

	Quantity of Interest	Symbol	Rule of thumb
<i>E. coli</i>	Cell volume	$V_{E.coli}$	$\approx 1 \mu\text{m}^3$
	Cell mass	$m_{E.coli}$	$\approx 1 \text{ pg}$
	Cell cycle	$t_{E.coli}$	$\approx 3000 \text{ s}$
	Cell area	$A_{E.coli}$	$\approx 6 \mu\text{m}^2$
	Genome length	$N_{bp}^{E.coli}$	$\approx 5 \times 10^6 \text{ bp}$
	Swimming speed	$v_{E.coli}$	$\approx 20 \mu\text{m/s}$
Yeast	Volume of cell	$V_{yeast}$	$\approx 60 \mu\text{m}^3$
	Mass of cell	$m_{yeast}$	$\approx 60 \text{ pg}$
	Diameter of cell	$d_{yeast}$	$\approx 5 \mu\text{m}$
	Cell cycle time	$t_{yeast}$	$\approx 200 \text{ min}$
	Genome length	$N_{bp}^{yeast}$	$\approx 10^7 \text{ bp}$
Organelles	Diameter of nucleus	$d_{nucleus}$	$\approx 5 \mu\text{m}$
	Length of mitochondrion	$l_{mito}$	$\approx 2 \mu\text{m}$
	Diameter of transport vesicles	$d_{vesicle}$	$\approx 50 \text{ nm}$
Water	Volume of molecule	$V_{H_2O}$	$\approx 10^{-2} \text{ nm}^3$
	Density of water	$\rho$	$1 \text{ g/cm}^3$
	Viscosity of water	$\eta$	$\approx 1 \text{ centipoise}$ $(10^{-2} \text{ g/(cm s)})$
	Hydrophobic embedding energy	$\approx E_{hydr}$	$25 \text{ cal/(mol A}^2)$
DNA	Length per base pair	$l_{bp}$	$\approx 1/3 \text{ nm}$
	Volume per base pair	$V_{bp}$	$\approx 1 \text{ nm}^3$
	Charge density	$\lambda_{DNA}$	$2 \text{ e}/0.34 \text{ nm}$
	Persistence length	$\xi_p$	$50 \text{ nm}$
Amino acids and proteins	Radius of "average" protein	$r_{protein}$	$\approx 2 \text{ nm}$
	Volume of "average" protein	$V_{protein}$	$\approx 25 \text{ nm}^3$
	Mass of "average" amino acid	$M_{aa}$	$\approx 100 \text{ Da}$
	Mass of "average" protein	$M_{protein}$	$\approx 30,000 \text{ Da}$
	Protein concentration in cytoplasm	$c_{protein}$	$\approx 300 \text{ mg/ml}$
	Characteristic force of protein motor	$F_{motor}$	$\approx 5 \text{ pN}$
	Characteristic speed of protein motor	$v_{motor}$	$\approx 200 \text{ nm/s}$
	Diffusion constant of "average" protein	$D_{protein}$	$\approx 100 \mu\text{m}^2/\text{s}$
Lipid bilayers	Thickness of lipid bilayer	$d$	$\approx 5 \text{ nm}$
	Area per molecule	$A_{lipid}$	$\approx \frac{1}{2} \text{ nm}^2$
	Mass of lipid molecule	$m_{lipid}$	$\approx 800 \text{ Da}$