

property	<i>E. coli</i>	budding yeast	mammalian (HeLa line)
cell volume	0.3–3 μm^3	30–100 μm^3	1000–10,000 μm^3
proteins per μm^3 cell volume	2–4 $\times 10^6$		
mRNA per cell	10 ³ –10 ⁴	10 ⁴ –10 ⁵	10 ⁵ –10 ⁶
proteins per cell	~10 ⁶	~10 ⁸	~10 ¹⁰
mean diameter of protein	4–5 nm		
genome size	4.6 Mbp	12 Mbp	3.2 Gbp
number protein coding genes	4300	6600	21,000
regulator binding site length	10–20 bp	5–10 bp	
promoter length	~100 bp	~1000 bp	~10 ⁴ –10 ⁵ bp
gene length	~1000 bp	~1000 bp	~10 ⁴ –10 ⁶ bp (with introns)
concentration of one protein per cell	~1 nM	~10 pM	~0.1–1 pM
diffusion time of protein across cell ($D \approx 10 \mu\text{m}^2/\text{s}$)	~0.01 s	~0.2 s	~1–10 s
diffusion time of small molecule across cell ($D \approx 100 \mu\text{m}^2/\text{s}$)	~0.001 s	~0.03 s	~0.1–1 s
time to transcribe a gene	<1 min (80 nts/s)	~1 min	~30 min (incl. mRNA processing)
time to translate a protein	<1 min (20 aa/s)	~1 min	~30 min (incl. mRNA export)
typical mRNA lifetime	3 min	30 min	10 h
typical protein lifetime	1 h	0.3–3 h	10–100 h
minimal doubling time	20 min	1 h	20 h
ribosomes/cell	~10 ⁴	~10 ⁵	~10 ⁶
transitions between protein states (active/inactive)	1–100 μs		
time scale for equilibrium binding of small molecule to protein (diffusion limited)	1–1000 ms (1 μM –1 nM affinity)		
time scale of transcription factor binding to DNA site	~1 s		
mutation rate	10 ⁻⁸ –10 ⁻¹⁰ /bp/replication		