttttttctttataaattccccagcctcagatattcctt  
tatagcaacactaaatgcattaaggca---CCCTC---TGAA-AACCTATTCTCCACACTGAAGCCATAGTGATCTTT  
TAAA-ACAC-----TTAAGGG-----CTTAAAGCCCTTTGGGCATT-CCTATTTTCTT  
AAGATGAAGACAAAGTCCTTTGCTGCCTGGCATGGCCCTGTGTGGTCAAGCTGCTCTGCATCCTCCTCCTCCCATT  
ACTCCCTTGTCTTTTGGGCCCAACAACCTTGCCCCACTTTTATTCTTCCAGTGTGCTGTGATCCATCCAGCCACATG  
GCCTGCGCACATGCCATTCTCTGCCTG
```

>Orangutan

```
TCTCCTAAACACCCCTCAAATCTGTCCTCTGTGCTCTGTCTCCAACACTGAGTTTGGAGCAGGCTAAGTTTTAGGCCT  
CTTTAGCCTGGACAACCTGCTG-----CCTCCTAATGGGTC-----TCCTATATTCCCTC-TTA---CCCTC-  
--tgctatagtttggatgtttgtcccctaaacctcctcatattgaaagttgatcccagtggtggaggtggggccta  
atgggaggtgtttggggcgtggaagtgaacctcctcatgagtagattaacgccttctgtgggg--tggg---tatgag-  
-tgagctctcattcttcttagttcccacatgaaaactggttgtt-----aaaaaaaaaaaaaagcctgaaatttcccccc  
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gaacttttctagacaacagaatcttgagccaaa-gaaaccttttttctttataaattccccagcctcagatattcctt  
tatagcaacactaaatgcattaatgca---CCCTC---TGAA-AACCTATTCTCCACACTGAAGCCATAGTGATCTTT  
TAAA-ACAC-----TTAAGGG-----CTTAAAGCCCTTTGGGCATT-CCTATTTTCTT  
AGGATGAAGACAAAGTCCTTTGCTTCCCTGGCATGGCCCTGTGTGGTCAAGCTGCTCTGCGTCCTCCTCCTCCCATT  
ACTCTCTTGTCTTTTGGGCCCAACAACCTTGCTCCACTTTTATTCTTCCAGTGTGCTGTGATCCATCCAGCCACATG  
GCCTGCGCACATGCCATTCTCTGCCTG
```

>Baboon

```
TATCCTAAACACCTCTCAAATCTATCTTCTGTGCTCTGTCTCCAACACTGAGTTTGGAGCAGTCTAAGTTTTAGGCCT  
CTTTAGCCTGGACAACCTGCTG-----CCTCCTAATGGGTC-----TCCTATATTCCC-----TCCTC-  
--tgctatagtttggatgtttgtctcccctaaacc---tcatggtgaaagttgatcccagtggtggaggtggggccta  
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-tgagctcttattcttatttagttcccacatgaaaaccggttgttataaaaaaaaaaaaaaaaaaagcctggaatttcccccc  
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agcatctgcatccagacgcttgactcaagcttatgtcctgtccatgagtggtcctctgggtgcagatgc-ccagctt  
gaacttttctagacaacagaatcttgagccaaa-gaaaccttttttctttataaattccccagcctcggatattcctt  
catggcaacactgaatgcattaaggca---CCCTC---TGAA-AACCTATTCTCCACACTGAAGCCACCGTGATCTTT  
TAAA-ACATGTCTGTCTTGTG-----CTTAAAGCCCTTTGGGCCTT-CCTATTTTCTT  
AAGATGAAGACAGAGTCCTCTGCTGCCTGGCATGGCCCTGTGTGGTCAAGCTGCTCTGCGTCCTCCTCCTCCCATT  
ACTCCCTTGTCTTTTGGGCCCAACAACCTTGCTCCACTTTTATTCTTCCAGTGTGCTGTGATCCATCCAGCCACATG
```


>Mouse_lemur

TCTACTAAACACCTCTGAAGTCCGTCCTCGGCTCTCCACCTCCAACATG-----GTAGT----GTTATAGGCTT
CATTAGCTTGGACAACCTGCTGTAA----GCTCCTGAGTGGTC-----TCTGATATTCTCTC-ATA-----

-----CCCTC---TGCA-AATCTGTTCTCCACACTAAAGCCACAGCAATCTTT
TAAA-C--TTTCCGTCCTGTG-----CTTAAAGCCCTTTGGACCTT-TCCATGTTCTT
AAGATGAAGACAAAAACCTTTGCTGCCTGGCGTGGCCCTGTGTGGTCCAGCTGCTCTGCAGCCTCCTCTCCCCTGCTC
ACTCCCTTGTCTTTGGGCTCCAACAACCTCCGTTGTTCTTTTCATTCTTCAAGTAGGCTGTGATCCATCAAGCCACAGG
GCCTTGGCACATGCCCTTCTCTGCCTG

>Guinea_pig

TCTCTTAAACAGCTCTCAAATCTATCTTTTGCTATCTTC-----
-TTTAGCTTGGACAACCTTCTGTGATCTATTCTCTCTATCTATTCTGTCTTCTCTATTCTCTTGTAC-----

-----TATCC---AAAAGGATCTATTCTCCATACTGTAGCTAGGGTGATCTTT
TTAG-AAACGTCTGTCTTGTGTTAAAAGCCCTTTGGCCTCCTCATTTTCTTAGCCCTTTGGGCGCT-CCCACTTTCTT
AGGAGCAAGAGAAAATCTGTTGCTGCCTGACATGCTCCCTGCATGAGCAACT-ATTCTGCAGCCTTCTCTCCTCCAATC
ACATCCTTGTCATTTTGGCTCTAACAACCTCACTTCTTCATTATCCT-CAAGTGGGTTGTGATTCATGCACCCACATG
GCCTTGGCATATGCTGCCCTCTGATTT

>Dog

CCCCACCCGACTTCCCAAATCTGTTCTCTCTCAACTTCCAATAC-----TTTAGTCTAAGTCATAGGCTT
ATCTAGCCTGCAAACTGCTGTGGCTTCTATCTTAGCTATTC-----TCATATATCCTCTT-TTA-----

-----TACCC---CAAAG--TCACTTCTCCACCCTGAAGCCACAGTGAACCTTT
TAAAGAAATGTCTATCCTATG-----TTTAAAATCCCTGGGTCCTTCCCCATTTCTTT
AGGATGAAGAACAAATCTTTTGCCATCCAGCCTGCCCTGTGTGCTCAAGCTGCTCTAGAAAATACT-----CCTCTC
ACTCCTCTTGTCCCTGAATTCGAACACCCTGTTCTC--CATTCA-CAGGTGGGCTG-GAATTCTCCACCACATG
GCCTTTGCACATGCTGTTCTCTTTCTG

>Horse

CCC-----AATCTGTCCTTTCTCTCCATCTC AAAAC-----CTTAGGCTAAGTTATAATCTT
CTCTCGCCTGGACAGCTGCTGTAGGTTCTGTCCTAACTGGTC-----TCCTGTATCCCCTT-TCA-----

-----CCCTC---CAAAA-ACCAGTTCTCCACCGTGAAGTCACAGTGATCTGT
TTAA-AAATGTCTGTCTGTG-----CTTAAAACCTTTTGG-CCTT-CCCATTCCCTT
AGGGTGGAGACAAAATCCTTTGCTGCCTGACTCGGCCCTGTGTGACCAAGCTGCCCTGCAGACTCCTCTCCCCATT
CCTCCATTGTCTCTGGGCTCCAACAACCCTGCTCTTCTGTCACTCT-TCAGTGGGCTGTGAGTCATCCAGCCACAGG
GCCTTTGCACACTCCCTTCTCTGCTTG

Marker M95

>MSTB1

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ccgcgagagctgggtggttaaaaaga-----gcctggcacctccctcctctc-----tcttgcttcc  
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cagaagcagatgctggcgccatgcttcttgtagcagcctgcagaaccgtgagccaaataaacctctttctttataaat  
taccagcctcaggtattcctttatagcaacacaaaatggactaagaca-----  
-----
```

