



SUPPLEMENTARY DATA

Characterization of the bipartite degron that regulates ubiquitin-independent degradation of thymidylate synthase

Karen W. BARBOUR*†, Yang-Yang XING*†, Edsel A. PEÑA*‡ and Franklin G. BERGER*†¹

*Center for Colon Cancer Research, University of South Carolina, Columbia, SC 29208, U.S.A., †Department of Biological Sciences, University of South Carolina, Columbia, SC 29208, U.S.A., and ‡Department of Statistics, University of South Carolina, Columbia, SC 29208, U.S.A.

See the following pages for Supplementary Figure S1 and Supplementary Table S1.

¹ To whom correspondence should be addressed (e-mail fgberger@mailbox.sc.edu).



~~~~~

|            |                           |                                                                 |              |
|------------|---------------------------|-----------------------------------------------------------------|--------------|
| HUMAN      | 1                         | ATGCCCTGTGGCCGGCTCGGA-GCTG---CCGC GCCGG CCCC TTGCCCC CGC ACAGGA | 56           |
| CHIMPANZEE |                           | ATGCCCTGTGGCCGGCTCGGA-GCTG---CCGC GCCGG CCCC TTGCCCC CGC ACAGGA |              |
| ORANGUTAN  |                           | ATGCCCTGTGGCCGGCTCGGA-GCTG---CCGC GCCGG CCCC TTGCCCC CGC ACAGGA |              |
| MACAQUE    |                           | ATGCCCTGTGGCCGGCTCGGA-GCTG---CCGC GCCGG CCCC TTGCCCC CGC ACAGGA |              |
| MARMOSET   |                           | ATGCCCTGTGGCCGGCTCGGA-GCTG---CCACGCCAGCCCTCGCAGCCC GCG CAGGA    |              |
| TARSIER    |                           | ATGCCCTGTGGCCGGCTCGGA-GCTG---CAGCGCCCACCC CGC GCG CAGGA         |              |
| MOUSE      |                           | ATGCTGGTTGGTGGCTCGGA-GCTG---CAGT-----CCGATGCTCAGCA              |              |
| RAT        |                           | ATGCTGGTTGAAGGCTCTGA-GCTG---CAGT-----CCGGTGCTCAACA              |              |
| RABBIT     |                           | ATGCCCGCCGCCGGCTCTGA-GCTG---CCG-----TCGCCGCCACGGCGCAGGA         |              |
| PIKA       |                           | ATGCCGGCTGCCGGCTCGGA-GCTG---CCGCTCCCGCCTTCGCCGCCACAGCACAGCA     |              |
| COW        |                           | ATGCCAGCGGCCGGCTCGGA-GCCG---TCGCGCCCGCGTCGCCGCCGGCGTGCAGGA      |              |
| DOLPHIN    |                           | ATGCCCGCCGCCGGCTCGGA-GCTG---CCGC CGCCGATGTCGCCGCCGCGCAGGA       |              |
| HORSE      |                           | ATGCCAGCCTCGGCTCGGA-GCTG---CAGCGCCCGCGTCGCCGCCGCCGCGGGGA        |              |
| DOG        |                           | ATGCCCGCCCCCGGCTCGGA-GCTG---CAGCGCCCGCGTCGCCGCCGCCGCGCAGAA      |              |
| CAT        |                           | ATGCCCGCTCCCGGCTCGGA-GCTG---CAGCGCCCGCCGCGCAGCTGCCGAGCAGAA      |              |
| GUINEA_PIG |                           | ATGCCAGTTGCCGGCTCGATGCCGCCGACTGCCGACTGCCGACAGCACAGGA            |              |
|            | **** *      ***** * * * * |                                                                 | *      * * * |

