

Table S4. Basic physiological parameters

Parameter	Description	Value	Unit	Reference*
R	Gas constant	8.31447		
T	Absolute temperature	310	K	
F	Faraday constant	96485	C/mol	
G _{0_ATP}	Gibbs energy for ATP hydrolysis	-36.03*1e+3	J	
P _K	Membrane permeability to potassium ion	1e-6	μm/s	[67,68]
P _{Na}	Membrane permeability to sodium ion	3.8*1e-8	μm/s	[67,68]
C _m	Membrane capacitance	1e-2	farad/m ²	[2]
D _{cell}	Cell diameter	4	μm	[69]
Volume _{Cell}	Cell volume	33.510	μm ³	
S _{mem}	Cell surface area	50.2655	μm ²	
L _p	Hydraulic membrane permeability	1.19*1e+6	m ⁴ /(J*s)	[51]
G _{EK}	Geometrical factor	7.85*1e-11	m ²	[51]
Osmo _{cyt} ⁰	Total concentration of initial intracellular osmolytes	600	mM	[51]

Osmo _{ext} ⁰	Total concentration of initial extracellular osmolytes	250	mM	[51]
Anion	Intracellular negative charges that balances H ⁺ , K ⁺ and Na ⁺	300	mM	
Turgor ⁰	Initial turgor pressure	0.875*1e+6	J/m ³	[51]
r _{vol}	Volumetric elastic modulus	0.63		[51]
[ATP]	ATP concentration	2.6	mM ⁻¹	[70,71]
[ADP]	ADP concentration	1.0	mM ⁻¹	[70,71]
[Pi]	Phosphate concentration	3.0	mM ⁻¹	[70,71]