>Human

```
GTCCACCTTTTGATTGATTTCTACACTTCCTTCAAATGTATCTCAAAGTTATGTGCAGTGTGAAATTTCCATAAAA  
TT-----ACAAAGAGCTTGTGCCTTTCTCCTCTTGGGCTTCTCAAGTAGGTTTA---CTCTC---tgatataggt-gg  
atatttgtgccctccaaacctcatattgaaacttgggtccccattggtggagggtggggcctgggtgagaggagtttgggt  
caaaaaggcagatcccccatgaacggccttgggtgccat-----tctcatcacattgagtaaattcttactcttatttc  
ccacatgatctgggtggttaaaaaaaaaaaaaaaaaaaaaa---gtccagcaccttcctcctttctccgtctcatccttcctt  
cctcttgccctgtgata-ctg---actccctggtgccttcgcttctgtcatgag-----gctctatgaggccctcac  
cagaaacagaagctggcgtcatgcttcttgtagcagcctgcagaac-----attttctttataaat  
taccagcctcagatattcctatatagcaacataa-atggactaagaca---CT-GAC---AAAAACATTTTT-ACT  
GCAGTTATTACT-TTTGTGATTTTTGACCAGGAGCTTCTCAAACACAGCATCCT
```

>Chimp

```
GTCCACCTTTTGATTGATTGCTACACTTCCTTCAAATGTATCTCGAAAGTTATGTCCAGTGTGAAATTTCCATAAAA  
TT-----ACAAAGAGCTTGTGCCTTTCTCCTCTTGGAGCTTCTCAAGTAGGTTTA---CTCTC---tgatataggt-gg  
atatttgtgccctccaaatctcatattgaaacttgggtcctcattggtggagggtggggcctgggtgagaggagtttgggt  
caaaaaggcagatccctcatgaacggccttgggtgccat-----tctcatcacattgagtaaattcttactcttatttc  
ccacatgatctgggtggttaaaaaaaaaaaaaaaaaaaaaaagtccagcaccttcctcctttctccgtctcatccttcctt  
cctcttgccctgtgata-ctg---actccctggtgccttcgcttctgtcatgag-----gccctatgaggccctcac  
cagaaacagaagctggcgtcatgcttcttgtagcagcctgcagaac-----attttctttataaat  
taccagcctcagatattcctatatagcaacataa-atggactaaggca---CT-GAC---AAAAACCTTTTTTACT  
GCAGTTATTACT-TTTGTGATTTTTGACCAGGAAGCTTCTCAAACACAGCATCCT
```

>Orangutan

```
GTCCACCTTTTGATTGATTTCTACACTTCCTTCAAATGTATCTCAAAGTTATGTCCAGTGTGAAATTTCCATAAAA  
TT-----ACAAAGAGCTTGTGCCTTTCTCCTCTTGGAGCTTCTCAAGTAGGTTTA---CTCTC---tcatatagtc-ag  
atatttgtccccctccaaatctcatattgaaacttgggtccccattggtggagggtggggcctgggtgagagtagtttggat  
caaaaaggcagatccctcatgaacggccttgggtgacat-----tctcatcacattgagtaaattcttactcttatttc  
ccacaagatctgggtgattaaaaaaaaaaaaaaaaaaaaagag---tccagcaccttcctcctttctccgtctcatccttcctt  
cctcttgccatgtgatg-ctg---actccctggtgccttcgcttctgtcatgag-----gccctatgaggccctcaa  
cagaaacagaagctgggtgtcatgcttcttgtagcagcctgcagaac-----attttctttataaat  
taccagcctcagatattccaatatagcaacataa-atggactaagaca---CT-GAC---AAAAACCTTTTTTACT  
GCAGTTATTACT-TTTGTGATTTTTGACCAGGAGCTTCTCGAACACAGCATCCT
```

