Table 2. Cellular concentrations of the common biological cations.

Ion	[Total] (mM)	[Free] (mM)	Total atoms per Cell[a]	Free atoms per cell
Na^+	12	8	3.6×10^6	2.4×10^6
K^+	140	120	4.2×10^7	3.6×10^7
Ca^{2+}	3	0.0001	9×10^5	30
Mg^{2+}	30	0.3	7.5×10^6	90,000

[a]Calculated for a 1 μM diameter cell; this approximates the volume of an *E. coli* cell. For a larger cell such as a lymphocyte, multiply these numbers by the ratio of the cell radius cubed ($[r_1/r_2]^3$). Thus for a lymphocyte of diameter 20 μM, multiply the above values by $([10/0.5]^3) = 8000$.