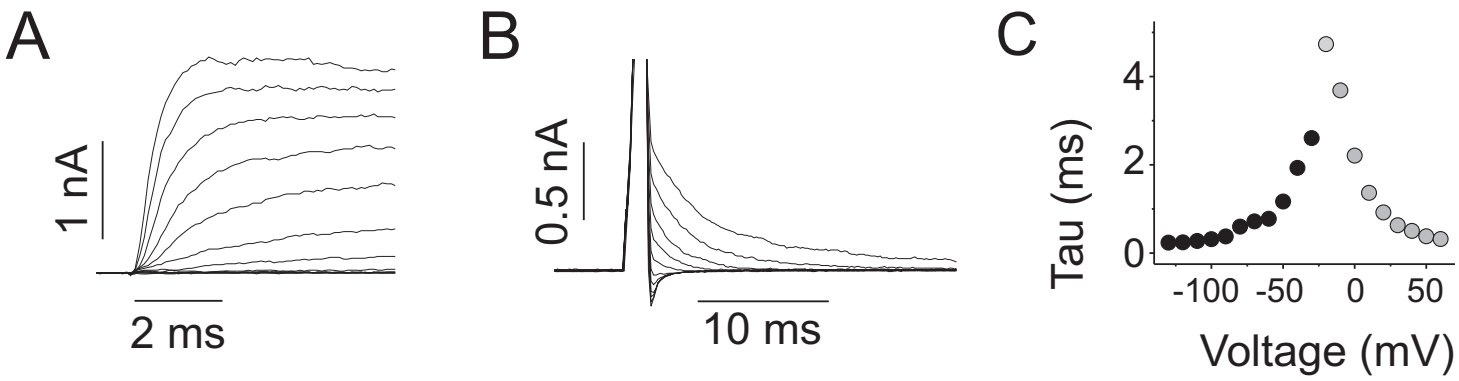
Supplementary Figure 1: Kinetic properties of Kv3-like currents in PC somatic patches

(A) The same voltage clamp traces of 1mM TEA sensitive currents as in Figure 4C at an expanded time scale to resolve activation kinetics. Voltage steps were in 10 mV increments and the top trace is at +40 mV. (B) Voltage clamp recordings used to determine deactivation kinetics. Protocol consisted of pre-pulse to -110 mV, a step to +60 mV for 1 ms to activate Kv3 currents, followed by steps from -130 to -30 mV in 10 mV increments. Peak currents at +60 mV are truncated. (C) Activation and deactivation currents at different command potentials were fit to single exponential equations. Time constant (tau) of fits for activation (gray) and deactivation (black) are presented, demonstrating remarkably rapid transitions consistent with known properties of Kv3 channels (Rudy and McBain 2001).

Supplementary Figure 2: Somatic and dendritic recordings of Ca^{2+} spike generation

Dual whole cell current clamp recordings were established from the soma and dendrite of a PC. The dendritic electrode was targeted to a segment 40 μm from the origin of the primary dendrite from the soma. Square pulse current injections were applied from either the somatic or dendritic electrode to generate dendritic spikes, while transmembrane voltage was recorded from both electrodes. During somatic (A) or dendritic (B) stimulation, the voltages at the dendritic recording site were depolarized relative to the soma during the plateau and at Ca^{2+} spike threshold. Scale bar applies to all panels. V thresh, voltage threshold.

Supplementary Figure 1



Supplementary Figure 2