Supporting Figure

Graph 1: *Testing for a surface charge screening effect in the experiments shown in Fig. 2E.* Neurons were depolarized in 2 mM and 10 mM external Ca^{2+} (= $[Ca^{2+}]_o$) for 100 ms to various levels in the presence of 0.5 µM TTX, 10 µM CNQX, 100 nM apamin and 3 µM BayK by current injection of incremental strength to evoke ADPs. ADP areas in each cell were evaluated for a medium current injection (e.g. #3 out of the series of 5 equally increasing current injections, as described in the Material and Methods section of the manuscript) in 2 mM $[Ca^{2+}]_o$ („2 Ca^{2+} medium“) and 10 mM $[Ca^{2+}]_o$ („10 Ca^{2+} medium“), and also in 10 mM $[Ca^{2+}]_o$ for a higher current injection (e.g. current injection #4 or #5), depolarzing the neurons by approximately 10 mV more („10 Ca^{2+} high“). For each condition, ADPs were normalized to the value obtained for „2 Ca^{2+} medium“. Results from 5 cells were averaged and displayed in a bar graph. This comparison shows that while elevation of $[Ca^{2+}]_o$ again reduced the ADPs, raising the current injection (and hence the depolarization levels) did not augment ADP areas to the levels obtained with the medium stimulus in 2 mM $[Ca^{2+}]_o$. Values are given as mean ± S.E.M.

Graph 2: *Testing for a contribution of muscarinic effects by the Na^+ substitute choline in the experiments shown in Fig. 4A.* Experiments were performed as indicated in the figure legend to Fig. 4A, but in the continuous presence of 1 µM atropine (n = 4). The presence of the muscarinic agonist did not abolish the profound reduction of the bump area by reduction of external Na^+. „BayK Atr“ denotes the bump area evoked in normal external solution, whereas „BayK Atr/low[Na^+] indicates the bump area that was evoked in the presence of lowered external Na^+. Values are given as mean area (mV*ms) ± S.E.M.

Graph 3: *Demonstrating a stimulus dependency of afterpotentials by I_{AHP}-recording in voltage clamp mode.* In voltage-clamp neurons were held at -65 mV and were depolarized by voltage steps to -25 mV with 0.5 µM TTX, 10 µM CNQX, 10 µM XE991 and 3 µM BayK in the bathing solution. The duration of the voltage steps was increased from 100 ms to 1000 ms and 8000 ms. Each voltage step was applied three times, both in the absence and presence of 30 µM BMI. BMI-sensitive peak outward tail currents were evaluated, normalized to the current obtained with the longest pulse duration and averaged for each condition. In the graph, results from 4 neurons are plotted separately. Data are given as mean ± S.E.M.