>Baboon

```
CTCCAACCTTTTGATTGATTTCTACACTTCCTTCAAATGTATCTCAAAGTTATGTCCAATGTGAAATTTCCATAAAA  
TT-----ACAAAGAGCTTGTGTCTTTCTCCTA-TGAGCTTCTCAAGGAGGTTTA---CTCTC---tgatataggt-gg  
atatttgtccccctccaaatctcatattgaaaattgggtcctcagtggtggagggtggggcctgggtgagaggagtttgggt  
caaaaaggcagatccctcaagaatggccttgggtgcat-----tctcatcagattgaggaaattcttactcttatttc  
ccacaagatctggcag-----aagaaaaataaaaaa---gtctagcaccttcctcctttctctgtctcatcattcctc  
cctcttgccatgtgatg-ctg---actccctggtgccttccttctgcatgag-----gccctatgaggcccttac  
cagaaacagatgctgggtgtcacgcttcttgtagcagcctgcagaac-----attttctttataaat  
tacctggcctcaggtattcctatatagcaacataa-atggactaagaca---CT-GAC---AAAAACCTTTTTTACT  
GCAGTTATTACT-TTTGTGATTTTTGACCAGGAGTTTCTCAAACACAGCATTCT
```

>Rhesus

```
CTCCAACCTTTTGATTGATTTCTACACTTCCTTCAAATGTATCTCAAAGTTATGTCCAATGTGAAATTTCCATAAAA  
TT-----ACAAAGAGCTTGTGTCTTTCTCCTA-TGAGCTTCTCAAGTAGGTTTA---CTCTC---tgatataggt-gg  
atatttgtccccctccaaatctcatattgaaaattgggtccccagtggtggagggtggggcctgggtgagaggagtttgggt  
caaaaaggcagatccctcaagaatggccttgggtgcat-----tctcatcagattgaggaaattcttactcttatttc  
ccacaagatctggcagaaaaa-----gtctagcaccttcctcctttctctgtctcatcattcctc
```



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-----
-----
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-----AT-GAA-----AAA-----
---ATTACTACTTTTTGTGA-TTTGAACCCAAAGTTTCTTAAATGCTACACTCT
>Guinea_pig
CTTCGTTTTGACTGCCTCTTTACTT-GTCCTTAAAATGTATCTCAAAA-TTATAC-TAGTATTATAATTCCCATA-AA
TT-----TCCAAAGTATTTCTACTTCTTACTGCTTTCAATGAAAACCATGAATA-----
-----
-----
-----
-----
-----CTTGAC-----AAAATCTCCTTTGCT
GCTATTATTCT-----GTGG-TTTACATTCAGAGCTCC--AATGCAGCATTCT
>Dog
CCCCACCTTTTGATTGATTTCTACTCATCCTTCAAATGTATCTCAAAAGTTATTTCTAGTGTGAAATTTCCCATAAAA
TT-----ACAAAGAGCTTGCTGCTTCCTCCTC-TGAGCTCCCTGGGATAGGTTT-----
-----
-----
-----
-----
-----GAC-----AAAACCTCCTTTTCT
GCAATTATTACTCTCTGCAA-TTTTCACTGGAAGTTTCTCAAATGCAGCCTTCA
>Horse
TCCCACCTTTTGATTGATTTCTACTCATCCTTCAAATGTATCTCAAAAGTTATTTCCAGTGTGGAATTTCCCATAAAA
TT-----ACAAAGAGCTTGCTGCTTCCTTCCC-TGAGCTCCCTGGGCAGGTTTA-----
-----
-----
-----
-----
-----CT-GAC-----TAAACCTCCTTTACT
GCAATTATTCT-TCTGTGA-TTTTCAGCCAGAGTTTCTCAAATGCAGCCTTCT

```


Marker M102

>MSTB1

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ttgttaaaaagagcctggcacctc-----cctc-ctctctctcttgcctcctc-tcg  
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agcagatgctggcgcca-----  
-----  
-----  
-----  
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cccagcctcaggtattc-----ctt-----tatagcaacacaaa  
atggactaagaca-----  
-----
```

>Human

```
CATCTGGTTCATCTAGCATGTGGGGCTGTGAGCAGGA---GTGTGCCCTGAGAGGACAAATTCTTG---AAGACTCC  
ATCCCTG--TAAAGAATGTCACACTGCTGC-TGCGTAT---GGTTG---tggtgtagtttggat-gtttgtctcctcc  
aaatatic-gtgcgtgaaatctgatccacagtggtggagatggggcctaacggggagccatctttagtcacaggggttaatc  
cttcatgaatagattaatgccctccct--gggtgggggataagtgagttctcactctggttcttctgtaggagctgg  
ttgctgaaaagagcctagcgcctc-----ccctctctctcttgcctcctctcaccatg  
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ccaatcttttagacacgagaactgtgagccaaataaattc-----  
-----  
-----  
-----  
-----tttttttaataaatta  
cccagcctcaggtattc-----ctacta-----tatagcaacacaaa  
-tagacttagaca---AGCTG---GTA--ATAAAGCCC-TCAAGGGCTAATGAGAGAAGTATGTGCTTTGGAGTCAGA  
AACTCCTGAGTTTTAGGCTTGGCTATGTCACCTTGCTAACTGTGAGACTTG
```

>Chimp

```
CATCTGGTTCATCTAGCATGTGGGGCTGTGAGCAGGA---GTGTGCCCTGAGAGGACAAATTCTTG---AAGACTCC  
ATCCCTG--TAAAGAATGTCACACTGCTGT-TGCGTAT---GGCTG---tggtgtagtttggat-gtttgtctcctcc  
aaatatic-gtgcgtgaaatctgatccacagtggtggagatggggcctaacggggagccatcttgggtcacaggggttaatc  
cttcatgaatagattaatgccctccct--gggtgggggataagtgagttctcactctggtcgttcttctgtaggagctgg  
ttgctgaaaagagcctagcgcctc-----ccctctctctcttgcctcctctcaccatg  
-----tgatctctgcacatgccagctcccccttcacctgctgtcatgagtggaagcagcctgaggctttcaccagatac  
ccaatcttttagacaccagaactgtgagccaaataaattc-----  
-----  
-----  
-----  
-----tttttttaataaatta  
cccagcctcaggtattc-----ctacta-----tatagcaacacaaa  
-tagacctagaca---AGCTG---GTA--ATAAAGCCC-TCAAGGGCTAATGAGAGAAGTATGTGCTTTGGAGTCAGA  
AACTCCTGAGTTTTAGGCTTGGCTATGTCACCTTGCTAACTGTGAGACTTG
```

