**Supplementary Figure 3.**

(A) Activation time-course of TRPM4b-mediated currents elicited by 1 mM glutamate application in HT-22 cells (n=6). (B) A representative traces of whole cell recording showed that pre-incubation (5-15 min) of 9-phenanthrol (100 μM) failed to activate endogenous TRPM4b-mediated currents elicited by 10 min application of glutamate (1 mM) in HT-22 cells (n=4; 0.292 ± 0.139 pA/pF increased). Note that raw traces were activated by voltage ramp (-100 to +100 mV) before (black) and 10 min after (red) 1 mM glutamate application were overlapped. (C) Summary bar graph of qRT-PCR of TRPM4b in HT-22 cells. The level of endogenous TRPM4b mRNA in HT-22 cells was comparable to the one in mouse primary cultured hippocampal neurons. (D) Validation of mouse TRPM4b shRNA constructs. HEK293T cells were co-transfected with GFP-mouse TRPM4b and mouse TRPM4b shRNA1 or shRNA2 and their knockdown efficiency was evaluated by Western blot using anti-GFP antibody against GFP-TRPM4b.