~~~~~

HUMAN	57	GCGGGGACGCCGAGCCCGTCCGCCG-----CACGGGGAGCTGCAGTACCTGGGGCA	107
CHIMPANZEE		GCGGGGACGCCGAGCCCGTCCGCCG-----CACGGGGAGCTGCAGTACCTGGGGCA	
ORANGUTAN		GCGGGGACGTCGAGCCCGTCCGCCG-----CACGGGGAGCTGCAGTACCTGGGGCA	
MACAQUE		GCGGGGACGCCGAGCCACGCCGCCG-----CACGGGAGACTGCAGTACCTGGGGCA	
MARMOSET		GCTGGACGCCAGCCCGGCCCT-----CACGGGGAGCTGCAGTACCTGGGGCA	
TARSIER		GCAGGGCGCCGAGCCGCCGCC-----CACGGGGAGCTGCAGTACCTGGGAGCA	
MOUSE		GCTGAGCGCGGAAGCCCCACGG-----CATGGAGAACCTCAGTACCTGAGGCA	
RAT		GCCACGCAAGGAAGCCCCCAG-----CATGGAGAACCTCAGTACCTGAGGCA	
RABBIT		GCAGGGCGCCGAGGCCGCCGCC-----CACGGGGAGCTGCAGTACCTGGGGCA	
PIKA		GCAGGGTACCGAGGCACGCCGCC-----CACGGGGAGCTGCAGTACCTGGGGCA	
COW		GCAGAGCGCCGAGCCGCCGCCGCCGCC-----CACGGGGAGCTGCAGTACCTGGGGCA	
DOLPHIN		GCAGGGCGCCGAGTCGCCGCCGCCGCC-----CACGGGGAGCTGCAGTACCTGGGGCA	
HORSE		GCAGGGGCTCGGAACCGCGGCCCT-----CACGGGGAGCTGCAGTACCTGGGGCA	
DOG		GCCGC CGC GCG -----CGTCCGCAGCCGCCCTCCACGGGGAGCTGCAGTACCTGAGGCA	
CAT		GCAGGGGCGCCGAACCGCAGCCGAGCCGCCACCCACGGGGAGCTGCAGTACCTGGGGCA	
GUINEA_PIG		CCCAGGGCCCGAGCCCTTGGCGCCG-----CATGGGGAGCTGCAGTACCTGCCGCA	
	*	*** *** *** *** **** *** ***	

Figure S1 Alignment of coding regions of mammalian TS mRNAs

The amino acid coding region of the TS mRNA from each of 16 species was downloaded and aligned (see the Experimental section for details). Numbers refer to the human transcript, with the initiation codon set as 1. Completely conserved nucleotides are marked by stars (*). The region encoding the IDR, corresponding to nucleotides 1–81 of the hTS transcript, is indicated by a tilde (~).