>Orangutan

```
CATCTGGTTCACCTGGCACTTGGGAATGTGAGCAGGA---GTGTGTCCTGAGAGGACCAATTCTTG---AAGACTCC  
ATCCCTG--T-AAGAATGTCACACTGCTGT-TGCATAT---GGCTG---tggtgtagtttggat-gttcgtctcctcc  
aaatatic-gtgcgtgaaatccgatccacagtggtggagatgggtgcctaataaggagccatcttgggtcacaggggttaatc  
cttcatgaatagattaatgccctccct--gggtgggggataagtgagttctcactctggtcgttctcgtgggagctgg  
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ccaatcttttagacaccagaactgtgagccaaataaatt-----  
-----  
-----
```

-----ttttttaaataaatta
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AACTCCTTAGTTTTAGGCTTTGGCTATGTCACTTGCTAACCGTGAGACTTG

>Baboon

CATCTGATTGAGCTGGCATGTGGGGCTGTGGGCAGGA---GTGTGCCCTGAGAGGACAAATTCTTG---AAGACTCT
ATCCCTG--T-AAGAATGTCACACTGCTGC-TGCATAT---GGCT-----gtgtagtttgat-gtttgtctcctcc
aagtatc-gtgcgtgaaatctgatccacgggtgttggaggtggggcgtaatgggagccattttgggtcacaggggttaatc
cttcacgaatagatgaatgccttcct--gggtgggggataagtgagttctcactctgttgggtccttggggagctgg
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-----attttttaaataaatta
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-tagacttagaca---GGCTG---GTA--ATAAAGCCC-TCGAGGGCTAATGAGAGAAGTAGGGGCTTTCGAGTCAGA
AACTCCTGAGTTTTAGCCTTTGGCTCTGTCACTTGCTAACCGTGAGACTTG

>Rhesus

CATCTGATTGAGCTGGCATGTGGGGCTGTGGGCAGGA---GTGTGCCCTGAGAGGACAAATTCTTG---AAGACTCT
ATCCCTG--T-AAGAATGTCACACTGCTGC-TGCATAT---GGCT-----gtgtagtttgat-gtttgtctcctcc
aagtatc-ctgcgtgaaatctgatccacgggtgttggaggtggggcgtaatgggagccattttgggtcacaggggttaatc
cttcacgaatagatgaatgccttcct--gggtgggggataagtgagttcttactctgttgggtccttggggagctgg
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AACTCCTGAGTTTTAGCCTTTGGCTCTGTCACTTGCTAACCGTGAGACTTG

>Marmoset

CATCTGATTGATT-GGCACGTGGGGCTGTGGGC-----CGGACAAATTCTTG---ACGACTCC
ATCGCTG--T-GAGAATGGCACACTGCTGT-TGCATTT---GGCTG---tggtgcagtttgat-gtttgtctcctcc
aaatatcaatgctgaaatctgatccacagtgctcagaggtggggcctaataatgggagccattttgggtcacaggggttaatt
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CGATGGAGTCTTGCTCCATCTCCAGGCTGGAGTGCAGTGGCACAATCTTGCTCACAGCAACCTCCGCCTGTGAGGTT
CAAGCAATTCTCCTGCCTCAGCCTCCCAAGTAGCTGGAACCTACAGGCACCTGCCATCACTCCAGCTGATTTTTTTGTA
TTTTTAGTAGAGACAGGGTTTACCATGTTGGCCAGGATGGTCTCGATTTCTTGACCTTAAGATCCACCCACCTGGCC
TCCCCAAGTGCTGGGATTACAGGCATGAGCCACTGTGCTCCACCAAATTCTTTTTTTTTTTTTTTTTTTTtaataaatca
cccagcctcaggtattc-----cct-----tataacaacacaaa
-tagactgagacg---GGCTG---GTA--ATAAAGCTCATTAAAGGATAATGAGAGAAGTGTGGGCTTTGGAGTCAGA
AACTCCTGAGTTTTAGCCTTTGGCTCTGTCACTTGCTAACCGTGAGACTTG

>Tarsier

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-----AGCTG---CTACCTCAAAGTCC-TCCAGGGGCATGGGGAGGATCACGGGCTGTGGAGTCAGA
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>Horse

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Marker M290

>MSTC

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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> Baboon

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> Rhesus

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> Marmoset

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> Tarsier

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Marker M116

>MSTB1

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Marmoset

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> Baboon

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> Rhesus

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> Marmoset

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> Tarsier

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Marker M121

>MSTB1

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>Human

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aaatctgatccccattggtggaggtggggcct-ggtgggaggtggttgggtcatccaggtggatccctcatgaatggt  
ttggtgcagtcgtcc---tggtgatgagttgagttcttactctcttggttcctgtgatagctgattgttaaaaagag  
cctggcaccttcc---cctcc-tgccttgcttctctc--accatgtgat--ctgcacatggtggcttcttcccc  
ttcctccatgcatggaagcagcttgagggcctccctagatgcagatgctggcaccatgcttcttgtagcagcctgtaga  
accatgagccaaatgaacctcttttcttta-----taaattaccagcctcaggtaatcctttatagcaatacaa-ac  
cgactgagaca---CCCAT---GGTCACCACATCCTTCCAGGGCGACA---TCCAGTGACT-AATTAATG--TGATA  
GTATACGGGTCTGGCTAT
```

>Chimp

```
GACACTGT-GTTGCTCAGATCCCCCTTCAATGAAGGATTT-TTCCCC-----GTCACCTACCAGTCCCTTTAGGGATT  
-GCC--AATTGCAGAGAGCCACCT-A---CCCAC---ttctacgtttggatatttgaccccaccaaactctcatggtg  
aaatctgatccccattggtggaggtggggcct-ggtgggaggtggttggagtcatccaggtggatccctcatgaatggt  
ttggtgcagtcgtcc---tggtgatgagttgagttcttactctcttggttcctgtgatagctgattgttaaaaagag  
cctggcaccttcc---cctcc-tgccttgcttctctc--accatgtgat--ctgcacatgtcagcttcttcccc  
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accatgagccaaatgaacctcttttcttta-----taaattaccagcctcaggtaatcctttatagcaatacaa-ac  
cgactaagaca---CCCAC---GGTCACCACATCCTTCCAGGGCGACAGACATCCAGTGACT-AATTAATG--TGATA  
GTATACGGGTCTGGCTAT
```

>Baboon

