



Fig. S3 Ion dependency of reversal potential (E_{rev}).

(Methods) The internal pipette solutions for whole-cell voltage-clamp recordings from ND7/23 cells contained (in mM) 50 TEA-Cl, 20 NaCl, 40 KCl, 5 EGTA, 20 HEPES, 20 NaOH, 5 MgSO₄, 2.5 MgATP, 1.2 Leupeptin, adjusted to pH 7.4 with HCl. The extracellular contained (in mM); standard Tyrode's solution (pH 7.4 by HCl): 101 TEA-Cl, 36 NaCl, 4 KCl, 10 HEPES, 4 NaOH, 0.5 CaCl₂, 4.5 MgCl₂, 11 glucose; low Na⁺ Tyrode: 101 TEA-Cl, 36 NaCl, 4 KCl, 10 HEPES, 4 NaOH, 0.5 CaCl₂, 4.5 MgCl₂, 11 glucose; high K⁺ Tyrode: 101 TEA-Cl, 40 KCl, 10 HEPES, 4 NaOH, 0.5 CaCl₂, 4.5 MgCl₂, 11 glucose. (A) A sample trace of current-voltage (I-V) relationship of the ChRWR photocurrent in the standard Tyrode (blue), low Na⁺ Tyrode (red) and high K⁺ Tyrode (green), respectively from the same cell. (B) A sample trace of current-voltage (I-V) relationship of the eMvChR1#2 photocurrent in the standard Tyrode (blue), low Na⁺ Tyrode (red) and high K⁺ Tyrode (green), respectively from the same cell. (C) Summary of the E_{rev} shift by changing Na⁺ from 40 to 4 mM (red, n = 7 for ChRWR and n = 5 for eMvChR1#2) or by changing K⁺ from 4 to 40 mM (green, n = 7 for ChRWR and n = 5 for eMvChR1#2). *, P < 0.05 (Wilcoxon signed rank test) and †, P < 0.05 (Mann-Whitney U-test).