Figure S1 **Continued**

HUMAN	288	AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	347
CHIMPANZEE		AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	
ORANGUTAN		AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	
MACAQUE		AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	
MARMOSET		AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	
TARSIER		AAATGCTAAAGAGCTGTCTCCAAGGGAGTC	AAATCTGGATGCCAATGGATCCCGAGA	
MOUSE		AAATGCTAAAGAATTGTCTCAAAGGGAGT	AAATCTGGATGCCAATGGATCCCGAGA	
RAT		AAATGCTAAAGAACTGTCTCCAAGGGAGT	AAATCTGGATGCCAATGGATCCCGAGA	
RABBIT		AAATGCTAAAGAACTGTCTCCAAGGGAGT	AAATCTGGATGCCAATGGATCCCGAGA	
PIKA		AAATGCTAAAGAACTGTCTCCAAGGGAGT	AAATCTGGATGCCAATGGATCCCGAGA	
COW		CAACGCTAAAGGAACTCTCTCCAAGGGAGT	CAACGCTAAAGGAACTCTCTCCAAGGGAGT	
DOLPHIN		AAACGCTAAAGGAGCTGTCTCCAAGGGAGT	AAACGCTAAAGGAGCTGTCTCCAAGGGAGT	
HORSE		AAATGCTAATGAACGTCTGCAAGGGAGT	AAACGCTAAAGGAGCTGTCTCCAAGGGAGT	
DOG		AAACGCTAAAGGAACTGTCTCCAGGGAGT	AAACGCTAAAGGAACTGTCTCCAAGGGAGT	
CAT		AAACGCTAAAGGAACTGTCTCCAAGGGAGT	AAACGCTAAAGGAACTGTCTCCAAGGGAGT	
GUINEA_PIG		AAATGCCAAAAGAACGTCTCAAGGGCTG	AAATGCCAAAAGAACGTCTCAAGGGCTG	
		*** * *** * * * * * * * * * * * *	*** * *** * * * * * * * * * * * * *	
HUMAN	348	CTTTTGGAACAGCCTGGGATTCTCCACCAGAGAAGAAGAAGGGACTTGGGCCAGTTTATGG	407	
CHIMPANZEE		CTTTTGGAACAGCCTGGGATTCTCCACCAGAGAAGAAGAAGGGACTTGGGCCAGTTTATGG		
ORANGUTAN		CTTTTGGAACAGCCTGGGATTCTCCACCAGAGAAGAAGAAGGGACTTGGGCCAGTTTATGG		
MACAQUE		CTTTTGGAACAGCCTGGGATTCTCCACCAGAGAAGAAGAAGGGACTTGGGCCAGTTTATGG		
MARMOSET		CTTTCTGGATAGCTGGGATTCTCCACCAGAGAAGAAGGAGATTGGGCCCTGTCTATGG		
TARSIER		CTTTTGGAACAGCCTGGGATTCTCCACCAGAGAAGAAGGGAGATTGGGCCCTGTCTATGG		
MOUSE		TTTTCTGGACAGCTGGGATTCTGCCAGAGAAGGAGACTGGGCCAGTTTATGG		
RAT		CTTTTGGAACAGCTGGGATTCTGCCAGAGAAGGAGACCTGGGCCAGTTTATGG		
RABBIT		CTTTTGGAACAGCTGGGATTCTGCCAGAGAAGGAGACCTGGGCCAGTTTATGG		
PIKA		ATTTCTGGACAGCCTGGGATTCTCACCCAGAGGAGGGGACCTGGGCCAGTTTATGG		
COW		CTTCTTGGAACAGCTGGGCTTCTGCACAGAGCTGAAGGGGATTAGGCCAGTTTATGG		
DOLPHIN		CTTCTTGGAACAGCTGGGATTCTCCACCAGAGCAGAAGGGGATTAGGCCAGTTTACGG		
HORSE		CTTTTGGAACAGCTGGGATTCCACCGAGAAGAAGGGGATTAGGCCCAATTATGG		
DOG		CTTCTTGGAACAGCTAGGATTCTCACACAGAGAAGAAGGGGATTAGGCCAGTTTATGG		
CAT		CTTCTTGGAACAGCTGGGTTCTAGCCGCCAGGAAGGGGACCTGGCCCCATTATGG		
GUINEA_PIG		*** * *** * * * * * * * * * * * * *		
HUMAN	408	CTTCCAGTGGAGGCATTTGGGGCAGAATACAGAGATATGGAATCAGATTATTCAAGGACA	467	
CHIMPANZEE		CTTCCAGTGGAGGCATTTGGGGCAGAATACAGAGATATGGAATCAGATTATTCAAGGACA		
ORANGUTAN		CTTCCAGTGGAGGCATTTGGGGCAGAATACAGAGATATGGAATCAGATTATTCAAGGACA		
MACAQUE		CTTCCAGTGGAGGCATTTGGGGCAGAATACAGAGATATGGAATCAGATTATTCAAGGACA		
MARMOSET		CTTCCAGTGGAGGCATTTGGGGCAGAATACAGAGATATGGAATCAGATTATTCAAGGACA		
TARSIER		CTTCCAGTGGAGGCATTTGGGGCAGAATACAAAGATATGGAATCAGATTATTCAAGGACA		
MOUSE		TTTCAATGGAGGCATTTGGAGCAGAGTACAAAGATATGGAATCAGATTACTGGGACA		
RAT		ATTCCAGTGGAGACATTTGGAGCAGACTACAAAGATATGGAATCAGATTACTGGGTC		
RABBIT		CTTCCAGTGGAGGCATTTGGTCAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
PIKA		CTTCCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
COW		CTTCCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
DOLPHIN		CTTCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
HORSE		CTTCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
DOG		CTTCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
CAT		CTTCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
GUINEA_PIG		CTTCAGTGGAGGCATTTGGGAGAATACAAAGATAAGGACTCAGATTATTCAAGGTC		
		*** * *** * * * * * * * * * * * * *		