```
GACA--GT-GTTGCTCAGATCCCCCTTCAATGAAGGACTT-TTCCCCTAGTTATCACCTACCAGTCCCTTTGGGGATT  
-GCC--GATTGCAGACAGCCACCT-A---CCCAC---tcctatggtttggatatttgaccccactgaatctcatggtg  
aaatctgatccccattggtggaggtggggcct-ggtgggaggtgctggagtcac-----gtc  
ttggtgccgtcttcc---tcgtaatgagttgagttcttactctatttggttcctgtgatagctgggtgttaaaaagag  
cctggcaccttcc---cctcc-tgccttgcttctctc--accatgtgat--ctgcacatgtcagcttcttcccc  
ttcctccaagtgtggaagcagcttgagggcctccctagatgcacatgctggcaccatgcttcttgtagcagcctgcaga  
accatgagccaaatgaacctttttcttta-----taaattaccagcctcaggtaatcctttatagcagtacaa-ac  
tgactaagacg---CCCAC---GGTCAGCACATCCTTCCAGGGCGACAGACATCCAGTGACT-AATTAATG--TGATA  
GTATACAGGTCTGGCTAT
```

>Rhesus

```
GACA--GT-GTTGCTCAGATCCTCCTTCAATGAAGGACTT-TTCCCTTAGTTATCACCTACCAGTCCCTTTGGGGATT  
-GCC--GATTGCAGACAGCCACCT-A---CCCAC---tcctatggtttggatatttgaccccactgaatctcatggtg  
aaatctgatccccattggtggaggtggggcct-ggtgggaggtgctggagtcac-----gtc  
ttggtgccgtcttcc---tcgtgatgagttgagttcttactctatttggttcctgtgatagctgggtgttaaaaagag  
cctggcaccttcc---cctcc-tgccttgcttctctc--accatgtgat--ctgcacatgtcagcttcttcccc  
ttcctccaagtgtggaagcagcttgagggcctccttagatgcacatgctggcaccatgcttcttgtagcagcctgcaga  
accatgagccaaataaacctttttcttta-----taaattaccagcctcaggtaatcctttatagcagtacaa-ac  
tgactaagatg---CCCAT---GGTCAGCACATCCTTCCAGGGCGACAGACATCCAGTGACT-AATTAATG--TGATA  
GTATACAGGTCTGGCTAT
```

>Marmoset

```
GACACCAT-GATGCTCAGATCCCCCTTCAATGAAGGACTT-TTCCCACAGCCATCATCTACCAGTCCCTTTGGGGATT  
-GCC--AGTTGCAGAGAGCCACCT-A---CCCAC---tcctatggtttgtatatttgaccccaccaaactctcatggtg  
aaatctggtccccagtggtgggggtgagggcctaggtaggaggtggttgggtcatccaggtgcatccctgatgaatgct  
ttggtgcagtcctcc---tggttatgagt-gagttcttgcttcttcttggctcctgtggttagctgggt----acaaagag
```



```
-----  
-----  
-----  
-----  
-----  
-----  
-----GAAAC--AAAGGCAAGAGTCTGAGCAAGAGCCTGGAAAGTGT  
>Dog  
AAAGTCCTCCTGCAGAGACCTGTGACCCAGTGAATGCCACAAA--TG--GT-----  
--CAATTGAGCCAGAAG-GTTCCGA--C----CCAACTCTGGGAGGAC---CCAGGGATATGGGAAAGATGCCTTAT-  
GGGGATTAAAGTCAAGCTCTTCCTTACAAGGTA-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----TGAGT--AGGGCCCAAAGTCTGAACTAGAACTTGGGATA---
```

Marker M130

>MSTB1

```
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cgccatgcttctgtacagcctgcagaaccgttgagccaaataaacctctttctttataaattaccagcctcaggta  
ttcctttatagcaacacaaaatggactaagaca-----  
-----
```

>Human

```
AATTCT-GCAGTGAAAAATAAC---CACTAATGGCAAAGGAGAAGAAAGACTTCCAAGACAAAGTTAAGCTATTTGAG  
GATAGACTC---AGGGATGTAGTTCAGATAAAAAGCGCCATTTAAAAGATT---GATGG---tgctattgtttg-ata  
tggtttgcttgggtcccccagctctcttggtaaatctgatgccagtggtggagggtggggctggtgggagggtgtt  
gggtcatgggga-ggactcctcaagagtagtttgggtatcattctcatgacaacgactgaat-----tcttgctctta  
gttcccgcacgaactgattggtgaaaagagcctggcacctcctcctttc-----tctcttgccctttctctctc  
accatgtgatgcctgctttccttcatcttacgtcatgagtggaatcttccctgaggctcctgatcagaagcagatattga  
caccatacttcttgtatagcctgcagaacctgggcccataaacctcttttctttataaatcactcagcctcaggta  
ttcctttatagcaacac-aaatggactaagact---GATGG---AATTCCAAGTGTGAGGAGAATGC-GTTATCTAA  
AGACTGCAGGT----TTA-----AGTAAGCCACTACAGATGTTAAAAATTACACCAGAGTAAAGTATTTGGTATAGC
```

>Chimp

```
AATTCT-GCAGTGAAAAATAAC---CACTAATGGCAAAGGAGAAGAAAGACTTCCAAGACAAAGTTAAGCTATTTGAG  
GATAGACTC---AGGGATGTAGTTCAGATAAAAAGTGCCATTTAAAAGATT---GATGG---tgctattgtttg-ata  
tggtttgcttgggtcccccagctctcttggtaaatctgatgccagtggtggagggtggggctggtgggagggtgtt  
gggtcatgggga-ggactcctcaagagtggttgggtgtcattctcatgacaacgactgaat-----tcttgctctta  
gttcccacacgaactgattggtgaaaagagcctggcacctcctcctttc-----tctcttgccctttctctctc  
accatgtgatgcctgctttccttcatcttacgtcatgagtggaatcttccctgaggctcctgatcagaagcagatactga  
caccatacttcttgtatagcctgcagaacctgggcccataaacctcttttctttataaatcactcagcctcaggta  
ttcctttatagcaacac-aaatggactaagact---GATGG---AATTCCAAGTGTGAGGAGAATAC-GTTATCTAA  
AGACTGCAGGT----TTA-----AGTAAGCCACTACAGATGTTAAAAATTACACCAGAGTAAAGTATTTGGTACAGC
```

>Orangutan

