

Table 1 Estimates of per cell mRNA inventories for laboratory bacterial cultures (top) and natural marine bacteria (bottom)

Cells	Method	Total RNA content (fg cell ⁻¹)	mRNAs cell ⁻¹	Reference
<i>Laboratory studies</i>				
<i>Escherichia coli</i>	Biochemical analysis	NA	1380	Neidhardt and Umbarger, 1996
<i>Escherichia coli</i>	Single-cell microscopy	NA	1800 ^a	Taniguchi <i>et al.</i> , 2010
<i>Vibrio alginolyticus</i>	RNA recovery	28	2288 ^b	Kramer and Singleton, 1992
<i>Natural communities</i>				
Coastal bacterioplankton, GA	Internal standard	NA	142–238	Gifford <i>et al.</i> , 2011
Bacterioplankton, Amazon Plume	Internal standard	NA	85–255	Satinsky <i>et al.</i> , in preparation
Coastal bacterioplankton, GA	RNA recovery	0.6–1.3	96–190 ^b	Gifford <i>et al.</i> , 2011
Coastal bacterioplankton, NY	RNA recovery	1.6–5.4	135–458 ^b	Lee and Kemp, 1994
Coastal bacterioplankton, CA	RNA recovery	1.9–9.5	161–805 ^b	Simon and Azam, 1989

Abbreviation: NA, not available.

^aCalculated by extrapolation from 137 genes (see text).

^bCalculated by assuming total RNA contains 4% mRNA by mass (Neidhardt and Umbarger, 1996) and bacterial mRNAs have an average length of 924 nucleotides (Xu *et al.*, 2006) and therefore an average weight of 4.72×10^{-4} fg.

Gifford SM, Sharma S, Rinta-Kanto JM, Moran M. (2011). Quantitative analysis of a deeply-sequenced marine microbial metatranscriptome. *ISME J* 5: 461–472.

Kramer JG, Singleton FL. (1992). Variations in rRNA content of marine *Vibrio* spp. during starvation-survival and recovery. *Appl Environ Microbiol* 58: 201–207.

Lee S, Kemp PF. (1994). Single-cell RNA content of natural marine planktonic bacteria measured by hybridization with multiple 16S rRNA-targeted fluorescent probes. *Limnol Oceanogr* 39: 869–879.

Neidhardt FC, Umbarger HE. (1996). Chemical composition of *Escherichia coli*. In: Neidhardt FC, Curtiss R III, Ingraham JL, Lin ECC, Low KB, Magasanik B, Reznikoff WS, Riley M, Schaechter M, Umbarger HE (eds) *Escherichia Coli and Salmonella Typhimurium: Cellular and Molecular Biology*, 2nd edn. ASM Press: Washington, DC, pp 13–16.

Satinsky BM, Smith CB, Crump BC, Sharma S, Dougherty M, Fortunato C *et al.* Taking stock of the meta-ome: microbial gene transcription ratios in the Amazon River Plume (in preparation).

Simon M, Azam F. (1989). Protein content and protein synthesis rates of planktonic bacteria. *Mar Ecol Prog Ser* 51: 201–213.

Taniguchi Y, Choi PJ, Li G-W, Chen H, Babu M, Hearn J *et al.* (2010). Quantifying *E. coli* proteome and transcriptome with single-molecule sensitivity in single cells. *Science* 329: 533–538.

Xu L, Chen H, Hu X, Zhang R, Zhang Z, Luo ZW. (2006). Average gene length is highly conserved in prokaryotes and eukaryotes and diverges only between the two kingdoms. *Mol Biol Evol* 23: 1107–1108.