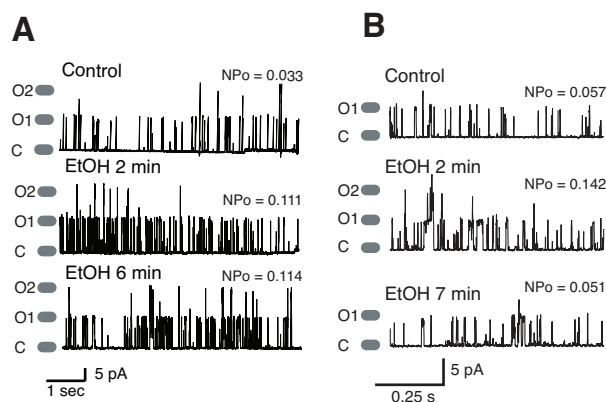
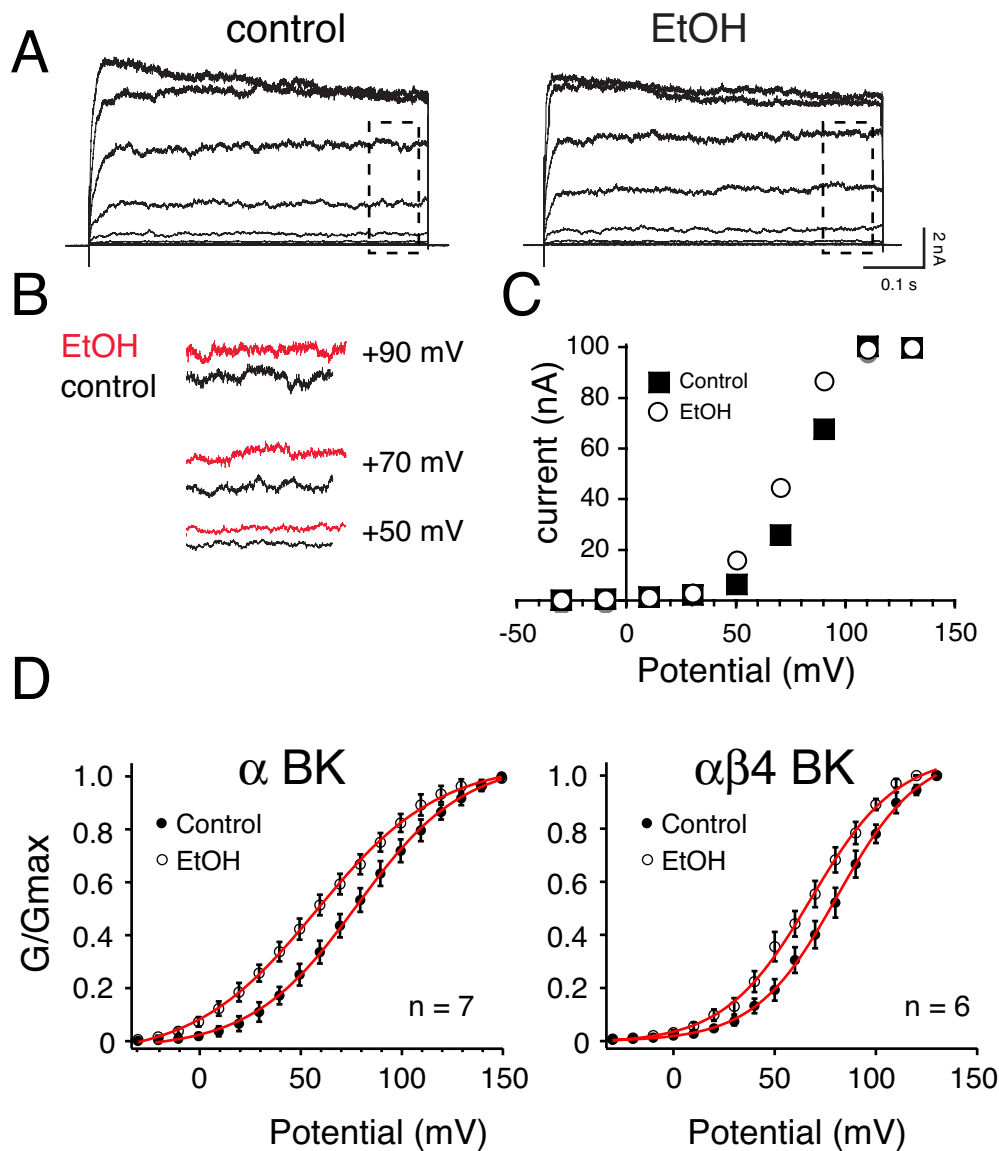