```
AATTCT-GCAGTGAAAAATAAC---CACTAATGGCAAAGGAGAAGAAAGACTTTGAAGACAAAGTTAAGCTATTTGAG  
GATAGACTC---AGGGACGTAGTTCAGATAAAAAGTGCCATTTAAAAGACT---GATGG---tgctattgtttg-ata  
tggtttgcttgggtcccccagctctcttggtaaatctgatgccagtggtggagggtggggcctggtgggagggtgtt  
gggtcatgggga-ggaccctcaagagtggttgggtgtcattctcatgacaacgactgaat-----tcttgctctta  
gttccctgcacgaactgattggtgaaaagagcctggcacctcctcctttc-----t---tgccctttctctc--  
accatgtgatgcctgctttccttcatcttacgtcatgagtggaatcttccctgaggctcctgaccagaagcagatactga  
caccatacttcttgtatagcctgcagaacctgggcccataaacctcttttctttataaatcactcagcctcagcta  
ttcctttatagcaacac-aaatggactaagact---GATGG---AATTTCCAAGTGTGAGGAGAATACAGTTATCTAA  
AGACTGCAGGT----TTA-----AGTAAGCCACTACAGATGTTAAAAATTACACCAGAGTAAATATTTGGTACAGC
```

>Baboon

```
AATTCT-GCAGTGAAAAATAAC---CACCAATGGCAAAGGAGAAGAAAGACTTCCAAGACAAAGTTAAGCTATTTGAG  
GATAGACTC---AGGGATGTAGTTCAGATAAAAAGTGCCATTTAAAAGATT---GATGG---tgctattgctctgggata  
tgatttgtttgggtcccccagctctcttggtaaatctgatgccagtggtggagggtggggcctggtgtgagggtgtt  
gggtcatgggga-ggacccttaagagtggttgggtgtcattctcatgacaaggactcaat-----tcttgctctta  
gttcacactcgaactgattggtgaaaagagcctggcacctcctcctttc-----tctcttgccctttctctc--  
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caccatacttcttgcatagcctgcagaacctgggcccataaacctcttttctttatacatcactcagcctcaggta  
ttcctttatagcaacac-aaatggactaagact---GATGG---AATTTCCAAGTGTGAGGAGAATACAGTTATCTAA  
AGACTGCAGGT----TTA-----AGTAAGCCACTACAGATGTTAAAAATTACACCAGAGTAAATATTTGGTACAGC
```

>Rhesus

```
ACTTCT-GCAGTGAAAAATAAC---CACCAATGGCAAAGGAGAAGAAAGACTTCCAAGACAAAGTTAAGCTATTTGAG  
GATAGACTC---AGGGATGTAGTTCAGATAAAAAGTGCCATTTAAAAGATT---GATGG---tgctattgctctgggata  
tgatttgtttgggtcccccagctctcttggtaaatctgatgccagtggtggagggtggggcctggtgtgagggtgtt  
gggtcatgggga-ggaccctcaagagtggttgggtgtcattctcatgacaaggactcaat-----tcttgctctta  
gttcacactcgaactgattggtgaaaagagcctggcacctcctcctttc-----tctcttgccctttctctc--
```

accatgtgatgcctgctttccttcgtcttacgtcatgagtggaatcttcctgaggtcctgaccagaagcagatactga
caccatacttcttgcatagcctgcagaacctgggccaataaacctttttctttatacatcactcagcctcaggta
ttcctttatagcaacac-aaatggactaagact---GATGG---AATTTCCAAGTGTGAGGAGAATACAGTTATCTAA
AGACTGCAGGT----TTA-----AGTAAGCCACTACAGATGTTAAAAATTACACCTGAGTAAAATATTTGGTACAGC
>Marmoset
AATTCT-GCAGTGAAAAATAAC---CACTAATGCCAAAGGAGAATAAAGACTCTGAAGACAAAGTTAAGGTATTTGAG
GATAGACTC---AGGGATGTAGTTCAGATAAAAGTGCTATTTAAAGACT---GACGG---tgctattgtttg-ata
tgatttgtttgcttccaccaagtctcttcttgaaatctaatagcccaatggttgatggggcctgggagggtggtt
gggtcatgggga-ggatccctcatgagtggttgggtgctattctcatgacaaggactgaat-----tcttgctctca
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caccaggcttcttgtagcctgcagaacctgggccaataaacctcttttctttataaatcacttaacttcaggta
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AGACTACAGGT----TTA-----AGTAAGCCATTACAGATGTTAAAAATTATACCAGAGTAAAATATTTGGTACAGC
>Tarsier
AATTCT-GTGGTGAAAAATAAC---CATTAATGCCAAAGAAGAAGAAAGACCTGGAAGAGAAAGCTAAGCTGTTTGGAG
GATAGACAC---AGGAATGCAGCTCAGATGAAAATGCAATTTAAAGGATT-----
-----aataaggtctggggagggtattt
tggtcatgggggagaccctcattaaaggcttgatgccattcacacaggagtaagtgaat-----tctcactctta
gttctgcaagaactgg-----taccgctttccctcctc-----tc-----
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cgccacacttcttgtagcctatggaactgtgagccaacaataatcttttctttataaattacctagcctcaggta
ttcctttatagcaacac-aaacagaccaagaca---GATGA---AATTTCCAAGTGTGAGGAGAATACAGTTATTTAA
AGACTACAGAT----TTACTTCAAGTTCGCCACTGAAGATGCTAAAAATAAAACCATTGTAAAGTATTTGGTATAAC
>Bushbaby
AATTCTTGCAGTGAAAAATACC---CACTAATGACAAAGGAGAAGAAAACCCAGAAAGATAAAGTTCAGCTATCTGAG
GCTAGACAT---GGAGAATTAGTTCAGATGAAA-TGCAATTTAAAGGATT-----

-----GATGG---AATTTCCAAGTATGAAGAGAACACAGTTATCTAA
AGACTGCAGGTGTAGTCAC---TTTAAGTCACTGTAGATGTTAAAAATAGGACCATAGTAAAATATTTGGCACAAC
>Mouse_lemur
AATTCT-GCAGTGAAAAATAAT---CACTAATGCCAAAGGAGAAGAAAGACTGAAAGCCAAAGTTCAGCTATCTGAG
GATAGACAC---AGGGATGTAGTTCAGATGAAAATGCAATTTAAAGGATT-----

-----GATGG---AATTTCTAAGTGTGA---GAATACGGTACTTAA
AGAAAGCAGGT----TTAT----TGTAAGCCACTGTAGAGGTTAAAA-TAAGACCATAGTCAAATATTTGGCACAAT
>Tree_shrew
AATACT-GAAGTGGAATAACGAACACCAATGCCAAAAAGAAAG---GACCCAGAAGACAAAGCTAAGCTATTTGAA
GATAGACAC---AATGATGCAGTTCAGATGAAAATGCAATTTCAAAGGATT-----

-----GAAGG---AATATATAAATGTGGAATAAATAAGATCATAGTGAAGTATTTGGCACAAC
AGAGTACGGGT----TTAT----TTTAAGTCACTGTCAATTTAAAAATAAGATCATAGTGAAGTATTTGGCACAAC
>Dog
AATTCT-GCAGTGAGTAATA---ACATTGATGCCAGGAGAAAAAACAATAGACAAGAGTAAGCTAAGCTATA-GAA
CAAAGCTACTTGAAGGATGCAGTTCAGATGAAAATACAATGTAAAGGATT-----

