	$GuanH^+$	K^+	Na^+	Cl^-
ΔG_{hyd}	69.7 ± 0.1	82.5 ± 0.1	103.1 ± 0.1	80.05 ± 0.03
$\Delta G_{sol,cHex}$	-6.0 ± 0.1	-1.1 ± 0.1	-3.43 ± 0.03	0.3 ± 0.1
$\Delta G_{part,water\text{-}cHex}$	64.0 ± 0.1	81.6 ± 0.1	99.9 ± 0.1	80.1 ± 0.1
$W_{total,water\text{-}membrane}$	24.6 ± 0.4	25.8 ± 0.1	25.6 ± 0.2	24.1 ± 0.3
$W_{remainder,water\text{-}membrane}$	61.9 ± 2.4	78.8 ± 0.9	86.6 ± 2.6	48.3 ± 6.9

Table S2. Comparison of ion solvation and partitioning free energies with membrane translocation free energies (in kcal/mol). ΔG_{hyd}, $\Delta G_{sol,cHex}$ and $\Delta G_{part,water\text{-}cHex}$ – "real" free energies (which include interfacial potential contribution) for ion hydration, solvation in cyclohexane and partitioning between water and cyclohexane, respectively. $W_{total,water\text{-}membrane}$ – total free energy barriers for ion translocation across the DPPC membranes (see Fig. 4 and Table 1 in the main text), $W_{remainder,water\text{-}membrane}$ – free energy barriers for ions to cross the membranes excluding contribution from core-located polar components (Fig.S9D**).** Error bars represent one standard error of means from block analysis.