Figure S1 **Continued**

HUMAN	468	GGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGACGACAGAAG	527
CHIMPANZEE		GGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGACGACAGAAG	
ORANGUTAN		GGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGACGACAGAAG	
MACAQUE		GGGAGTTGACCAACTACAAAGAGT GATTGACACC ATCAAACCAAC CCTGACGACAGAAG	
MARMOSET		AGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGATGACAGAAG	
TARSIER		AGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGATGACAGAAG	
MOUSE		AGGAGTAGACCAGCTGCAAAAAGT GATTGACACC ATCAAACCAAC CCTGATGACAGAAG	
RAT		AGGAGTAGACCAGCTGCAAAAAGT GATTGACACC ATCAAACCAAC CCTGATGACAGAAG	
RABBIT		AGGAGTAGACCAC TGCAGAAGGT GATC GAT ACC ATCAAACCAAC CCTGATGACAGAAG	
PIKA		AGGAGTAGACCAGCTGCAAAGAGT GATC GAT ACC ATCAAACCAAC CCTGATGACCCGAG	
COW		AGGAGTAGATCAACTGCAAAGAGT GATC GACACA ATCAAACCAAC CCTAACGACAGAAG	
DOLPHIN		AGGAGTAGATCAACTGCAAAGAGT GATTGACACA ATCAAACCAAC CCTGACGACAGAAG	
HORSE		AGGAGTAGACCAACTGCAAAGAGT GATTAACACA ATCAAACCAAC CCTGACGACAGAAG	
DOG		AGGAGTCGACCAGCTGCAAAGAGT GATTGACACA ATCAAACCAAC CCTGACGACAGAAG	
CAT		AGGAGTAGATCAACTGCAAAGAGT GATTGACACA ATCAAACCAAC CCTGATGACAGAAG	
GUINEA_PIG		AGGAGTTGACCAACTGCAAAGAGT GATTGACACC ATCAAACCAAC CCTGATGACAGAAG	
		***** *	
HUMAN	528	AATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	587
CHIMPANZEE		AATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	
ORANGUTAN		AATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	
MACAQUE		AATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	
MARMOSET		AATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	
TARSIER		GATCATCATGTGCGCTTGGAAATCCAAGAGATCTTCTCTGATGGCGCTGCCTCCATGCCA	
MOUSE		AATCATCATGTGCGCTTGGAAACCCAAAAGATCTTCCCCTGATGGCAGTGCCTCCATGCCA	
RAT		AATCATCATGTGCGCTTGGAAACCCAAAAGATCTTCCCCTGATGGCAGTGCCTCCATGCCA	
RABBIT		AATCATCATGTGCGCTTGGAAATCCAAAAGACCTTCTGATGGCGCTGCCCTCGTGCCA	
PIKA		AATCATCATGTGCGCTTGGAAATCCAAAAGACCTTCTCAGATGGCCCTGCCCTCGTGCCA	
COW		AATCATCCTGTGTGCTTGGAAATCCAAGAGATCTGCTCTCATGGCCCTCCCCCATGCCA	
DOLPHIN		AATCATCCTGTGTGCTTGGAAATCCAAGAGATCTGCTCTCATGGCCCTACCCCGTGCCA	
HORSE		AATCATCCTGTGTGCTTGGAAATCCAAGAGATCTGCTCTCATGGCTCTGCCCTCGTGCCA	
DOG		AATTATTCTGTGTGCTTGGAAATCCAAGAGATCTGCTCTCATGGCCCTACCTCCGTGCCA	
CAT		AATCATCCTGTGTGCTTGGAAATCCAAGAGATCTGCTCTCATGGCCCTGCCCTCGTGCCA	
GUINEA_PIG		AATTATCATGTGCGCTTGGAAACCCGAAAGATCTTCTCTGATGGCGCTGCCTCCCTGTCA	
		*** *	
HUMAN	588	TGCCCTCTGCCAGTTCTATGTGGTGAACAGTGAGCTGCCAGCTGTACCAAGAGATC	647
CHIMPANZEE		TGCCCTCTGCCAGTTCTATGTGGTGAACAGTGAGCTGCCAGCTGTACCAAGAGATC	
ORANGUTAN		TGCCCTCTGCCAGTTCTATGTGGTGAACAGTGAGCTGCCAGCTGTACCAAGAGATC	
MACAQUE		TGCCCTCTGCCAGTTCTATGTGGTGAACAGTGAGCTGCCAGCTGTACCAAGAGATC	
MARMOSET		TGCCCTCTGCCAGTTCTACGTGGTGAACGGTGAGCTGCCAGCTGTACCAAGAGATC	
TARSIER		TGCCCTCTGCCAGTTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTTACCAAGGGTC	
MOUSE		TGCCCTCTGTCAATTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
RAT		TGCCCTCTGTCAATTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
RABBIT		TGCCCTCTGCCAGTTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
PIKA		TGCTCTCTGCCAGTTCTACGTGGTGAACGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
COW		CGCCCTCTGCCAGTTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
DOLPHIN		TGCCCTCTGCCAGTTCTACGTGGTGAACGGTGAGCTGCCAGCTGTACCAAGGGTC	
HORSE		TGCCCTCTGCCAGTTCTACGTGGTGAACGGTGAGCTGCCAGCTGTACCAAGGGTC	
DOG		TGCCCTCTGCCAGTTCTACGTGGTGAACGGTGAGCTGCCAGCTGTACCAAGGGTC	
CAT		TGCTCTCTGCCAGTTCTACGTGGTGAATGGGAGCTGTCTGCCAGCTGTACCAAGGGTC	
GUINEA_PIG		CACCCCTCTGCCAGTTCTACGTGGTGAACGGGAAATTGCTCTGTCACTGTACCAAGGGTC	
		* *	