```
-----  
-----  
-----  
-----  
-----GATGG---AATTTCTAATTCAGAGGAGAAGAAAGTTATCCAA  
AGATAGCAGGT---TTACTTTGAATAAGCCATAGTAAAATTAATAAATAAGACCACAGTAAAATATTTTACATGAC  
>Horse  
AATTCT-GTAGTGAATAATAACAAACACTAATGCCAAAAGAGAAGAAAGACCTGGAAGACAAAGCTAAGATATTTAAA  
GACAGACAT---AGGGATACAGTTCAGATCAATGTGCAATTTAAAGGATT-----  
-----  
-----  
-----  
-----  
-----GATGG---AATTTCTAAGTGTGAGGAGAATAAAGTTATCTAA  
AGATAGAAGGT---TTACTTTAATAAGCCACCAAAGATTTAATAAATAAGACTATAGTAAAATATTTTGCATGAC
```

Marker M131

>MSTB1

```
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t--gag-tgagttctcactctattagttcccgcgagagctgggtgttaaaaagagcctggcactccctcctc  
cttgcttctcctcgccatgtgatctctgcacacgcggctccccttcaccttccgcca-tgagtggaagcagc  
aggccctcaccagaagcagatgctggcgccatgcttctgtacagcctgcagaaccgtgagccaaataaacct  
ctttataaattaccagcctcaggtattcctttatagcaacacaaaatg-----gactaagaca-----  
-----
```

>Human

```
AAG----AGG-TTTCCTTGAGGAAGAGGCACAGGAAAGATGA-AAATTTACATTCTGCTGCTCTGATA---CTCAC-  
--tgctctgggttggatgcttttccccaaa-acctcatggtgaaatttgatcacaatggtggaggtgaggccta  
ggaaatgttttaggtcac-agggtgcagatccatcatgaatacactaatgcagggagaagggctgact-ggggcg  
tgtgag-tgagctctcactctattagttcctgtgagatctgggtgttaaaaagagcctggcatctc----cct  
t-----gttgccatttgatctctacacactca-gtcccccttgccttccacca-tgagtggaagcatcctg  
aggccctcaccagatgc-----ccaatggtgaacctccagcaagctgaatcatgagctaaataaacctcttt  
ctttataaattatccagcatcagatattcctttatagcaatagtaaag-----gactaagaca---CTGAA-  
-----ACAATAGCAAAACACATACTTTTAGCCCCACAGTGCCTCT-AAAAAGGTCTTCCCATATGTTACT
```

>Chimp

```
AAG----AGGCTTTCCTTGAAGAAGAGGCACAGGAAAGATGA-AAATTTACATTCTGCTGCTCTGATA---CTCAC-  
--tgatctgggttggatgcttttccccaaa-acctcatggtgaaatttgatcataatggtggaggtgaggccta  
ggaaatgttttaggtcac-agggtgcagatccatcatgaatacactaatgcagggagaagggctgact-ggggcg  
tgtgag-tgagctctcactctattagttcctgtgagatctcggtgttaaaaagagcctggcatctc----cct  
t-----gttgccatttgatctctacacactca-gcaccctatgccttccacca-tgagtggaagcatcctg  
aggccctcaccagatgc-----ccaatggtgaacctccagcaagctgaatcatgagctaaataaacctcttt  
ctttataaattatccagcatcagatattcctttatagcaatagtaaag-----gactaagaca---CTGAA-  
-----ACAATAGCAAAACACATACTTTTAGCCCCACAGTGCCTCT-AAAAAGGTCTTCCCATATGTTACT
```

>Orangutan

```
AAG----AGGCTTTCCTTGAAGAAAAGGCACAGGGAAGATGA-AAATTTATATTCTGCTGCTCTGATA---CTCAC-  
--tgctctgggttggatggttttccccaaa-acctcatggtgaaatttgatcacaatggtggaggtgaggccta  
ggaaatgttttaggtcac-agggtgcagatccatcatgaatacactaatgcagggagaagggctgactaggggcg  
tgtgag-tgagttctcactctattagttcctgtgagatctgggtgttaaaaagggcctggcatctc----cct  
t-----gttgccatttggtctctacacactca-gtcccccttgccttccacca-tgagtggaagcatcctg  
aggccctcaccagatgc-----ccaatggtgaacctccagcaagctgaatcatgagctaaataaacctcttt  
ctttataaattatccagcatcagatattcctttatagcaatagtaaag-----gactaagaca---CTGAA-  
-----ACAATAGCAAAACACACATTTTTAGCCCCACAGTGCCTCT-AAAAAGGTCTTCCCATATGTTACT
```

>Baboon

