

Due to a printing error, Fig. 3 appeared incorrectly. It is printed correctly below.

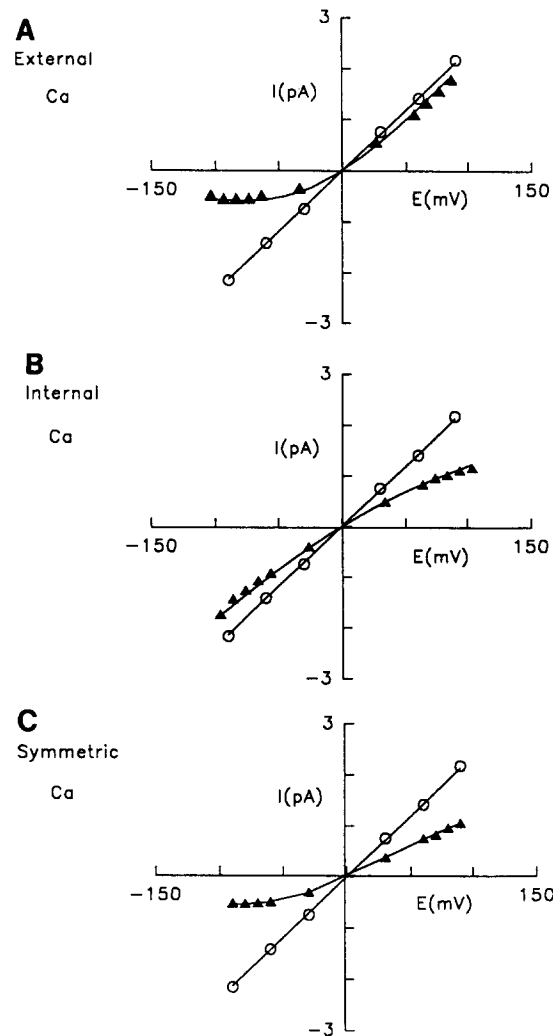


FIGURE 3. Effects of extracellular, intracellular or symmetric Ca^{2+} on current-voltage relations of single, BTX-activated sodium channels in planar lipid bilayers, determined in the presence of 125 mM symmetrical Na^+ . Each point represents the mean of data from two to eight membranes. In each of the frames the smooth curves through the data points were calculated from the 3B2S double-occupancy model. Open circles and filled triangles represent current measured in the absence and presence of Ca^{2+} , respectively. (A) External calcium. Single-channel current-voltage relationships obtained with symmetrical 125 mM Na^+ , in the absence of divalent cations, or with 10 mM Ca^{2+} added to the external side of the membrane. Note that external Ca^{2+} blocks both inward and outward current, with the degree of block increasing as the voltage is made more negative. (B) Intracellular calcium. The same conditions as A, except that 10 mM Ca^{2+} was added to only the intracellular surface of the sodium channel. Internal Ca^{2+} blocks both inward and outward current, with

the degree of block increasing as the voltage is made more positive. (C) Symmetric calcium. The same conditions as A, except that 10 mM Ca^{2+} is added to both sides of the membrane. The i - E relationship is asymmetric, despite the symmetric ionic conditions, consistent with a more potent and more voltage-sensitive block by external Ca^{2+} , as indicated by A and B.