

Table 1: The fit parameters for modeled currents as function of time in Saline APW (see Fig. 2 and eqns. 2 -5).

Time in medium	I_{OH}			I_{irc}			pH_i	g_{bkg}	E_{OH}	Resting PD
	$N_{OH}P_{OH}$	V_{50-}	Z_g-	N_KP_K	V_{50}	Z_g				
Saline APW	$\times 10^{-4} m.s^{-1}$	mV		$\times 10^{-7} m.s^{-1}$	mV			$S.m^{-2}$	mV	mV
min										
11	17	-208	0.6				6.9	3.85	- 6	- 89
21	25	-200	0.6				6.86	3.1	- 8	- 83
60	27	-250	0.6				6.825	3.1	- 10	- 83
66	49	-280	0.6	75	-227	1.8	6.72	3.1	- 17	- 77
74	86	-275	0.6	54	-228	1.8	6.7	3.1	- 18	- 68
APW wash										
33	36	-200	1.5	54	-350	1.45	6.65	1.4	-21	-115

The steady state I/V profile in Sorbitol APW contains a pump component with rate constants: $k_{io}^0 = 1000$, $k_{oi}^0 = 0.1$, $\kappa_{io} = 0.5$, $\kappa_{oi} = 70 s^{-1}$ (see eqn. 1); inward rectifier with $N_KP_K = 54 \times 10^{-7} m.s^{-1}$, $V_{50} = -352.5 mV$ and $Z_g = 5.0$ and background conductance $g_{bkg} = 0.31 Sm^{-2}$. Membrane resting PD was $-198 mV$. V_{bkg} was fitted at $-100 mV$ throughout all the records in Sorbitol APW, Saline APW and APW wash. The pump component in APW wash was fitted with $k_{io}^0 = 2100 s^{-1}$, $k_{oi}^0 = 0.1 s^{-1}$, $\kappa_{io} = 0.5 s^{-1}$ and $\kappa_{oi} = 57 s^{-1}$.

Table 2: The parameters for modeled currents to fit data from Saline APW of pH 7 and 9 (see Fig. 3 and eqns. 2 -5).

pH _o	I _{OH}					I _{irc}			I _{orc}			pH _i	g _{bkg}	E _{OH}	Res ting PD
	N _{OH} P _{OH}	V ₅₀₋	z _{g-}	V ₅₀₊	z _{g+}	N _K P _K	V ₅₀	z _g	N _K P _K	V ₅₀	z _g				
	x 10 ⁻⁴ m.s ⁻¹					x 10 ⁻⁷ m.s ⁻¹	mV		x 10 ⁻⁷ m.s ⁻¹	mV			S.m ⁻²	mV	mV
7	11	-185	0.6			50	-181	2.5				7.25	1.05	9	- 60
9	9			-117	0.6							7.32	1.05	- 100	- 95
9	9.5			-139	0.6	50	-220	2.5	6.5	105	1.0	7.5	1.05	- 89	- 90

The V_{bkg} was set at -100 mV at pH 7, but was modeled at -90 mV for pH 9. The internal K⁺ concentration was set at 40 mM for all three I/V curves.

Table 3: The parameters for modeled currents to fit data from Saline APW of pH 9 and 6 (see Fig. 4 and eqns. 2 -5).

pH _o	I _{OH}					I _{irc}			I _{orc}			pH _i	g _{bkg}	E _{OH}	Resti ng PD
	N _{OH} P _{OH}	V ₅₀₋	Z _{g-}	V ₅₀₊	Z _{g+}	N _K P _K	V ₅₀	Z _g	N _K P _K	V ₅₀	Z _g				
	x 10 ⁻⁴ m.s ⁻¹					x 10 ⁻⁷ m.s ⁻¹	mV		x 10 ⁻⁷ m.s ⁻¹	mV			S.m ⁻²	mV	mV
9	5.0	-190	0.6	-115	0.6	50	-220	2.8	6.5	32	2.8	7.1	0.5	-113	-101
9	5.0	-180	0.6	-115	0.6				6.5	32	2.8	7.27	0.5	-103	-97
6	14.0	-140	0.8	-50	0.6							7.2	0.85	+81	-51
6	12.0	-145	0.8	-50	0.6				6.5	32	2.8	7.2	0.85	+81	-59
6						50	-198	2.8	6.5	39	2.8		0.82		-87

V_{bkg} was set at -90 mV at pH 9 and -88 mV for pH 6.

Table 4: The fitted parameters to statistics of the response of the I/V characteristics to pH change (see Fig. 5 and eqns. 2 -5)

pH _o	OH ⁻ current					I _{irc}			I _{orc}			pH _i	g _{bkg}	E _{OH}	Res ting PD
	N _{OH} P _{OH}	V ₅₀₋	z _{g+}	V ₅₀₊	z _{g+}	N _K P _K	V ₅₀	z _g	N _K P _K	V ₅₀	z _g				
	x 10 ⁻⁴ m.s ⁻¹					x 10 ⁻⁷ m.s ⁻¹	mV		x 10 ⁻⁷ m.s ⁻¹	mV			S.m ⁻²	mV	mV
7	5.5	-230	0.6			30	-160	2.1				7.1	0.6	0	- 70
9	6.0	-200	0.6	- 100	0.6	30	-205	2.1	6.5	25	2.8	7.4	0.6	- 95	- 97
6	45.0	-240	0.6						6.5	20	2.5	6.9	1.3	53	- 46

Cells 4 – 8 (4 I/V profiles) at pH 7, cells 4 – 7 (4 I/V profiles) at pH 9, cells 7 and 8 (4 I/V profiles) at pH 6. The V_{bkg} was fitted at -100 mV for pH 7, -90 mV for pH 9 and -100 for pH 6. [K⁺]_i was set at 30 mM throughout.