```
AAG----ACACTTTCCTTGAAG---AGGCATGGGGAAGATGA-AAATTTACATTCTGATGCTCTGATA---CTCAC-  
--tgctctgggttggatggttttccccaaa-acctcatggtgaaatttgatcacaatggtggaggtgaggccta  
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tgtgag-tgagttctcactctattagttcccgtagaggtgggtgttaaaaagaacctgatatctc----cct  
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aggccctcaccagatgc-----ccagtgctgaaccttccagcgagctcaatcatgagctaaataaacctctt  
ctttataaattatccagcatcagatattcctttatagcaatagtaaag-----aactaagaca---CTGAA-  
-----ACAATAGCAAAACACGTACTTTTAGCCTCACAGTGCCTCTAAAAAAGGTCTTCCCATATGTTACT
```

>Rhesus

```
AAG----ACACTTTCCTTGAAGAAGAGGCATGGGGAAGATGA-AAATTTACATTCTGATGCTCTGATA---CTCAC-  
--tgctctgggttggatggttttccccaaa-cactcatggtgaaatttgatcacaatggtggaggtgaggccta  
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aggccctcaccagatgc-----ccagtgctgaaccttccagcgagctgaatcataagctaaataaacctc--ct  
ctttataaattatccagcatcagatattcctttatagcaatagtaaag-----aactaagaca---CTGAA-  
-----ACAATAGCAAAACACGTACTTTTAGCCTCACAGTGCCTCTAAAAAAGGTCTTCCCATATGTTACT
```


>Horse

AGTCAGAAGGCTTTTCAGCAAAGAAGAGGTGTAGGGAGGCTGAAAATGTTCCACCCCTGCTGTTCCGGTG-----

-----CAGCA---AA
CACACACGACAGCAAACCTGGTATTTTTATCCCCACAATGTCTCTAAAAAGATCTGG-CTT-ATGTTCTC

Marker M132

>MSTB1

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atgaatagattaa---tgccctccctcgggggtggggatgagtgagttctcactctattagttcccgcgagagctgggt
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ctccccttcaccttccgccatgagtggaagcagcctgagggcctcaccagaagcagatgctggcgccatgcttcttgt
acagcctgcagaaccgtgagccaaataaacctcttttctttataaattaccagcctcaggtattcctttatagcaac
acaaaatggactaagaca-----
```

>Human

```
CTTACATCCTTTTGTGACGGGTGCTGATAGAATTGGTTTAGCTCTTTTCATCACCG-TTTAAAGAATATCAAG
GAAAGAATCTACATAACCCAGCTTG---GGTCT---tgctatgggttcagacatagtttgggttggcccaacaagtctt
atggttgaatctgatccccagtggttggga-g-g-gggacctgggtgggaggtggttgggttatgagaagggatctttc
atgaatgggttgggtggttgcctcc-----taggagtgagtgagttctcactc----aattcccacaggaactgggtt
attggaagagcctg--acctcctcctgtctc---ctccttccctctctcatcgctctgacat-----ca
cttcccttccctttctgccataagtgggaagcagtccttaggccttcatcagaaacagatgctgggtgccatgcttcttgt
atagctctgcagaactgtgagccaagtaaatctcttttctttattaactcaacattaggcattcctttatggcaac
acaa-atggactaaaaca-----GGTTC---TGTGTCCATTC-----TTTAGGTCAAACACAC
TGGGGAGGGGGT-GGTATGAGGTTCTGAGATTACCCAATGTGGGTTATGT--TTT
```

>Chimp

```
CTTACATCCTTTTGTGACGGGTGCTGATAGAATTGGTTTAGCTCTTTTCATCACCG-TTTAAAGAATATCAAG
GAAAGAATCTACATAACCCAGCTTG---GGTCT---tgatatgggttcagacatagtttgggttggcccaacaagtctt
atggttgaatctgatccccagtggttggga-g-g-gggacctgggtgggaggtggttgggttatgagaagggatctttc
atgaatgggttgggtggttgcctcc-----taggagtgagtgagttctcactc----aattcccacaagaactgggtt
attggaagagcctg--acctcctcctgtctc---ctccttccctctctcatcgctctgacat-----ca
cttcccttccctttctgccataagtgggaagcagtccttaggccttcatcagaaacagatgctgggtgccatgcttcttgt
atagctctgcagaactgtgagccaagtaaatctcttttctttattaactcaacattaggcattcctttatggcaac
acaa-atggactaaaaca-----GGTTC---TGTGTCCATTC-----TTTAGGTCAAACACAC
TGGGGAGGGGGT-GGTATGAGGTTCTGAGATTACCCGATGTGGGTTATGT--TTT
```

>Orangutan

```
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TGGGGAGGGGGT-GGTATGAGGTTCTGAGATTACCCAATGTGGGTTATGT--TTT
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>Baboon

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>Rhesus

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>Tarsier

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>Bushbaby

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-----GGTCC---TCTGCCATCCTTTCTTTTAGATCAAACACAC
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>Mouse_lemur

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-----GGTCC---TCTGTCCATCC-----TTTAGATCAAACACAC
TGGGCAGGGGGT-GGTATGAGGTTCTGAGATTGCCAAATGTGGATCATATTCTTA

>Tree_shrew

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>Dog

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>Dog

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ACTT

>Horse

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Marker M137

>MSTB1

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>Chimp

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>Orangutan

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>Baboon

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>Tree_shrew

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>Dog

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-----CCT-----AAATGGTATTTGCACA
TGAGAACAA-TTAAAAGCCATCTGGGCAGAAAAAAAAAGGATGGAAGGAAGAGAAACACA---AAATATCCTTTATGC
AG-----CTATGACAAATACACTTGAGGCCTCCTAGCCCAGTGCTCTGCCTCC

>Horse

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Marker M138

>MSTB2

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>Human

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>Chimp

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>Orangutan

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>Baboon

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>Rhesus

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