Supplementary Table 6: Total number of transcripts and proteins and transcript and protein degradation rates used in Figure 4 in the main text. Results from several bacterial species imply average mRNA decay rates on the order of 10/hour (corresponding to 3×10^{-3}/sec). In *E. coli*, $\sim 80\%$ of mRNAs have decay rates (δ_r) in the range of 7.2 and 19.8/hour, with a median of 12.0/hour [204, 303]. The vast majority of mRNAs in *Bacillus subtilis* seem to have decay rates > 6.0/hour, with median ~ 8.3/hour [304]; and in *Lactococcus lactis*, mean and median mRNA decay rates are in the range of 2.6 to 6.9/hour, declining with decreasing cellular growth rates [305]. Estimates of median mRNA decay rates range from 3.0 to 6.0/hour in *S. cerevisiae* [306, 307], and average 0.12/hour in mouse fibroblast cells [213]. The majority of bacterial protein decay rates are generally in the range of 0.1 to 0.9/hr, while the range is between 0.02 and 1.4/hr for eukaryote cells. In the bacterium *Lactococcus lactis*, the vast majority of protein decay rates are in the range of 0.04 to 6.0/hour, with the median being 0.1 to 0.9/hour depending on the growth rate [308]; and those for other bacteria are commonly in the range of 0.05 to 0.20/hour [309]. In *S. cerevisiae*, the median and mean decay rate is between 0.1 and ~ 1.4/hour, depending on the growth conditions [310]. In mouse fibroblast cells, the median decay rate of a protein is ~ 0.02/hour (with a range of 0.002 to 0.3/hour) [213]. In a human cancer cell line, decay rates range from 0.04 to 1.3/hour, with a median of ~ 1.3/hour [311]. The lower values for decay rates (0.1/hour, corresponding to 2.8×10^{-5}/sec) were used for all species, due to the lack of direct measurements of these parameters for nearly all of the organisms included in this analysis. The values of $N_{tot,r}$ and $N_{tot,p}$ were derived from the power-law relationships described by equations 5 and 6.

Group	Species	$N_{tot,r}$ (10^3)	$N_{tot,p}$ (10^6)	δ_r (copies/sec)	δ_p (copies/sec)
Bacteria	*Acholeplasma laidlawii*	4.38	0.262	3×10^{-3}	2.8×10^{-5}
Bacteria	*Bacillus cereus*	14.3	5.59	3×10^{-3}	2.8×10^{-5}
Bacteria	*Bacillus megaterium*	11.3	2.99	3×10^{-3}	2.8×10^{-5}
Bacteria	*Bacillus subtilis*	10.3	2.39	3×10^{-3}	2.8×10^{-5}
Bacteria	*Bdellovibrio bacteriovorus*	3.7	0.169	3×10^{-3}	2.8×10^{-5}
Bacteria	*Clostridium cellulolyticum*	4.56	0.289	3×10^{-3}	2.8×10^{-5}
Bacteria	*Clostridium thermocellum*	6.73	0.793	3×10^{-3}	2.8×10^{-5}
Bacteria	*Delftia acidovorans*	8.62	1.50	3×10^{-3}	2.8×10^{-5}
Bacteria	*Enterobacter aerogenes*	9.44	1.90	3×10^{-3}	2.8×10^{-5}
Bacteria	*Enterobacter cloacae dissolvens*	5.21	0.408	3×10^{-3}	2.8×10^{-5}
Bacteria	*Esherichia coli*	10	2.32	3×10^{-3}	2.8×10^{-5}
Bacteria	*Haemophilus influenzae*	3.23	0.119	3×10^{-3}	2.8×10^{-5}
Bacteria	*Lactobacillus casei*	9.97	2.19	3×10^{-3}	2.8×10^{-5}
Bacteria	*Lactobacillus plantarum*	12.3	3.75	3×10^{-3}	2.8×10^{-5}
Bacteria	*Lactococcus lactis cremoris*	8.51	1.45	3×10^{-3}	2.8×10^{-5}
Bacteria	*Legionella pneumophila*	7.26	0.964	3×10^{-3}	2.8×10^{-5}
Bacteria	*Myxococcus xanthus*	9.09	1.72	3×10^{-3}	2.8×10^{-5}
Bacteria	*Paracoccus denitrificans*	6.37	0.687	3×10^{-3}	2.8×10^{-5}
Bacteria	*Pseudomonas aeruginosa*	7.30	0.978	3×10^{-3}	2.8×10^{-5}
Bacteria	*Pseudomonas fluorescens*	9.23	1.79	3×10^{-3}	2.8×10^{-5}
Bacteria	*Pseudomonas putida*	8.09	1.27	3×10^{-3}	2.8×10^{-5}
Bacteria	*Rhizobium leguminosarum*	6.84	0.826	3×10^{-3}	2.8×10^{-5}
Bacteria	*Salmonella typhimurium*	8.14	1.30	3×10^{-3}	2.8×10^{-5}
Bacteria	*Sphingopyxis alaskensis*	3.39	0.135	3×10^{-3}	2.8×10^{-5}
Bacteria	*Staphylococcus aureus*	5.67	0.509	3×10^{-3}	2.8×10^{-5}
Bacteria	*Staphylococcus epidermidis*	4.90	0.348	3×10^{-3}	2.8×10^{-5}
Bacteria	*Streptococcus pyogenes*	7.95	1.22	3×10^{-3}	2.8×10^{-5}
Bacteria	*Streptomyces coelicolor*	9.74	2.06	3×10^{-3}	2.8×10^{-5}
Bacteria	*Thermoanaerobacterium thermosaccharolyticum*	9.15	1.75	3×10^{-3}	2.8×10^{-5}
Bacteria	*Vibrio fischeri*	3.99	0.205	3×10^{-3}	2.8×10^{-5}
Bacteria	*Zymomonas mobilis*	15.7	7.01	3×10^{-3}	2.8×10^{-5}
Amoebozoa	*Acanthamoeba castellanii*	147	2280	1×10^{-3}	2.8×10^{-5}
Apusozoa	*Thecamonas trahens*	46.5	116	1×10^{-3}	2.8×10^{-5}
Chlorophyta	*Chlamydomonas reinhardtii*	53.8	170	1×10^{-3}	2.8×10^{-5}
Chlorophyta	*Micromonas pusilla*	16.3	7.75	1×10^{-3}	2.8×10^{-5}
Chlorophyta	*Ostreococcus sp.*	27.1	28.8	1×10^{-3}	2.8×10^{-5}
Ciliates	*Paramecium tetraurelia*	879	232,000	1×10^{-3}	2.8×10^{-5}
Ciliates	*Tetrahymena thermophila*	223	6710	1×10^{-3}	2.8×10^{-5}
Diatomes	*Phaeodactylum tricornutum*	45.1	108	1×10^{-3}	2.8×10^{-5}
Diatomes	*Thalassiosira pseudonana*	55.9	188	1×10^{-3}	2.8×10^{-5}
Eustygmatophyta	*Nannochloropsis gaditana*	19.4	12.2	1×10^{-3}	2.8×10^{-5}
Haptophyta	*Emiliania huxleyi*	31.6	43.0	1×10^{-3}	2.8×10^{-5}

Supplementary Table 6 – Continued from previous page

Group	Species	$N_{tot,r}$ (10^3)	$N_{tot,p}$ (10^6)	δ_r (copies/sec)	δ_p (copies/sec)
Fungi	*Saccharomyces cerevisiae*	60	82.2	1×10^{-3}	2.8×10^{-5}
Fungi	*Schizosaccharomyces pombe*	41	135	1×10^{-3}	2.8×10^{-5}

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