Figure S1 Continued

Figure S1 **Continued**

Figure S1 **Continued**

Table S1. Synonymous (d_s) and nonsynonymous (d_N) nucleotide substitutions for the IDR and the body of the TS polypeptide
 Values for each of the 120 pairwise comparisons among 16 mammalian species were determined, and d_N/d_s ratios were calculated.

Species 1	Species 2	IDR			Body		
		d_N	d_s	d_N/d_s	d_N	d_s	d_N/d_s
Human	Chimpanzee	0.0000	0.0441	0.0000	0.0045	0.0159	0.2830
	Orang-utan	0.0355	0.1946	0.1824	0.0030	0.0321	0.0935
	Macaque	0.0629	0.2880	0.2184	0.0060	0.0948	0.0633
	Marmoset	0.1011	0.4321	0.2340	0.0205	0.1341	0.1529
	Tarsier	0.1113	0.4674	0.2381	0.0290	0.2979	0.0973
	Rabbit	0.1257	0.5646	0.2226	0.0267	0.3083	0.0866
	Pika	0.2201	0.6355	0.3463	0.0354	0.4987	0.0710
	Cow	0.1953	0.3235	0.6037	0.0361	0.4854	0.0744
	Dolphin	0.1590	0.3699	0.4298	0.0236	0.3595	0.0656
	Horse	0.1833	0.6655	0.2754	0.0386	0.2948	0.1309
	Dog	0.2150	0.3490	0.6160	0.0299	0.3998	0.0748
	Cat	0.2609	0.4975	0.5244	0.0306	0.4741	0.0645
	Mouse	0.3041	1.0397	0.2925	0.0321	0.5807	0.0553
	Rat	0.3536	2.8876	0.1225	0.0329	0.6567	0.0501
	Guinea pig	0.3908	1.1119	0.3515	0.0571	0.6529	0.0875
Chimpanzee	Orang-utan	0.0355	0.1410	0.2518	0.0015	0.0267	0.0562
	Macaque	0.0536	0.2567	0.2088	0.0045	0.1009	0.0446
	Marmoset	0.0913	0.3941	0.2317	0.0190	0.1405	0.1352
	Tarsier	0.1113	0.3904	0.2851	0.0275	0.2905	0.0947
	Rabbit	0.1257	0.4661	0.2697	0.0252	0.3008	0.0838
	Pika	0.2201	0.5416	0.4064	0.0338	0.4695	0.0720
	Cow	0.1953	0.2590	0.7541	0.0345	0.4860	0.0710
	Dolphin	0.1590	0.3014	0.5275	0.0220	0.3599	0.0611
	Horse	0.1833	0.5653	0.3243	0.0370	0.2874	0.1287
	Dog	0.2150	0.2784	0.7723	0.0314	0.3827	0.0820
	Cat	0.2490	0.4546	0.5477	0.0321	0.4747	0.0676
	Mouse	0.3041	1.0397	0.2925	0.0306	0.5480	0.0558
	Rat	0.3536	2.8876	0.1225	0.0345	0.6208	0.0556
	Guinea pig	0.3908	0.9414	0.4151	0.0554	0.6176	0.0897
Orang-utan	Macaque	0.0916	0.1433	0.6392	0.0030	0.0948	0.0316
	Marmoset	0.1312	0.1995	0.6576	0.0175	0.1341	0.1305
	Tarsier	0.1524	0.1979	0.7701	0.0259	0.2902	0.0892
	Rabbit	0.1489	0.3010	0.4947	0.0236	0.2851	0.0828
	Pika	0.2437	0.4582	0.5319	0.0322	0.4886	0.0659
	Cow	0.2413	0.2590	0.9317	0.0330	0.5056	0.0653
	Dolphin	0.2027	0.1270	1.5961	0.0205	0.3427	0.0598
	Horse	0.2351	0.3856	0.6097	0.0354	0.2721	0.1301
	Dog	0.2665	0.0993	2.6838	0.0299	0.3823	0.0782
	Cat	0.2978	0.3041	0.9793	0.0306	0.4546	0.0673
	Mouse	0.3756	1.0397	0.3613	0.0290	0.5582	0.0520
	Rat	0.4363	2.5045	0.1742	0.0329	0.6199	0.0531
	Guinea pig	0.4513	0.8025	0.5624	0.0538	0.6168	0.0872
Macaque	Marmoset	0.0907	0.2635	0.3442	0.0144	0.1992	0.0723
	Tarsier	0.1308	0.2612	0.5008	0.0259	0.3457	0.0749
	Rabbit	0.1722	0.3041	0.5663	0.0236	0.3239	0.0729
	Pika	0.2421	0.3904	0.6201	0.0322	0.5083	0.0633
	Cow	0.2165	0.3295	0.6571	0.0291	0.5525	0.0527
	Dolphin	0.1794	0.1837	0.9766	0.0205	0.4026	0.0509