# Supporting Information

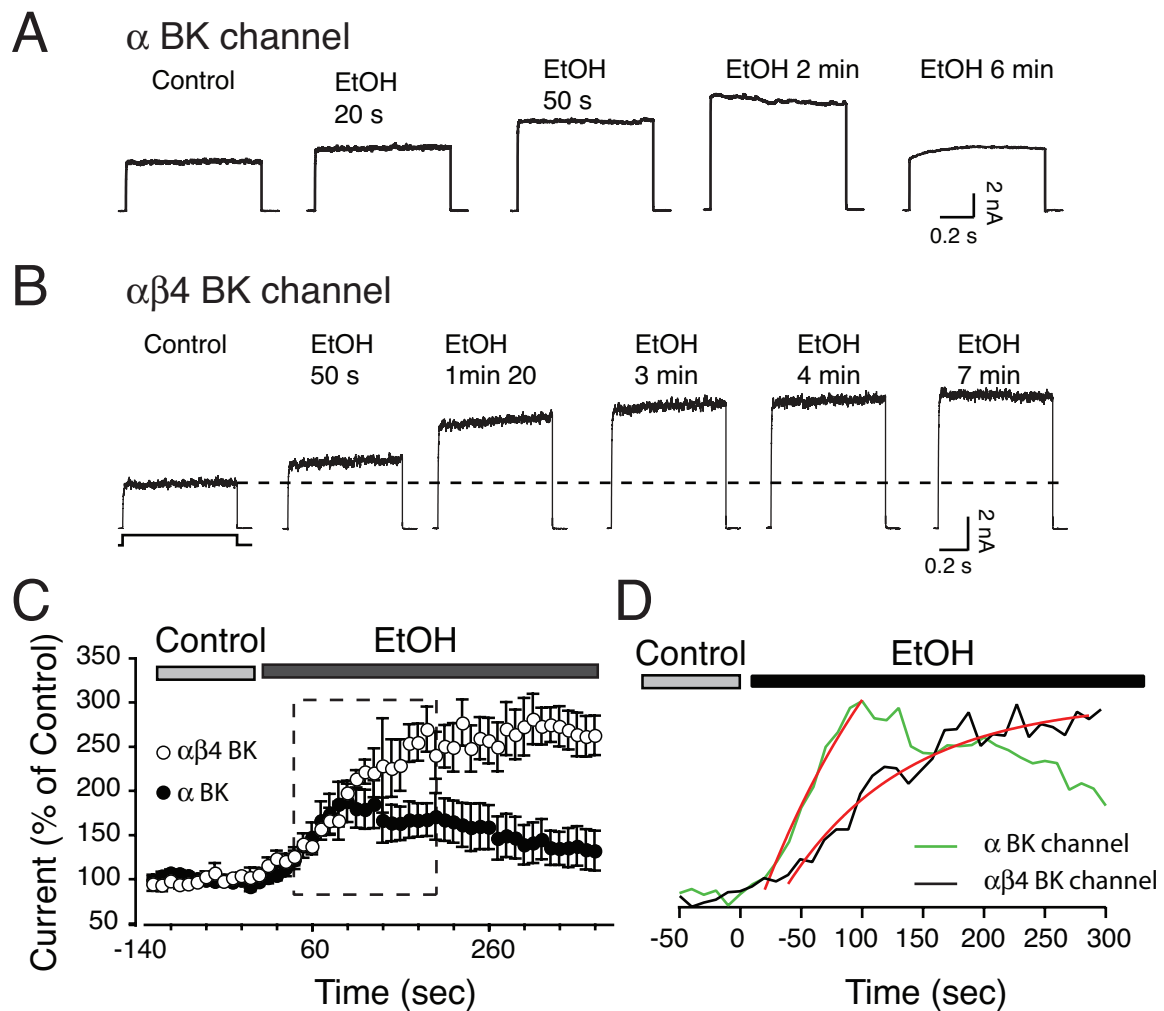
Martin *et al.* 10.1073/pnas.0801068105



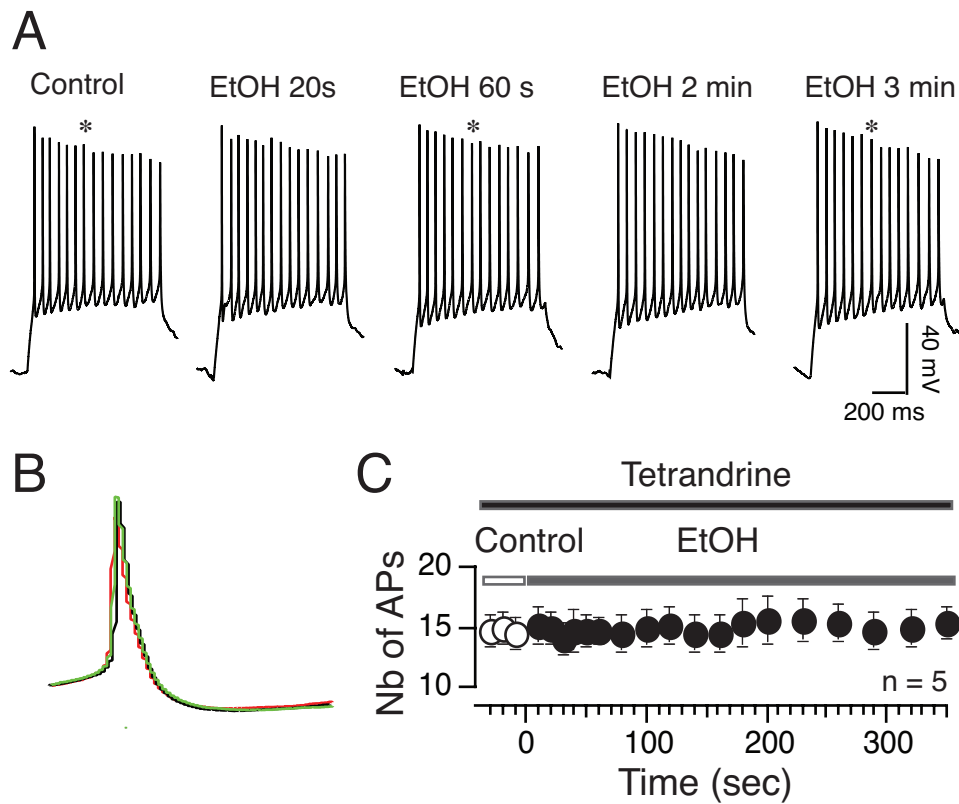
**Fig. S1.** (A) Single channel activity recorded from HEK293 cells expressing  $\alpha\beta4$  BK channels recorded at depolarized potentials. (B)  $\alpha$  BK single channel activity recorded at a depolarized potential before (control) and during EtOH exposure.



**Fig. S2.** EtOH-mediated potentiation of BK channel activity is not voltage-dependent. (A)  $\alpha$  BK currents evoked from a holding potential of  $-70$  mV by a series of incremental voltage steps before (control) and after (EtOH) alcohol perfusion. (B) Magnified segments of BK currents in control conditions and during EtOH exposure outlined by dashed boxes in A. (C) Current-voltage relationship of BK channels from the same cell as in A and B. (D) Plots of conductance versus voltage (G-V) relationship for  $\alpha$  (Left) and  $\alpha\beta 4$  (Right) before (control; filled circles) and during EtOH exposure (EtOH; open circles). All current were normalized to the maximum conductance (1 on the ordinate) obtained at potentials around  $+150$  mV.



**Fig. 53.