

**Appendix S7.** Results of ANCOVA's across species, testing the effect centromeric vs. telomeric location (location), the total number of coding base-pairs (Exon), the total number of base pairs in introns between coding exons (Intron), and their interactions. One transcript per gene was chosen randomly. In all species except opossum, X-linked genes had significantly lower codon usage bias compared to autosomal genes.

Organism	DF	Sum Square	Mean Squares	F	Pr(>F)	Significance
<b>Chimp:</b>						
Location (Centro vs. Telo)	1	694	693.8	21.255	4.28E-06	***
Exon (total coding bp)	1	152	152.1	4.66	0.031	*
Intron (total bp)	1	1118	1117.7	34.239	5.70E-09	***
Interaction(Location*Exon)	1	48	47.6	1.457	0.228	
Interaction(Location*Intron)	1	15	14.7	0.451	0.502	
Interaction(Exon*Intron)	1	24	24.2	0.74	0.39	
interaction(Location*Exon*Intron)	1	13	12.6	0.385	0.535	
Residuals	1970	64309	32.6			
<b>Human:</b>						
Location (Centro vs. Telo)	1	1101	1100.9	32.261	1.55E-08	***
Exon (total coding bp)	1	386	386.1	11.313	0.000785	***
Intron (total bp)	1	1656	1656.2	48.532	4.42E-12	***
Interaction(Location*Exon)	1	2	2.1	0.063	0.802459	
Interaction(Location*Intron)	1	66	65.5	1.92	0.165991	
Interaction(Exon*Intron)	1	99	99.2	2.907	0.088375	
interaction(Location*Exon*Intron)	1	4	4.3	0.126	0.722877	
Residuals	1957	66784	34.1			
<b>Marmoset:</b>						
Location (Centro vs. Telo)	1	49	49.3	1.287	0.256797	
Exon (total coding bp)	1	527	526.6	13.743	0.000215	***
Intron (total bp)	1	1478	1478.5	38.581	6.21E-10	***
Interaction(Location*Exon)	1	41	41.2	1.074	0.300065	
Interaction(Location*Intron)	1	6	5.9	0.155	0.694206	
Interaction(Exon*Intron)	1	34	34	0.888	0.346175	
interaction(Location*Exon*Intron)	1	8	8.2	0.214	0.643803	
Residuals	2320	88905	38.3			
<b>Mouse:</b>						
Location (Centro vs. Telo)	1	550	550.3	22.142	2.73E-06	***
Exon (total coding bp)	1	419	418.8	16.851	4.23E-05	***
Intron (total bp)	1	387	387.1	15.573	8.24E-05	***
Interaction(Location*Exon)	1	4	3.5	0.143	0.70578	
Interaction(Location*Intron)	1	35	35.4	1.424	0.23287	
Interaction(Exon*Intron)	1	169	168.7	6.789	0.00925	**
interaction(Location*Exon*Intron)	1	7	6.6	0.264	0.60713	
Residuals	1788	44439	24.9			
<b>Orangutan:</b>						
Location (Centro vs. Telo)	1	785	785.3	22.431	2.31E-06	***
Exon (total coding bp)	1	218	217.8	6.222	0.0127	*
Intron (total bp)	1	1025	1024.8	29.271	6.93E-08	***
Interaction(Location*Exon)	1	65	64.5	1.843	0.1747	
Interaction(Location*Intron)	1	144	143.8	4.108	0.0428	*
Interaction(Exon*Intron)	1	66	65.7	1.875	0.171	
interaction(Location*Exon*Intron)	1	0	0	0	0.9864	
Residuals	2341	81956	35			