Table S1 Continued

Species 1	Species 2	IDR			Body		
		<i>d_N</i>	<i>d_S</i>	<i>d_N/d_S</i>	<i>d_N</i>	<i>d_S</i>	<i>d_N/d_S</i>
Marmoset	Horse	0.2054	0.4870	0.4218	0.0315	0.3379	0.0932
	Dog	0.2386	0.2177	1.0960	0.0330	0.4264	0.0774
	Cat	0.2130	0.4226	0.5040	0.0337	0.4637	0.0727
	Mouse	0.3406	1.3061	0.2608	0.0259	0.5575	0.0465
	Rat	0.3926	1.6170	0.2428	0.0298	0.6072	0.0491
	Guinea pig	0.4272	0.9178	0.4655	0.0530	0.6581	0.0805
	Tarsier	0.1304	0.2029	0.6427	0.0346	0.3005	0.1151
	Rabbit	0.1489	0.3010	0.4947	0.0299	0.3472	0.0861
	Pika	0.2413	0.5592	0.4315	0.0401	0.5483	0.0731
	Cow	0.2158	0.3326	0.6488	0.0369	0.5504	0.0670
	Dolphin	0.1788	0.1853	0.9649	0.0296	0.4027	0.0735
Tarsier	Horse	0.2286	0.4099	0.5577	0.0386	0.3490	0.1106
	Dog	0.2251	0.2524	0.8918	0.0423	0.4450	0.0951
	Cat	0.2583	0.3490	0.7401	0.0422	0.4492	0.0939
	Mouse	0.3055	1.3061	0.2339	0.0343	0.6084	0.0564
	Rat	0.3926	2.5914	0.1515	0.0377	0.7319	0.0515
	Guinea pig	0.4256	0.9313	0.4570	0.0585	0.6890	0.0849
	Rabbit	0.0600	0.1073	0.5592	0.0275	0.3435	0.0801
	Pika	0.1316	0.4674	0.2816	0.0364	0.5635	0.0646
	Cow	0.1103	0.2635	0.4186	0.0322	0.6074	0.0530
	Dolphin	0.0780	0.1290	0.6047	0.0275	0.4243	0.0648
Rabbit	Horse	0.0957	0.3326	0.2877	0.0354	0.3577	0.0990
	Dog	0.1098	0.1868	0.5878	0.0370	0.3853	0.0960
	Cat	0.1590	0.3099	0.5131	0.0361	0.3844	0.0939
	Mouse	0.2683	1.0892	0.2463	0.0314	0.6311	0.0498
	Rat	0.3154	1.8318	0.1722	0.0361	0.6540	0.0552
	Guinea pig	0.3975	0.9178	0.4331	0.0514	0.7208	0.0713
	Pika	0.0604	0.4608	0.1311	0.0170	0.3563	0.0477
	Cow	0.1517	0.2947	0.5148	0.0268	0.5869	0.0457
	Dolphin	0.0397	0.1643	0.2416	0.0213	0.4503	0.0473
Pika	Horse	0.1827	0.3916	0.4665	0.0229	0.3729	0.0614
	Dog	0.1773	0.2180	0.8133	0.0346	0.4419	0.0783
	Cat	0.2561	0.3658	0.7001	0.0283	0.4367	0.0648
	Mouse	0.3213	1.1765	0.2731	0.0190	0.5587	0.0340
	Rat	0.3597	1.1861	0.3033	0.0236	0.5908	0.0399
	Guinea pig	0.3501	1.0714	0.3268	0.0339	0.6528	0.0519
	Cow	0.2218	0.4586	0.4836	0.0373	0.7123	0.0524
	Dolphin	0.1590	0.4452	0.3571	0.0314	0.6124	0.0513
	Horse	0.2068	0.6655	0.3107	0.0355	0.5008	0.0709
Cow	Dog	0.2275	0.4693	0.4848	0.0434	0.6735	0.0644
	Cat	0.2978	0.5429	0.5485	0.0346	0.6620	0.0523
	Mouse	0.3213	0.9241	0.3477	0.0354	0.6200	0.0571
	Rat	0.2901	1.1861	0.2446	0.0401	0.7198	0.0557
	Guinea pig	0.4780	0.7037	0.6793	0.0518	0.7532	0.0688
	Dolphin	0.1505	0.0954	1.5776	0.0229	0.3044	0.0752
	Horse	0.2286	0.2064	1.1076	0.0284	0.3442	0.0825
	Dog	0.2127	0.1585	1.3420	0.0409	0.4518	0.0905
	Cat	0.2583	0.2138	1.2081	0.0306	0.4513	0.0678
	Mouse	0.3701	0.8740	0.4235	0.0361	0.8683	0.0416
	Rat	0.4232	1.9237	0.2200	0.0385	0.7946	0.0485