** Temporal responses of  $\alpha$  and  $\alpha\beta 4$  BK channels to acute EtOH are different. (A) Representative traces of  $\alpha$  BK channel currents recorded in whole cell before (control) and at various time during EtOH exposure in response to a single voltage step (+90 mV). (B) Representative traces of  $\alpha\beta 4$  BK channel currents recorded in whole cell before (control) and at various time during EtOH exposure in response to a single voltage step (+100 mV). Note the lack of tolerance. (C) Averaged current amplitude for  $\alpha$  (filled circles) and  $\alpha\beta 4$  (open circles) BK channels before (control) and during EtOH exposure (EtOH). Box with dashed outline shows the part of the graph that was enlarged in D. (D) Enlarged section of graph in C. Curves were fitted with a single exponential. The time to peak for  $\alpha$  occurs much earlier (around 2 min) compared to that of  $\alpha\beta 4$  BK channels (3–4 min). For C and D, bars above symbols indicate when EtOH was applied.



**Fig. S4.** In presence of an  $\alpha\beta 4$  BK channel blocker (tetrandrine,  $1.5 \mu\text{M}$ ), EtOH failed to alter spike patterning in medium spiny neurons from WT mice. (A) Representative traces of action potential patterns evoked by injecting the same single current pulse before and during EtOH exposure. Stars above traces indicate action potentials enlarged and overlaid in B. (B) No change in the shape of action potentials was visible. (C) Averaged number of action potentials from 5 medium spiny neurons before (control) and during EtOH exposure (EtOH).