Table S1. Continued

Species 1	Species 2	IDR			Body		
		d_N	d_S	d_N/d_S	d_N	d_S	d_N/d_S
Dolphin	Guinea pig	0.3817	0.6208	0.6149	0.0515	0.7589	0.0679
	Horse	0.1815	0.2064	0.8794	0.0299	0.1974	0.1515
	Dog	0.1650	0.0492	3.3537	0.0314	0.2922	0.1075
	Cat	0.2349	0.1544	1.5214	0.0283	0.2793	0.1013
	Mouse	0.3041	1.0397	0.2925	0.0282	0.7807	0.0361
Horse	Rat	0.3536	1.6805	0.2104	0.0314	0.7932	0.0396
	Guinea pig	0.3817	0.7301	0.5228	0.0490	0.7717	0.0635
	Dog	0.1521	0.2177	0.6987	0.0474	0.2588	0.1832
	Cat	0.1797	0.2758	0.6516	0.0386	0.2795	0.1381
	Mouse	0.3423	0.7940	0.4311	0.0322	0.6407	0.0503
Dog	Rat	0.4273	0.9607	0.4448	0.0362	0.6450	0.0561
	Guinea pig	0.5244	0.6816	0.7694	0.0500	0.6355	0.0787
	Cat	0.1290	0.1355	0.9520	0.0244	0.2369	0.1030
	Mouse	0.3089	0.7739	0.3991	0.0346	0.6765	0.0511
	Rat	0.2870	1.6841	0.1704	0.0362	0.7140	0.0507
Cat	Guinea pig	0.5769	0.6649	0.8676	0.0523	0.6959	0.0752
	Mouse	0.3503	0.7920	0.4423	0.0290	0.7893	0.0367
	Rat	0.4019	0.9313	0.4315	0.0306	0.8020	0.0382
Mouse	Guinea pig	0.5456	0.6053	0.9014	0.0506	0.7445	0.0680
	Rat	0.1618	0.4879	0.3316	0.0045	0.1833	0.0245
	Guinea pig	0.6132	0.9435	0.6499	0.0331	0.7597	0.0436
Rat	Guinea pig	0.5573	1.2745	0.4373	0.0363	0.8011	0.0453

Received 30 October 2012/20 November 2012; accepted 22 November 2012

Published as Immediate Publication 26 November 2012, doi 10.1042/BSR20120112